CITY OF HOMER
INVITATION TO BID / BID DOCUMENTS

Homer Fire Station #2 – Skyline Drive
2014

PREPARED BY:
CITY OF HOMER – PUBLIC WORKS DEPARTMENT
3575 HEATH STREET
HOMER ALASKA 99603
907-235-3170

INVITATION TO BID

By the City of Homer, Alaska
for the

Homer Fire Station #2 – Skyline Drive

Sealed bids for the construction of the **Homer Fire Station #2 – Skyline Drive** will be received at the office of the City Clerk, City Hall, City of Homer, 491 East Pioneer Avenue, Homer, Alaska, until 2:00 PM, Thursday, **February 27, 2014** at which time they will be publicly opened and read. The time of receipt will be determined by the City Clerk's time stamp. Bids received after the time fixed for the receipt of the bids shall not be considered. **All bidders must submit a City of Homer Plan Holders Registration form to be on the Plan Holders List and to be considered responsive.** Plan holder registration forms, and Plans and Specifications are available on line at http://www.cityofhomer-ak.gov/rfps

The project is funded with a State Legislative Grant. The City's local bidders 5% preference requirements will apply; State prevailing wage rates will apply. The work includes, but is not limited to, the following:

To construct a new 2,750 Sf. Fire Station located directly adjacent to the existing Homer Water Treatment Plant on Skyline Drive. The new station will consist of a heated concrete slab cast over the foundation of the old water treatment plant and incorporate a structural steel frame with prefabricated exterior wall panels for the skin. The interior will consist of a mechanical room, 100 sf. office and one small restroom with a mezzanine level for extra storage.

Please direct all technical questions regarding this project to: Dan Nelsen, City of Homer, Public Works Department, 3575 Heath Street, Homer, Alaska, 99603, (907) 435-3141

A mandatory pre-bid conference will be held on Wednesday, **February 12th, 2014** at 1:00 PM at Homer City Hall Conference Room, 491 East Pioneer Avenue, Homer, Alaska, to discuss the construction of the fire station and answer any questions bidders may have.

Plan holder registration forms, and Plans and Specifications are available online at http://www.cityofhomer-ak.gov/rfps **All bidders must submit a City of Homer Plan Holders Registration form to be on the Plan Holders List and to be considered responsive.** Hard copies can be obtained at the Office of the City Clerk upon payment of $220 per set ($250 for overnight delivery). City of Homer Standard Construction Specifications 2011 Edition (containing general contract provisions) may be downloaded from the City's web site. All fees are non-refundable. The City of Homer reserves the right to accept or reject any or all bids, to waive irregularities or informalities in the bids, and to award the contract to the lowest responsive bidder.

Dated this 20th day of January, 2014.

CITY OF HOMER

Walt Wrede, City Manager

Homer News – January 30 & February 6, 2014
Peninsula Clarion – February 2, 2014

Fiscal Note: 151-0936

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Homer Fire Station #2 – Skyline Drive

Homer Fire Station #2 – Skyline Drive

The City of Homer, Alaska is requesting bid proposals from qualified firms and individuals for the project described herein.

I. Scope of Services

The proposed work is located within the Homer city limits and is illustrated on the plans entitled:

Homer Fire Station #2 – Skyline Drive

The project consists of furnishing all labor, materials, equipment, tools, supervision and other facilities necessary for the performance of the work described herein and shown on the project drawings. The work includes but is not limited to the following:

To construct a new 2,750 Sf. Fire Station located directly adjacent to the existing Homer Water Treatment Plant on Skyline Drive. The new station will consist of a heated concrete slab cast over the foundation of the old water treatment plant and incorporate a structural steel frame with prefabricated exterior wall panels for the skin. The interior will consist of a mechanical room, 100 sf. office and one small restroom with a mezzanine level for extra storage.

II. General Bidding Requirements

The work must be performed by a Contractor skilled and regularly engaged in the general class or type of work called for under the Contract. The bidder must have a current contractor's license issued by the State of Alaska. The license must apply to the work described in the Invitation to Bid.

The City of Homer Standard Construction Specifications, 2011 Edition, shall supplement the project plans. A copy of the Homer Standard Construction Specifications (S.C.S.) may be obtained at the Office of the City Clerk, 491 E. Pioneer Ave., Homer, Alaska 99603. The cost for S.C.S. is per set is $50.00. Persons requesting the sets by mail must include an additional $25.00 for shipping.

This project is covered by the State of Alaska, Laborer's and Mechanic's Minimum Rates of Pay, Title 36 Public Contracts, (AS 36.05 & 36.10) **Pamphlet 600 Issue 27**, **Effective September 1, 2013**. It is the responsibility of the bidder to determine the current rates of pay required and to submit the proper certified payrolls to the State Department of Labor.

Performance and Payment bonds in the amount of One Hundred Percent 100% of the bid amount are required.

Bids must be submitted on the Bid Form and will be received, **until 2:00 PM, Thursday, February 27, 2014** at the Office of the City Clerk, 491 E. Pioneer Avenue, Homer, Alaska 99603. **A bid bond is required.** Cashier checks in an amount equal to five percent (5%) of the bid are acceptable. Surety bonds are acceptable.

The City of Homer has a two-part bid process, Part A and Part B. Each portion of the bid must be submitted in separate envelopes. At the bid opening, Part B is opened first and must be complete and regular or Part A will not be opened and the bid will be rejected.

Part A of the bid contains the Bid Form, the Bid Bond and the Power of Attorney (if needed). Part A must be submitted separately in an envelope marked Part A.

Part B of the bid contains the 1) Addenda Acknowledgment, 2) EEO-1 Certification, 3) Equal Employment Opportunity Clause. Part B must be submitted separately in an envelope marked Part B.

III. Instruction to Bidders

The City of Homer reserves the right to accept or reject any or all proposals, to waive irregularities or informalities in the proposals, and to award the contract to the bidder that best meets the criteria stated below.

A. Qualification of Bidders

It is the intention of the City of Homer to award this contract to the lowest responsible, responsive Bidder who furnishes satisfactory evidence they have the requisite experience, ability and sufficient capital, facilities and plant to prosecute the work successfully (and properly) and to complete it within the time allowed in the Contract at the least cost to the City of Homer for dollars spent for value received.

If the signature on the Bid is by an agent, other than an Officer of a corporation of a member of a Co-partnership, a Power of Attorney must either be on file with the City Clerk prior to the Bid opening or submitted with the Bid in Part B.

B. Taxes

Attention is directed to the requirements of the General Conditions regarding the payment of taxes. All taxes that are lawfully assessed against Owner or Contractor in connection with the work shall be paid by the Contractor. The Bid prices shall include all such taxes.

The City of Homer is exempt from local sales taxes. The Contractor shall not include sales tax markup in his bid. However, in order to recoup sales tax the Contractor might pay at local vendors, the Contractor must secure a Tax Exempt card from the Kenai Peninsula Borough Tax Department.

C. Familiarization With The Work

Before submitting a Bid, each prospective Bidder shall familiarize themselves with the work, labor conditions and all laws, regulations and other factors affecting performance of the work. The Contractor shall carefully correlate his observations with the requirements of the Contract Documents and otherwise satisfy himself of the expense and difficulties attending performance of the work. The submission of a Bid shall constitute an acknowledgement that the Bidder has thoroughly examined and is familiar with the Contract Documents and the provisions thereof. The failure or neglect of a Bidder to receive or examine any of the Bid Documents shall in no way relieve the bidder from any obligations with the respect to their Bid or to the Contract. Misinterpretation or a reputed lack of knowledge concerning the Bid will not serve as a basis for a claim for additional compensation.

1. Site Conditions

Each Bidder shall visit the site of the Work and completely inform himself relative to construction hazards and procedures, the availability of lands, the character and quantity of surface and subsurface materials and utilities to be encountered, the arrangement and conditions of existing structures and facilities, the procedure necessary for maintenance of uninterrupted operations of existing facilities, the character of construction equipment and facilities needed for performance of the work, and facilities for transportation, handling and storage of materials and equipment. All such factors shall be properly investigated and considered in the preparation of the Bid.

D. Interpretation of Bid Documents

All questions about the meaning or intent of the Contract Documents shall be submitted, in writing, to the Office of the Director of Public Works, 3575 Heath St. Homer Alaska, 99603. Replies will be issued by Addenda mailed or delivered to all parties recorded by the City Clerk's Office as having received the Bidding documents. The City of Homer will not be held responsible for questions received less than (7) days prior to the date of opening of Bids. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. No questions will be answered the day of the bid due date.

The Bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the Addendum Form, properly signed by the Bidder and placed in envelope B.

It shall be the Bidder's responsibility to inquire as to addenda issued. Failure to include the Addenda Form in envelope B shall result in the Bid being rejected as non-responsive.

E. Bid Bond Guarantee

Each Bid shall be accompanied by a Bid Bond duly completed on the suggested form provided by a guaranty company authorized to carry on business in the State of Alaska, along with a General Power of Attorney form, if applicable, for payment to the City in the sum of five percent (5%) of the total amount of the Bid. Failure to include the Bid Bond in envelope A of the Bid shall result in the Bid being rejected as non-responsive.

The amount payable to the City under the Bid Bond or the certified or cashier's check, as the case may be, shall be forfeited to the City in case of a failure or neglect of the Bidder to furnish, execute, and deliver to the City required Performance and Payment Bonds, Evidences of Insurance, necessary forms or material required by the Bid or failure to enter into, execute and deliver to the City the Contract on the form provided therefore, within ten (10) working days after receipt of "Notice of Intent to Award Contract" by the City that the Contract is ready for execution. The "Award of Contract" will be made upon the execution of the Contract by the Bidder and the City.

F. Return of Bid Guarantee

Within thirty (30) days after the Bids are opened, the City will return the Bid Guarantees accompanying the Bids, which are not to be considered in making the award. The bid Guarantees of the three (3) lowest responsive Bids will be held until the Contract has been fully executed after which time the Guarantees will be returned to the respective Bidders whose Bids the Guarantees accompanied.

G. Contract Time

The Contract Time is an essential part of the Contract and it will be necessary for each Bidder to satisfy the City of his ability to complete the work within the time set forth in the Bid form. Provisions for delays, liquidated damages, and extensions of time are set forth in the Standard Construction Specifications. Time is of the essence in this contract.

H. Bids

1. Preparation of Bids

Bids must be submitted on the forms provided by the city and completed in all respects as required by the Bid Documents. Bids shall include all information requested herein, and be manually signed by the Bidder or the Bidder's duly authorized representative, with the Bidder's address and phone number. If the signature is by an agent, other than an Officer of a Corporation, or a member of a Co-partnership, a Power of Attorney must be on file with the City Clerk prior to opening the Bid or submitted in envelope B of the Bid; otherwise, the Bid will be disregarded as irregular and unauthorized, and will be rejected as non-responsive. All Bids must be regular in every respect, and no alterations shall be made to the Bid form.

2. Bid Modifications

If erasures or changes appear on the forms, each must be initialed by the person signing the Bid. Oral or telephonic Bids will not be considered.

Bid modifications by facsimile or hand delivered, to Bids already submitted, will be considered if received prior to the time fixed in the Invitation to Bid. Facsimile or hand delivered modifications will only be considered if they are submitted as a complete **new** Part A (Bid schedule / Bid Bond) and shall be signed by a properly authorized agent, officer, or partner.

Bids will be received at the City Clerk's Office located at 491 East Pioneer Avenue, Homer, Alaska 99603, until the time indicated on the Invitation to Bid. Each Bid shall be submitted enclosed in a sealed, opaque envelope. The Bidder shall see that the Bid title and date of Bid opening is on the lower left-hand corner of the envelope. The City is not responsible for the premature opening of, or failure to open, a bid not properly addressed and identified. Promised overnight delivery from the Post office or private carriers usually is an inaccurate statement for Alaska and Homer Area.

No consideration will be given by the city to a claim of error unless such claim is made to the city in writing within two (2) hours after the time of Bid opening. Written verification and supporting evidence of the error shall be delivered to the City Clerk within 24 hours of the Bid Opening (not including Saturday, Sunday or legal holidays) to allow consideration of the claim for error. Supporting evidence shall be original documents, including cost breakdown sheets, supplier quotes and other documents used to compute the Bid.

It is the bidder's responsibility to see that Bids are deposited at the time and place set forth for the public opening of Bids. Bids not received by the time will not be accepted and will be returned to the Bidder in the sealed bid envelope.

I. Local Bidders Preference

The City of Homer Local Bidder Preference does apply to this contract.

IV. BID SCHEDULE
Part A

City of Homer
Homer Fire Station #2 - Skyline Drive
Bid Schdule

BASE BID Itrems

Item	Pay Item Description (In words)	Pay Unit	Units	Unit Price	Amount
1	All Work Required _____Per Lump Sum	LS	All Req'd		
2	SWPPP Design/Implementation _____Per Lump Sum	LS	All Req'd		

ALTERNATIVE 1

A1	Roof Access Ladder _____Per Lump Sum	LS	All Req'd		

ALTERNATIVE 2

A2	46' x 10' Concrete Apron _____Per Lump Sum	LS	All Req'd		

Bid Schedule (BS)

City of Homer

BID SCHEDULE - SUMMARY

Homer Fire Station #2 – Skyline Drive

Total Project Cost:

$_____
In Numbers

$_____
In Words

Name of Firm: _____
Typed or Printed Name

Address of Firm: _____

_____

_____

Authorized Signature: _____

Typed or Printed
Name of Signatory: _____

Title of Signatory: _____

Date of Bid: _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that _____

_____

Hereinafter called the PRINCIPAL, and _____

a Corporation duly organized under the laws of the State of Alaska having its principal place of business at _____
In the State of Alaska, and authorized to do business in the State of Alaska, as SURETY, are held and firmly bound unto the City of Homer hereinafter called the OBLIGEE, in the penal

sum of _____ DOLLARS ($_____) for payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the PRINCIPAL has herewith submitted his or its BID for _____

_____ said Bid, by reference thereto, being hereby made a part hereof.

NOW, THEREFORE, if the Bid submitted by the PRINCIPAL is accepted and the Contract awarded to the PRINCIPAL, and if the PRINCIPAL shall execute the proposed Contract and shall furnish such Performance and Payment Bond as required by the Contract Documents within the time fixed by the documents, then this obligation shall be void: if the PRINCIPAL shall fail to execute the proposed Contract and furnish the Bond, the SURETY hereby agrees to pay the OBLIGEE the penal sum as liquidated damages:

Signed and sealed this _____Day of _____, 2014.

PRINCIPAL:

BY:

SURETY:

ATTORNEY-IN-FACT:

Part B

ADDENDA ACKNOWLEDGMENT

Project Name: **Homer Fire Station #2 – Skyline Drive**

I hereby acknowledge addenda numbers:

_____

_____

_____

_____

_____

_____

Name of Firm: _____

Signature of Bidder: _____

Date: _____

This Acknowledgement must be included with Part B of the Bid or the Bid will be considered non-responsive.

City of Homer

Equal Employment Opportunity (EEO – 1) CERTIFICATION

The following Certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7 (b) (1)) and must be submitted by BIDDERS and proposed SUBCONTRACTORS in connections with contracts and subcontracts which are subject to the Equal Opportunity Clause. Contracts and subcontracts which are exempt from the Equal Opportunity Clause are set forth in 41 CFR 60-1.5 (generally only contracts or subcontracts of $10,000 or under are exempt.) Proposed PRIME CONTRACTORS and SUBCONTRACTORS who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports, should note the 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period as specified by the Federal Highway Administration; by the Director, Office of Federal Contract Compliance Programs, U.S. Department of Labor; or by the Equal Employment Opportunity Commission.

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations. The Employer Information Report EEO-1 (Standard Form 100) is not a voluntary survey. The filing of the report is in accordance with Standard Form 100 instructions and is required by Federal law. The applicable law is Section 709©, Title VII, Civil rights Act of 1964 and regulations issued by the Equal Opportunity Commission under that law are reprinted in Appendix (6). Under Section 710(b) of Title VII, the Commission may obtain an order from a United States District Court compelling a covered employer to file this report. Under Section 209 (a) of Executive Order 11246, the penalties for failure by a Federal contractor or subcontractor to comply may include termination of the Federal government contract and debarment from future Federal contracts.

It is the employer's responsibility to keep current on all EEO-1 filing requirements. All inquiries and requests for special procedures should be directed to: Office of Federal Contract Compliance Programs, Department of Labor, Federal Building/U.S. Court House, 701 C Street, Box 55, Anchorage, AK 99513. Blank reporting forms may be obtained from: The Joint Reporting committee, P.O. Box 2236, Norfolk, Virginia 23501 (804) 625-3734.

(CHECK APPLICABLE BLOCK) The BIDDER _____ or proposed SUBCONTRACTOR _____ hereby certifies:

1. Their firm has participated in a previous contract or subcontractor subject to the Equal Opportunity Clause as required by Federal Executive Order 11246, Section 201 (301 F.R. 12319) YES NO

   A. Their firm has filed all reports due under the applicable filing requirement with the Joint Reporting Committee Opportunity Commission as stated in this certifications. YES NO

2. Their firm has participated in a previous City of Homer construction contract or subcontract. YES NO

   A. Their firm has filed all the EEO reports due under applicable filing requirements of the city of Homer Department of Public Works. YES NO

_____ _____
Signature of Authorized Representative of Company Date

_____ _____
Name of Company Phone Number

_____ _____
Address of Company Zip Code

PROJECT NAME - **Homer Fire Station #2 – Skyline Drive**

This certificate (2 pages) needs to be included with the Bid Documents Part B or the Bid will be considered non-responsive.

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees to comply with OFCC Regulations 40 CFR 60.1.4 (1) through (7) as follows:

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

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

3. The contractor will send to each labor union or representative of workers with whom he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965 and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor will comply with all provisions of executive order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965 and by the rules, regulations, and orders of the secretary of labor, or pursuant thereto, and will permit access of his books, records, and accounts by the contracting agency and the secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further government contracts in accordance with procedures authorized in executive order 11246 of September 24, 1965 and such other sanctions may be imposed and remedies invoked as provided in executive order 11246 of September 24, 1965 or by rule, regulation or order of the Secretary of Labor as otherwise provided by law.

7. The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965 so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however that in the event the contractor

becomes involved in, or is threatened wit, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

_____ _____

(Signature) (Title)

_____

(Date)

This form (2 pages) must be included with the Bid, Part B, or the Bid will be considered non-responsive.

V. Contract Documents

C O N T R A C T

This Contract, made and entered into by and between the City of Homer, Alaska, a Municipal Corporation, hereinafter called the "City" and

Hereinafter called the "Contractor";

WITNESSETH:

The Contractor, in consideration of the sum to be paid him by the City and of the covenants and agreements herein contained, hereby agrees at his own cost and expense to do all the work and furnish all the materials, tools, labor and all appliances, machinery and appurtenances for City to the extent of the Bid made by the contractor, dated the _____ day of _____, 2014, all in full compliance with the Contract documents referred to herein as:

Homer Fire Station #2 – Skyline Drive

a) Invitation to Bid
b) The signed copy of the Bid
c) The Bid Bond
d) The 2011 City of Homer Standard Construction Specifications
e) All Addenda, totaling ___
f) The drawings which consist of 39 sheets entitled;

Homer Fire Station #2 Skyline Drive

Are hereby referred to and reference made a part of the Contract as fully and completely as if the same were fully set forth herein.

In consideration of the performance of the work as set forth in these Contract Documents, the city agrees to pay to the contractor the amounts specified bid in the Bid and to make such payments upon the Contractor's invoicing as approved by the City Engineer.

C O N T R A C T

CONTRACT COMPLETION TIME

The Contractor agrees to complete the project, in all respects no later than **September 1st, 2014**

CONTRACT AMOUNT _____

In Numbers

_____

In Words

LIQUIDATED DAMAGES:

Liquidated damages in the amount of $250.00 per day will apply to the Contractor's unexcused delay in the Completion of Construction. The liquidated damage amount specified herein shall only apply to damages and expenses the Owner may incur as a result of a delay in placing the facility into use and operation exclusive of third party damages or claims. The liquidated damage amount shall not cover any damages or expenses the Owner may incur as a result of the Contractor's unexcused delay in completing any portion of the entire Project, which delay results in whole or in part in delay, disruption, hindrance, interference, damages or expenses to any third party. The Contractor shall remain liable for the full amount of any such delay damages or expenses suffered by any third party without limitation by any liquidated damage provision set forth in the Contract.

IN WITNESS WHEREOF, we, the parties hereto, each herewith subscribe the same this _ day of _____ _____, 2014.

CITY OF HOMER

By: _____

Title: Walt Wrede, Homer City Manager

CONTRACTOR

_____

(Contractor)

By:

Title:

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

_____ a _____
(Corporation, Partnership, Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____

hereinafter called the "Surety" are held and firmly bound unto the City of Homer, hereinafter called "Owner," in the penal sum of _____
dollars ($_____) in 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 and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that Whereas, the Principal has or is about to enter into a certain contract with the Owner, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if it shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making food any default, then this obligations shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or the work to be performed thereunder or the specifications accompanying the same shall in any wise affect it obligation on this bond, and it does hereby waive notice of any such change, extension f time, alteration or addition to the terms of the contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed and original, this the _____ day of _____, 2014.

ATTEST:

(Principal's Corporate Secretary)	(Principal)
Affix CORPORATE SEAL if applicable	
	(Address-Zip Code)
(Witness as to Principal)	
(Address – Zip Code)	
	(Surety)
ATTEST:	By: (Attorney-in-Fact)
(Surety) Secretary	(Address-Zip Code)

(Affix SURETY'S SEAL)

(Witness as to Surety)

(Address-Zip Code)

Notes:

If Principal is Partnership, all partners must execute bond. The Attorney-in-Fact, who executes this bond on behalf of the surety, must attach a copy of his Power-of-Attorney as evidence of his authority.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

_____ a _____
(Corporation, Partnership, Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____

hereinafter called the "Surety" are held and firmly bound unto the City of Homer,

hereinafter called "Owner," in the penal sum of _____

dollars ($_____) in 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 and successors, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATIONS are such that Whereas, the Principal has or is about to enter into a certain contract with the Owner, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors and corporations furnishing material for, or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for material, lubricants, fuels, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor performed in such work, whether by subcontractor or otherwise, then this obligation shall be void: otherwise to remain in full for and effect.

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

PROVIDED, FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed and original, this the _____ day of _____, 2014.

ATTEST:

(Principal's Corporate Secretary)	(Principal)
Affix CORPORATE SEAL if applicable	
	(Address-Zip Code)
(Witness as to Principal)	
(Address-Zip Code)	
	(Surety)
ATTEST:	By: (Attorney-in-Fact)
(Surety) Secretary	(Address-Zip Code)

(Affix SURETY'S SEAL)

(Witness as to Surety)

(Address-Zip Code)

Notes:

If Principal is Partnership, all partners must execute bond. The Attorney-in-Fact, who executes this bond on behalf of the Surety, must attach a copy of his Power-of-Attorney as evidence of his authority.

VI. Project Schedule

Homer Fire Station #2 – Skyline Drive

No Later Than

Mandatory Pre-Bid……1:00 PM, Wednesday February 12, 2014

Bids Due…..…….until 2:00 PM, Thursday February 27, 2014

Notice of intent to Award…….February 27, 2014

Pre-Construction meeting and Notice to Proceed……March 11, 2014

Start Construction…..……May 1st 2014

Substantial Completion……Sept 1st, 2014

VII. Special Provisions

SPECIAL PROVISIONS

General Conditions of the Contract

The General Provisions of this contract shall be those of the City of Homer Standard Construction Specifications, 2011 Edition, Section 10. (These provisions are available on the City's website).

Liability Exclusion

The City of Homer and the State of Alaska is not liable for damages or claims from damages arising from any Contractor's performance or activities under the terms of this contract. The Contractor shall defend, indemnify, and hold harmless the City from all claims, actions, costs, damages, or expenses of any nature whatsoever by reason of the acts or omissions of the City in connection with the performance of this contract; except those damages which may be caused by the sole negligence of the City.

Construction Schedule

Construction will commence - May 1, 2014
Construction will be substantially complete by - September 1, 2014

Contractor will be required to provide a detailed **C**ritical **P**ath **M**ethod project schedule upon award of contract and presented to the City at the Pre-Construction Conference. Contractor will also be required to provide updates to the CPM schedule at a minimum of once a month.

Applicable Prevailing Wage Rates

Contractor is required to pay State of Alaska Department of Labor or Workforce Development Laborers' & Mechanics' Minimum Rates of Pay. Contractor is required to submit State of Alaska Department of Labor Certified Payrolls in accordance with the State Department of Labor requirements, including submittal of signed Statements of Compliance.

Questions regarding compliance with State Davis Bacon Wage requirements should be directed to:

Warren E. Petrasek
Wage and Hour Investigator
Wage and Hour Administration
Anchorage Regional Office
Telephone: 907-352-2558
Fax: 907-352-4182
Email: warren.petrasek@alaska.gov

Insurance Requirements

The Contractor shall provide the following types of insurance prior to starting work (see General Conditions - Article 6.18 – Insurance). All Insurance Certificates shall name "City of Homer, Alaska" as an additionally insured party. Contractor will also include a provision that the City of Homer is not be liable for damages or claims from damages arising from any

contractor's performance or activities in connection with work authorized by the projects Grant Agreement.

1. Worker's Compensation	Minimum Limits
Employer's Liability and Workers' Compensation as required by Alaska State Workers' Compensation Statutes.	Statutory (no less than $100K per occurrence)
U.S. Longshoremen & Harbor Workers' (USL&H).	

2. Comprehensive General Liability	Minimum Limits
Single Limit	$1,000,000
Aggregate	$2,000,000

- Bodily Injury & Property Damage Liability
- Premises Operations
- Blanket Contractual
- Broad Form Property Damage
- Personal Injury
- Independent Contractors

3. Comprehensive Automobile Liability	Minimum Limits
Bodily Injury and Property Damage, including All owned, hired and non-owned vehicles	$1,000,000

Anti-Discrimination Requirements

The Contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Access to Records and Project

The City shall have full access and the right to examine, excerpts, and copy any documents generated by the Contractor that relate to this project. Additionally, the City shall have unhindered access to the project site and all work performed in connection with this project. Contractor shall provide access for any duly authorized representatives of the City of Homer or to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions. Contractor shall retain all required records for three years after final payment and all other pending matters are closed.

SPECIAL PROVISIONS

Violation and Breach of Contract

Administrative, contractual, or legal remedies in instances where the Contractor violates or breaches contract terms or either party terminates for cause or convenience are contained in the General Conditions of the City of Homer Standard Construction Specifications 2011 which provide for such procedures, sanctions and penalties as may be appropriate. See Section 5.30, 5.31., 5.32, and 5.34 of the General Conditions and liquidated damages amount in the contract.

Compliance with Equal Employment Opportunity Provisions of Executive Order 11246

Contractor shall be in compliance with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor regulations (41 CFR Chapter 60).

Compliance with State and Federal Environmental Regulations

Contractor shall be in compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15).

City Provided Work/Services

The City will accomplish the following work items:

1. Provide contractor with a lay down area / Storage area for equipment and materials for this project only. This area will be determined by the City of Homer Public Works Department.
2. The City will provide a Quality Control / City Inspector for the duration of the project.
3. The City will provide Contractor with a detailed Inspection Record Card to be signed off by the City Inspector at time of inspection. Contractor will be responsible for coordinating with the City and their representatives for all required City inspections. Contractor will also be responsible to remove, uncover or dismantle any un-inspected work as deemed necessary by the City Inspector.

Contractor Provided Materials/Work

The Contractor is responsible for providing all materials, equipment and labor required to complete the work as specified herein, as shown on the plans and specifications, or as directed by the Engineer. Contractor is responsible for all required quality control testing and construction survey as described in the technical specifications. Contractor will submit the Testing agencies that will be contracted to perform the required project testing before any work takes place. Refer to the COH Standard Construction Specifications on proper submittal submission.

(Contractor will not proceed with any definable feature of work without Engineer approved submittals in hand.)

SPECIAL PROVISIONS

Coordination of Work with Ongoing Activities

Contractor shall coordinate with the to minimize conflict with adjacent property owners and pedestrian/vehicular traffic. The Contractor shall be responsible for limiting access to the actual job site, including if necessary the installation of barricades and caution tape / danger tape along the perimeter of the work area and around any material storage areas if necessary. The Contractor shall coordinate all power and or water shut downs with the City of Homer Public Works Department 48 hours before the desired time and date.

Coordination with local municipalities / building inspectors will be the sole responsibility of the Contractor to facilitate during the duration of this project. Any portion of work that is installed and or covered up without inspectors sign off will not be accepted and Contractor may be asked to uncover work for inspection.

The City will conduct a mandatory weekly project coordination meeting with the Contractor during the duration of the project to be held at the Homer Harbormasters office conference room. Attendance by the Contractors Project Superintendent and Project Manager will be required for all meetings.

Project Safety Requirements

The City of Homer is requiring that the General Contractor and all Sub-Contractors provide their individual Code of Safe Practices and their Company Safety Policy along with a well-developed Activity Hazard Analysis for all definable features of work on this project to be submitted 2 weeks after award of contract. All plans will be reviewed and approved by the City of Homer before the Contractor will be allowed to proceed with any contract work. The General Contractor will hold a mandatory jobsite wide safety meeting at a minimum of once a month during the course of construction. The General Contractor will be responsible for their Sub-Contractors safe work practices at all times during this project. The City of Homer will maintain and enforce the most current issue of O.S.H.A. standards. If there is a need for the Contractor to make a critical pick with any of their hoisting equipment a Critical Lift Plan must be submitted to the City of Homer a minimum of 72 hours before the scheduled work. All Critical Lift Plans will need to be approved by the City Engineer before work can commence.

SWPPP Responsibilities

The Contractor is responsible for preparing a Storm Water Erosion Control Plan (SWPPP) and protecting the waters of the United States as required by the Clean Water Act. The Contractor shall be responsible (under the Prepare SWPPP bid item) for completing work as described below:

1) Obtain NOI and prepare a SWPPP. Obtain approval by the Owner.
2) Deliver three copies to Owner for approval and have at least one approved copy available on-site.
3) Maintain the SWPPP of Record

4) Provide required site signage/postings.
5) Implement the SWPPP, including weekly inspections and site documentation. Keep copy of all records on-site.
6) Construct a silt fence or other approved sediment control improvement around the work site as determined by the approved SWPPP plan.
7) Implement nominal/basic erosion control measures identified in the SWPPP and basic BMP's.
8) Any other normal requirements of the SWPPP, including but not limited to securing Owner signatures on weekly SWPPP inspection reports, submitting copies of the reports and other basic regulatory obligations.

The City will partner with the Contractor to determine means and methods employed to protect surface and ground water and manage risk. The City and the Contractor are jointly responsible for permitting and permit compliance within the work area. The SWPPP shall encourage the installation of final erosion control measures as soon as possible. Subcontractors must certify that they have read and will abide by the conditions of the project SWPPP.

The City and the Contractor will monitor the site and determine if any special additional work is required beyond the basic work identified in the SWPPP. Any work items above and beyond that listed above will be paid for on a ***time and material basis*** if additional control measures are deemed necessary by the City.

The SWPPP shall be prepared by a Certified Professional in Erosion and Sedimentation Control (CPESC); an individual with a current AK-CESCL certification and at least three relevant years of experience; or a Professional Engineer registered in Alaska with current certification as AK-CESCL

The SWPPP plan will document that the project is in conformance with applicable Clean Water Act provisions and that work conforms to all project environmental permits conditions.

Contractor is responsible for revising SWPPP during construction if necessary. The Contractor will act as the Operator on the Construction site as it relates to completing SWPPP work activities. The Contractor shall track success and failures of BMP implementation in inspection reports.

Utilities

The Contractor shall protect all overhead and underground utilities as provided for in Article 6.13 of CHSCS 2011.

The City will be responsible for all charges and fees associated with providing electric service to the fire station. The Contractor is responsible for installing a wall mounted meter base on the fire station building in accordance with HEA standards. The City will be responsible for paying all costs associated with HEA work in extending electrical service to the new building.

SPECIAL PROVISIONS

The Contractor is responsible for coordinating with HEA and the City to accomplish the work and coordinate electrical service connection scheduling.

VIII. Technical Specifications

DOCUMENT 00002 - TABLE OF CONTENTS

INTRODUCTION

DIVISION 1 - GENERAL REQUIREMENTS

DIVISION 2 – SITEWORK

DIVISION 3 -CONCRETE

DIVISION 4 - MASONRY

Not Required

DIVISION 5 - METAL

DIVISION 6 - WOOD AND PLASTICS

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

DIVISION 8 - DOORS AND WINDOWS

DIVISION 9 - FINISHES

DIVISION 10 – SPECIALTIES

DIVISION 11 - EQUIPMENT

Not Required

DIVISION 12 - FURNISHINGS

Not Required

DIVISION 13 - SPECIAL CONSTRUCTION

END OF TABLE OF CONTENTS

SECTION 01200
COORDINATION AND PROJECT MEETINGS

PART 1 GENERAL

1.01 COORDINATION

A. Contractor shall be responsible for coordinating between his operation and any other work being done on the same site, by the Owner or the Owner's representatives, or other contractors or agencies, including utility companies. Contractor coordination shall include developing a plan for protecting other work, and sharing the existing facilities to optimize the efficiency of Contractor's Work and any other work being done on the site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.02 MEETING LOCATION

A. Owner’s Representative will establish meeting locations.

3.03 PRECONSTRUCTION MEETING

A. Engineer will schedule a preconstruction conference prior to any work beginning. Conference shall be attended by Contractor, Owner and Engineer.

B. Minimum Agenda

1. Organizational arrangement of Contractor's forces and personnel, those of subcontractors, materials suppliers, Owner, and Owner's Representative.

2. Channels and procedures for communication.

3. Construction Schedule, including sequence of critical work. Review materials that might require long lead times, etc.

4. Contract Documents, including distribution of required copies of original documents and revisions.

5. Processing of shop drawings and other data submitted to Owner's Representative for review.

6. Processing of Design Clarification Requests, field decisions, and Change Orders.

7. Rules and regulations governing performance of Work.

8. Contractor's procedures for safety and first aid, security, quality control, housekeeping, and related matters.

9. Processing of payment requests.

10. Preliminary discussions of future project close-out procedures.

3.04 PROJECT MEETINGS

A. Attendance:

1. As mush as possible, assign the same person or persons to represent the Contractor at project meetings throughout the progress for the Work.

2. Subcontractor, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum Agenda:

1. Work completed to date.
2. Scheduled work (compliance with approved schedule).
3. Submittals (long lead time items, compliance with approved submittals)

4. Document Clarification Requests and Non-Compliance Requests.
5. Change Orders.
6. Coordination with Owner.
7. Comments.

3.05 CONTRACTOR'S MEETINGS

A. Conduct meetings with own forces as required.

B. Notify Owner's Representative in writing of any impending meetings for which the Owner's Representative's input is needed. Provide minimum one week prior notification of meeting and include meeting topic, agenda, time location, and list of expected attendees.

C. Take minutes of meeting and provide copies to Owner's Representative within 3 calendar days after meeting.

3.05 CLOSE-OUT MEETINGS

A. Approximately two weeks prior to Substantial Completion, weekly Project Meetings will include discussion of closet procedures.

B. Contractor is responsible to invite subcontractors as necessary to review related close-out work.

PART 4-MEASUREMENT AND PAYMENT

4.01 Measurement.

No measurement will be made for work under this section.

4.02 Payment.

Payment for work in this section is subsidiary to other items and no separate payment will be made.

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Proposed products list.

D. Shop drawings.

E. Product data.

F. Samples.

G. Manufacturer's instructions.

H. Manufacturer's certificates.

I. Construction photographs.

1.02 RELATED SECTIONS

A. Section 01020 - Contract Considerations: Schedule of Values.

B. Section 01400 - Quality Control: Manufacturers' field services and reports.

C. Section 01700 - Contract Closeout: Contract warranty and manufacturer's certificates, closeout submittals.

1.03 SUBMITTAL PROCEDURES

A. Transmit each submittal with Engineer accepted form.

B. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and deliver to Owner's Representative. Coordinate submission of related items.

F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed work.

G. Provide space for Contractor and Owner's Representative review stamps.

H. Revise and resubmit submittals as required, identify all changes made since previous submittals.

I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial progress schedule in duplicate within 15 days after date of Notice to Proceed for review by Owner's Representative.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a horizontal bar chart with separate line for each major section of Work or operation identifying first work day of each week.

1.05 PROPOSED PRODUCTS LIST

A. Within 20 days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.06 SHOP DRAWINGS

A. Submit in the form of one reproducible transparency and one (1) opaque reproduction.

B. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 - Contract Closeout.

1.07 PRODUCT DATA

A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Owner's Representative.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

C. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01700 - Contract Closeout.

1.08 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Owner's Representatives selection.

C. Include identification on each sample, with full Project information.

D. Submit the number or samples specified in individual specification Sections; one of which will be retained by Owner's Representative.

E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.09 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up adjusting, and finishing, in quantities specified for Product Data.

B. Identify conflicts between manufacturers' instructions and Contract Documents.

C. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

D. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner's Representative.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality assurance and control of installation.

B. References.

C. Field samples.

D. Inspection and testing laboratory services.

E. Manufacturers' field services and reports.

1.02 RELATED SECTION

A. Section 01300 - Submittals: Submission of Manufacturers' Instructions and Certificates.

B. Section 01600 - Material and Equipment: Requirements for material and product quality.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions con conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.04 REFERENCES

A. Conform to reference standard by date of issue current on date of Contract Documents.

B. Should specified reference standards conflict with Contract Documents, request clarification for Owner's Representative.

C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

A. Install field samples at the site as required by individual specifications Section for review.

B. Acceptable samples represent a quality level for the Work.

C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Owner's Representative.

1.06 INSPECTION AND TESTING LABORATORY SERVICES

A. Contractor will appoint, employ, and pay for services of an independent firm to perform inspection and testing.

B. The independent firm will perform inspections, test, and other services specified in individual specification Sections and as required by the Owner's Representative.

C. Reports will be submitted by the independent firm to the Owner's Representative, indicating results of tests and indicating compliance or non-compliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, and assistance as requested.

1. Notify Owner's Representative 48 hours prior to expected time for operations requiring services.

2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

E. Retesting required because of non-conformance to specified requirements shall be performed by the independent firm on instructions by the Owner's Representative. Payment for retesting will be charged to the Contractor by deducting inspection or testing charges from the Contract Sum/Price.

PART 2-PRODUCTS

Not Used

PART 3-EXECUTION

Not Used

END OF SECTION

SECTION 01500
CONSTRUCTION FACILITIES & TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 TEMPORARY SANITARY FACILITIES

A. Contractor shall provide and maintain temporary sanitary facilities and appurtenances for use by Contractor's personnel, Owner's personnel and Owner' representatives. Sanitary facilities shall be of the "Port-A-Potty" type, and shall meet all local health codes. Contractor shall maintain facilities per OSHA standards in a clean and sanitary condition.

1.02 BARRIERS

A. Provide, erect, and maintain temporary barriers and security devices around Work, per specifications, for protection until all Work in the area is complete. Contractor will be informed by the Engineer of any condition judged to be hazardous, and Contractor shall immediately protect the hazardous area, per this section.

1.03 CONTRACTOR WORK AND STORAGE AREAS

A. The Contractor shall make his/her own arrangements for areas and facilities needed by him/her for the storage of materials, supplies and equipment, parking, and other activities. Contractor may store materials onsite however, security for such areas shall be the sole responsibility of the Contractor. The Contractor shall hold the Owner harmless from all claims or complaints arising from the use of such areas. Public streets in or outside this project shall not be used for any storage activities (equipment and materials) and/or vehicle parking, without prior written approval from the Engineer.

1.04 EXISTING SURVEY MONUMENTS

A. Survey monuments and rebars marking property corners shall be carefully preserved from damage or disturbance by the Contractor. If monuments are disturbed by the Contractor, Contractor shall pay all costs for proper replacement of the monument.

Upon completion of construction the Contractor shall have the survey monuments and property corners reinstalled in their original location under the supervision of an Alaska Registered Land Surveyor, who shall provide a written certification verifying that all such monuments and property corners have been reinstalled in their original location.

1.05 WATER FOR COMPACTION

A. The Contractor shall provide water to be used for construction activities within this project.

1.06 EXISTING UTILITIES IN CONSTRUCTION ZONE

A. The Contractor shall provide all labor, materials, equipment, supervision and other means necessary to work around, protect, and preserve in place, existing utilities including natural gas, telephone, electrical power, and cable television.

B. The following utilities are know to exist within the project site.

1. Buried water mains and service lines for the building, water tank and water treatment plant.
2. Buried sewer line for building.
3. Buried telephone lines.
4. Electrical transformers, electric service, overhead and buried electrical power cables.

C. The Contractor shall contact utility companies prior to construction to obtain field location of existing utilities and additional information regarding requirements of the utility company pertaining to the Contractor's work in the vicinity of the utility, including methods of exposing, shoring and protecting utilities.

D. Field location marks are intended to show the approximate horizontal location of the utility within 3 feet either side of the field location mark. The depth of located utilities is not known. The Contractor is responsible for all damages and/or delays resulting from damage to utilities located within 3 feet horizontally of field marks, no matter what depth the utility is located. Care shall be taken by the Contractor to avoid damage to utilities outside of the field locate also. Plan locations of utilities are diagrammatic only and shall not be scaled to determine actual locations in the field.

E. The Contractor shall protect and preserve all utilities in a manner acceptable to the utility company and shall exercise all possible care to avoid damaging existing utilities unless otherwise approved by the Utility.

F. Contractor shall pay for repairs to all utilities damaged by the Contractor, at no cost to the Owner.

1.07 CONSTRUCTION SURVEYING

A. It shall be the Contractor's responsibility to provide all necessary surveying to layout and define limits of work, and to protect all survey control and provide for its replacement in the event of its loss prior to required work. All in field work requiring surveying, i.e. grade check, pipe alignment, etc., will be the responsibility of the Contractor.

1.08 DISPOSAL AREAS

A. The contractor shall provide a disposal area for unusable excavation, unsuitable materials and other waste materials from this project. The Contractor shall hold the Owner harmless from all claims and complaints arising from the use of any disposal area.

1.09 TRAFFIC MAINTENANCE

A. The Contractor shall maintain traffic control during construction and until the work is accepted. The Contractor shall be liable for all damage or injuries suffered due to the Contractor's failure to provide adequate traffic safety, maintenance or restoration services.

B. Unless otherwise provided, the roadway undergoing improvements shall be kept open to all traffic by the Contractor. All locations requiring redirection or stopping of the traveling public shall be properly signed and/or flagged by the Contractor.

The Contractor's equipment shall stop at all points of intersection with the traveling public unless satisfactory traffic control measures, approved in writing, are installed and maintained at the Contractor's expense.

C. Open trenches, ditches, pavement edge drop-offs and other excavations and hazardous areas shall be protected with barricades and shall be delineated.

D. The Contractor shall furnish and erect, move and remove, as required and directed, series C construction signs, construction barricades and/or temporary guide markers and pavement marking required to adequately and safely inform and direct the traveling public and to satisfy legal requirements.

1.10 SIGNS, MARKERS AND MAILBOXES

A. Existing commercial signs, valve markers, manhole markers, or underground utility markers which lie within areas of excavation shall be carefully removed, protected, saved and reinstalled in their original position by the Contractor, unless directed otherwise, in writing, by the Engineer. All damage to such items resulting from the Contractor's operations shall be repaired at the Contractor's expense.

1.11 TEMPORARY UTILITIES

A. Electric Power

1. The Contractor shall make arrangements for and shall provide temporary power for Contractor's use.

2. The Contractor shall connect to temporary service and provide all equipment necessary for temporary power and lighting

B. Telephone

1. Contractor shall provide telephone for Contractor's use.

C. Heating and Ventilation

1. Contractor shall provide, at his own expense, sufficient temporary heat for proper installation of work; and to protect all work and materials; and shall keep humidity down to extent required to prevent corrosion, dampness, and mildew that may be potentially damaging to materials, equipment, or finishes. Fuel, equipment, and method of temporary heat shall be reviewed by Owner's Representative for appropriateness. Do not overheat spaces or materials. All such heating, ventilation, and services shall be provided and maintained until final acceptance of the Work.

1.12 FIELD OFFICES

A. Contractor. Contractor shall provide a field office for Contractor's use, with heat and electricity. Minimum 10' x 10' with 8' ceiling height.

1.13 MOBILIZATION AND DEMOBILIZATION

A. Work Included. Mobilization and Demobilization includes preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; ; for the purchase of bonding; for the establishment of all offices, buildings, and other facilities necessary for the work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning and completing work on the various items on the project site, and for incidental items of work noted on the drawings.

B. Maximum Allowable Bid.

The amount bid for Mobilization and Demobilization may not exceed ten (10) percent of the total amount of the Basic Bid.

PART 2-PRODUCTS

NOT USED

PART 3-EXECUTION

3.01 MAINTENANCE

A. Maintain temporary facilities and controls as along as needed for safe and proper completion of work and to the owners satisfaction.

B. Remove such temporary facilities and controls as rapidly as progress of Work will permit, or as directed by Owner's Representative.

3.02 USE OF TEMPORARY FACILITIES

A. Temporary facilities shall be made available for use by workmen and subcontractors employed on the Project, and Owner's Representative, subject to reasonable direction by Contractor as to their proper and most efficient utilization.

3.03 WELL RESERVE PROTECTION

A. No fueling, oiling, oil storage, or fuel storage may occur within 150 feet of water wells or surface water supply. No oil fired heaters may be used within 150 feet of water wells. All fuel storage areas shall be within a fuel containment facility provided by the contractor that meets all OSHA standards

B. Do not locate temporary sanitary facilities within 150 feet of water wells and water treatment ponds.

C. Do not store or discharge hazardous or toxic materials on the Site.

3.04 CONSTRUCTION AIDS

A. Provide and operate drainage and pumping equipment, including trench dewatering equipment if necessary.

B. Maintain excavations and Site free of standing water.

3.05 SECURITY

A. Provide temporary security and protection, including but not limited to; barricades, warning signs/lights, personnel security program (theft prevention), environmental protection, and similar provisions intended to minimize property losses, personal injuries, and claims for damages at Site.

B. Unauthorized Entry:

1. Maintain provision for closing and locking building during non-working hours.

3.06 CLEANING

A. Maintain the public road and Site in a clean condition. Remove mud, dirt, rocks, etc. from the tires of vehicles before they exit the site.

END OF SECTION

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Products.

B. Transportation and handling.

C. Storage and protection.

D. Product options.

E. Substitutions.

1.02 RELATED SECTIONS

A. Instructions to Bidders: Product options and substitution procedures.

B. Section 01400 - Quality Control: Product quality monitoring.

1.03 PRODUCTS

A. Products: Means new materials, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying erection of the Work. Products may also include existing materials or components required for reuse.

B. All products, including all materials for unit price items are to be provided by the Contractor. Payment for materials shall be included under the materials respective bid item.

1.04 TRANSPORTATION AND HANDLING

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.05 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protection.

D. Cover products subject to deterioration with impervious sheet covering provide ventilation to avoid condensation.

E. Store loose granular materials on solid flat surfaces in a well-drained area.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.06. PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.07. SUBSTITUTIONS

A. Substitutions may only be made as allowed in the Instructions to Bidders.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Adjusting.

D. Project record documents.

E. Operation and maintenance data.

F. Warranties.

G. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

A. Section 01500 - Construction Facilities and Temporary Controls: Progress cleaning.

B. Section 01650 - Starting of Systems: System start-up, testing, adjusting, and balancing.

1.03 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for inspection by Owner's Representative.

B. Provide submittals to Owner's Representative that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.04 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior glass and surfaces exposed to view, remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean equipment and fixtures to a sanitary condition.

D. Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.05 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.06 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the Work:

1. Contract Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other Modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and Modifications.

E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work
4. Field changes of dimension and detail.
5. Details not on original Contract Drawings.

F. Submit documents to Owner's Representative with claim for final Application for Payment.

1.07 OPERATION AND MAINTENANCE DATA

A. Submit two sets prior to final inspection, bound in 8-1/2 inch X 11 inch text pages, three D side ring capacity expansion binders with durable plastic covers.

B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 30 pound white paper.

E. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.

F. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
1. Significant design criteria.
2. List of equipment.
3. Part Certificates.
4. Photocopies of warranties.

H. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection with Owner's Representative comments. Revise content of documents as required prior to final submittal.

I. Submit final volumes revised, within ten days after final inspection.

1.08 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.09 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

B. Deliver to Owner's Representative obtain receipt prior to final payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01800
CONSTRUCTION SURVEYING BY CONTRACTOR

PART 1 GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide all surveying and staking essential for completion of the project in conformance with the plans and specifications and shall perform the necessary calculations required to accomplish the work. Staking shall be accomplished in accordance with standard survey and engineering practices.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 02072

DEMOLITION, CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Demolition, cutting and patching of existing construction where shown on Drawings, or as required to accommodate new work shown or specified.

B. Related Sections include but are not necessarily limited to:
1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
2. Division 1 - General Requirements.
3. Section 03300 - Concrete.
4. Section 09900 - Paint.

1.2 QUALITY ASSURANCE

A. Qualifications:
1. Use only firms or individual trades qualifies to perform work required under this Section.

B. Contractor shall be responsible for all cutting, fitting and patching, including attendant excavation and backfill, required to complete the work or to:
1. Make its several parts fit together properly.
2. Uncover portions of the work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirements of Contract Documents.

C. Referenced Standards:
1. American Society of Testing and Materials)ASTM):
a. D1557, Moisture Density Relations of Soils and Soil-Aggregate Mixtures using a 10
LB Rammer and an 18 IN Drop. D1557 is “Modified Proctor”.

1.3 SUBMITTALS

A. Shop Drawings:
1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
2. Indicating manufacturer and type of:
a. Proposed nonshrink
grout.
b. Epoxy bonding
adhesive.
c. Proposed materials and methods to be used for matching and repairing existing construction.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General:
1. Salvage items, designated for Owner's salvage, as a functional unit.
2. Clean, list and tag for storage.
3. Protect from damage and deliver to location designated.
4. Salvage each item with auxiliary or associated equipment required for operation.

1.5 PROJECT CONDITIONS

A. Perform preliminary investigations as required to ascertain extent of work.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate and reschedule work as required to preclude interference with other operations.

1.7 PERMITS

A. Obtain and pay for all permits required by all authorities having jurisdiction and notify all involved utility companies.

B. Obtain approval of authorities having jurisdiction for any work which affects access to or exit from such areas. Obtain approval of authorities for any temporary construction which affects such areas.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following products and manufacturers are acceptable:
   1. Nonshrink grout:
      a. Supreme Grout by Gifford Hill.
      b. Masterflow 713 Plus by BASF Building Systems.
      c. Sika Grout 212 by Sika.
   2. Epoxy bonding adhesive:
      a. Euco No.452 MV by Euclid Chemical Co.
      b. Sikadur 32, Hi-Mod by Sika Corporation.

B. Submit request for substitution in accordance with Specification Section 01640.

2.2 MATERIALS

A. Temporary Partitions:
   1. Plywood: 1/2 IN minimum for interior or exterior use.
   2. Paneling: 1/4 IN minimum for interior use.

B. Nonshrink Grout:
   1. Nonmetallic, noncorrosive and nonstaining.
   2. Premixed with only water to be added in accordance with manufacturer's instructions at jobsite.
   3. Grout to produce a positive but controlled expansion. Mass expansion not to be created by gas liberation or by other means.
   4. Minimum compressive strength at 28 days to be 6500 psi.
   5. Coat exposed edges of grout with a cure/seal compound recommended by grout manufacturer.

C. Epoxy Bonding Adhesive:
   1. Two component, moisture insensitive adhesive manufactured for the purpose of bonding fresh concrete to hardened concrete.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide temporary partitions as required in public areas.
   1. Construct partitions of braced plywood in exterior areas.
   2. Adequately braced paneling may be used in interior areas.

B. Provide covered passageways where necessary to ensure safe passage of persons in or near areas of work.

C. Provide substantial barricades and safety lights as required.

D. Provide temporary dustproof partitions where indicated or necessary.
   1. Prevent infiltration of dust into occupied areas.

E. Provide temporary weather protection as necessary.

3.2 INSTALLATION

A. Cutting and Removal:
   1. Remove existing work indicated to be removed, or as necessary for installation of new work.
   2. Neatly cut and remove materials, and prepare all openings to receive new work.
   3. Remove masonry or concrete in small sections.
   4. Remove existing piping and utility structures as indicated.
   5. Plug and abandon in-place piping and utility structures as indicated.

B. Modification of Existing Concrete:
   1. Where indicated, remove existing concrete and finish remaining surfaces as specified in
      Section 03348.
      a. Protect remaining concrete from damage.
      b. Make openings by sawing through the existing concrete.
      c. Concrete may be broken out after initial saw cuts in the event concrete thickness prevents cutting through.
      d. Where sawing is not possible, make openings by drilling holes around perimeter of opening and then chipping out the concrete.
         1) Holes shall be sufficient in number to prevent damage to remaining concrete.
   2. Oversize required openings in existing concrete 1 IN on all sides and build back to required opening size by means of nonshrink grout epoxy bonded to the existing concrete.
   3. Where oversized openings cannot be made, remove the concrete to the required opening
      size and cut back exposed reinforcing 1 IN from face of concrete and fill resulting holes with nonshrink grout.

C. Removal of Existing Anchor Bolts or Other Protruding Elements:
   1. Removal within a distance of {8} FT above finished floor or operating level elevation.
   2. Removed to a depth of 1/2 IN from finished surface.
   3. Fill void with non-shrink grout.

D. Matching and Patching:
   1. Walls, ceilings, floors or partitions:
      a. Repair abutting walls, ceilings, floors or partitions disturbed by removal.
      b. Match and patch existing construction disturbed during installation of new work.
   2. Methods and materials:
      a. Similar in appearance, and equal in quality to adjacent areas for areas or

surfaces being repaired.

b. Subject to review of Engineer.

E. Salvaged Items:
1. Thoroughly dry and clean all metal surfaces.
2. Prime all bare metal in accordance with Section 09905.
3. Clean and lubricate motors and other moving parts.
4. Brace motors attached to flexible mountings until reinstallation.
5. Dispose of items or materials not designated for Owner's salvage or reuse. Promptly remove from site.
6. Do not store or sell Contractor salvaged items or materials on site.

F. Clean Up:
1. Transport debris and legally dispose of off site.

END OF SECTION

SECTION 02200
EARTHWORK, GRADING AND DRAINAGE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included.
This section covers the furnishing of materials, labor, equipment and supervision required to complete the site earthwork construction for Phase 1 improvements including roads, parking areas and building pad; excavation, fill and backfill and site grading and drainage as shown on the contract drawings.

B. Related Work

1. Section 02540-Geotextile.
2. Section 02275-Erosion, Sediment and Pollution Control.
3. QA/ Q/C staff will not be required of Contractor however, Contractor will be responsible for compaction testing and soil gradation testing per Section 02200 Earthwork.

1.02 COMPACTION TESTING

A. Method to Determine Maximum Dry Density of Soil.
Where compaction requirements are specified, the maximum soil density, Proctor density, shall be determined by ASTM D-1557 or AASHTO T-180-D.

B. Method to Determine in place field density of soil.

The in-place soil density shall be determined in accordance with any of the following:

1. ASTM D 1556 - Density of soil in-place by the sand cone method;

2. ASTM D 2167 - Density and Unit Weight of Soil In-Place by the Rubber Balloon Method;

3. ASTM D 2922 - Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth) or AASHTO T-238.

C. Frequency of testing to determine in-place density of fill and backfill.

1. In-place density tests shall be taken on each lift of fill or backfill at the rate of one test per 5,000 square feet of area.

2. In-place density tests on each lift of trench backfill shall be taken at the rate of one test per 100 lineal feet, or one test per lift if the trench is less than 100 feet long.

3. Failing test areas shall be re-compacted and retested until the compaction requirements are met.

1.03 GRADATION TESTING

A. Gradation Test Method.
Soil shall be tested in accordance with ASTM C136 and ASTM C117 or AASHTO T27 and AASHTO T11, washed gradation analysis, to determine conformance to specified gradation.

B. Gradation Test Frequency.

1. Gradation Test shall be performed on each type and source of material used in fills and backfills.

2. Gradation test shall be performed for each 10,000 tons of material used in fills and backfills. Gradation samples shall be obtained from the fill or backfill after it has been placed.

1.04 SUBMITTALS

A. Maximum Dry Density.
Contractor shall submit a Proctor density each type and source of material used in fills and backfills.

B. Gradation.
Contractor shall submit a gradation test results used in fills and backfills.

C. Compaction
Contractor shall submit compaction test results at frequency specified on part 1.02 of this section.

1.06 DEFINITIONS

A. Classified Material

1. Classified fill and backfill shall contain no lumps, frozen material, organic matter, or other deleterious material, and shall be durable and sound. It shall have a plasticity index not greater than six (6) as determined by ASTM D-424 and shall conform to one of the following types as required by the Drawings and Specifications. The coarse aggregate material conforming to the requirements specified below shall have a percentage of wear not to exceed thirty (30) after five hundred (500) revolutions, as determined by the current requirements of ASTM C-131. The portion of the

material retained on a #4 sieve shall be known as coarse aggregate. Both coarse and fine aggregates shall conform to the quality requirements of AASHTO M-147.

2. **Type II.** Materials furnished by the Contractor for use as Type II classified fill and/or backfill shall be graded within the limitations delineated below:

Type II

U. S. Std. Sieve Size	Cumulative % Passing By Weight
8"	100
3"	70-100
1 ½"	55-100
3/4"	45 - 85
#4	20 - 60
#10	12-50
#40	4 - 30
#200	2 - 6

In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than fifteen percent (15%) of that fraction passing the #4 sieve.

3. **Type IIA.** Materials furnished by the Contractor for use as Type IIA classified fill and/or backfill shall be graded within the limitations delineated below:

Type IIA Classified Fill

U. S. Std. Sieve Size	Cumulative % Passing By Weight
2"	100
3/4"	50 - 100
#4	25 - 60
#10	15-50
#40	4 - 30
#200	2 - 6

In addition to the grading limits listed above, the fraction of material passing the #200 sieve shall not be greater than twenty percent (20%) of that fraction passing the #4 sieve.

4. **Type III.** Materials furnished by the Contractor for use as Type III classified fill and/or backfill shall be approved non frost susceptible sand and gravel with a maximum of ten percent (10%) passing the #200 sieve.

B. Unclassified Excavation: Any excavated material not otherwise classified. Unclassifed excavation may include organic soils, inorganic soils, peat and volcanic ash.

C. Suitable Soils: Excavated soils that conform to the requirements for the intended use as determined by the Owner's Representative.

D. Unsuitable soils: All soils and debris that do not conform to the requirements for Type III classified fill, or which do not meet the requirements for the intended use, as determined by the Owner's Representative.

E. Usable excavation: Inorganic non-frost susceptible sand or gravel soils, free of trash, peat, volcanic ash, debris, or frozen clods, that are excavated from the project site and are approved by the Owner's Representative for incorporation into the backfill.

F. Unusable Excavation: All suitable excavated soils that are surplus to the needs of the project and all unsuitable soils as designated by the Owner's Representative.

G. Over-Excavation: Any excavation beyond limits of the contract that has been done without the written authorization of the Owner's representative.

H. Additional Excavation: Excavation beyond the limits necessary to place classified or unclassified material, where authorized in writing in advance by the Owners Representative.

I. Subgrade: The surface upon which classified material, topsoil, or new improvements are placed.

J. Area Grading: Area grading consists of the excavation and fill work, along the perimeter of the site, necessary for a smooth transition from the design site grades to the grade(s) of the adjacent properties. This work is also commonly called "site grading" or "overlot grading".

K. Non-Frost Susceptible Material (NFS): Granular soils free of organic material and containing less than three (3) percent by weight finer than 0.02 millimeters when compacted in place.

L. Trench Excavation: Excavation for buried utilities.

M. Solid Waste Excavation: Excavation of solid waste materials, either baled or un-baled, from existing Homer landfill.

1.05 WEATHER LIMITATIONS

A. Unless otherwise authorized by the Owner's Representative, fill, backfill, and leveling course shall not be placed when the atmospheric temperature is below 35 degrees

Fahrenheit. When the temperature falls below 35 degrees Fahrenheit, it shall be the responsibility of the Contractor to protect all areas of completed work against any detrimental effects. Any areas of work not completed in accordance to the plans and specifications that are damaged by weather shall be reconditioned, reshaped, and re-compacted by the Contractor in conformance with the requirements of these specifications without additional cost to the owner.

1.06 EXISTING UTILITIES

A. At various stages of the project the Contractor will be required to work in close proximity to existing utilities, including possible removal of material over, under, and adjacent to the lines. It is the Contractor's responsibility to contact the utility owners for locations, scheduling, and additional information.

B. The Contractor shall protect these lines in a manner approved by both the Owner's Representative and the Utility Owner in writing.

C. Compaction density and techniques in the vicinity of existing utilities shall conform to requirements for classified fill.

D. The Contractor is directed to contact the utility companies both prior to bidding and during construction, for information about existing utilities, scheduling, location and other pertinent information.

1.07 RELATED WORK

A. Site Clearing-Section 02110.
B. Geotextile-Section 02340.
C. Mobilization and Demobilization-Section 01500.
D. Construction Survey by Contractor-Section 01800.

PART 2-PRODUCTS

2.01 MATERIAL SOURCE

A. When the quantity of classified, unclassified, and screened soils required for the work exceeds that available from excavated materials, the additional material shall be from Contractor-furnished borrow areas. The Contractor shall locate, obtain, develop and process classified and unclassified materials to complete the requirements of work.

B. The source of materials shall be approved by the Owners Representative. Any change in the source of materials during the construction shall be approved by the Owners Representative.

2.02 MATERIAL HANDLING

A. When the soils into which the excavation will penetrate and/or when the backfill soils are sensitive to erosion, sloughing under seepage forces, softening during soaking, and/or repeated loading of heavy equipment, the Contractor shall take all necessary steps to protect the work. These may include, but are not limited to:

1. Sloping the excavation to drain and/or dewatering from inside the excavation with sumps and/or pumps or from outside the excavation with well-points or other means;

2. Limiting construction traffic to designated and maintained construction roads and placing additional temporary fill as necessary to support the traffic loads.

3. Developing alternate access routes.

4. Excavating with a smooth bladed backhoe from outside the excavation.

5. Covering of temporarily stockpiled unclassified fill to protect it from precipitation as directed.

6. Using only dryer unclassified fills for compaction and reuse.

7. The costs to protect the work shall be included in the bid price for earthwork.

B. If the subgrade or backfill soils are disturbed by surface runoff, ponding, seepage, and/or construction traffic, the disturbed soils shall be regraded and densified to the density requirements specified herein or completely removed and replaced with classified materials compacted to the density requirements specified herein. The corrective work shall be performed by the Contractor at no additional expense to the owner.

PART 3 - EXECUTION

3.01 CONSTRUCTION STAKING

A. General
The Contractor shall furnish all vertical and horizontal controls and staking sufficient for Contractor's needs to accurately complete the requirements of this project.

B. Contractor shall furnish Professional Land Surveyor for Measurement of excavation and fill quantities.

3.02 SITE EXCAVATION

A. Unclassified Excavation

1. Unclassified Excavation consists of the removal and reuse or disposal of all materials encountered as required to obtain the required subgrade elevations in accordance with the typical sections shown on the Drawings, and as directed by the Owner's Representative.

2. Suitable excavated materials shall not be removed from the site unless they are surplus to the requirements of the work and then only with the written approval of the Owner's Representative. Excess suitable material that is not incorporated into the work and unsuitable material shall be transported to the Owner furnished disposal site located at the Homer Solid Waste Landfill.

3. The excavation shall conform to the limits shown on the drawings and as directed by the owner's representative, within a tolerance of 0.10 feet. Excavation beyond the limits indicated on the drawings is not permitted without written approval. The Owner's Representative is to be notified 24 hours in advance of Contractors need for after excavation surveys. Payment for excavation will be based on typical sections shown on the drawings, and as directed by the Owner's Representative.

4. Excavation shall be performed in a manner that will not endanger adjacent structures or improvements.

B. Dewatering

1. Surface water and shallow water table are present at the site. The Contractor shall plan his operation in a sequence that will provide drainage at all times. The excavation shall be shaped to drain and shall be maintained in a dry condition, free of puddles or holes where water may accumulate. Any areas that cannot be so drained shall be kept free of standing water by pumping, if necessary.

C. Excavation and Placement of Fill

1. Excavation shall be carried to the subgrade elevations required for the placement of classified material and to such additional depths as required to remove unsuitable material as directed by the Owner's representative.

2. Classified fill to be placed in excavated areas shall only be placed over geotextile on subgrade and shall not be placed until the subgrade has been approved in writing by the Owner's Representative. Where site has been excavated to remove unsuitable materials, the subgrade shall be dewatered prior to placement of fill materials.

3. Classified fill to be placed in non-excavated areas shall be placed over geotextile.

D. Additional Excavation

1. The Owner's Representative will inspect and approve the various subgrade areas as they are excavated. Owner's Representative may direct that soils found to be excessively soft, wet, or otherwise unsuitable below the subgrade elevations shall be removed.

2. The Contractor shall promptly perform all such additional excavation that is authorized in writing.

3. The resulting additional excavation will be measured for unit price payment.

4. Backfill of additional excavation areas shall be Type III classified material.

E. Over Excavation

1. Excavation beyond the approved limits will be considered as over-excavation and shall be restored by the Contractor by backfilling with Type III classified material and compacting to 95% of the maximum density at no cost to the Owner.

F. Stability of Excavations

1. The Contractor shall slope the sides of excavations to the angle required for safety, or shore and brace where sloping is not possible either because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in a safe condition until completion of backfilling, by scaling, benching, shelving or bracing. Take precautions to prevent slides or cave-ins when excavations are made in locations adjacent to backfilled excavations, and when sides of excavations are subjected to vibrations from vehicular traffic or the operation of machinery, or any other source. In all cases the sides of all excavations shall be constructed to satisfy the requirements set forth in the local, state, and federal safety regulations regarding shoring and slope angle.

G. Cold Weather Protection

1. The subgrade must be kept from freezing from the time earthwork begins until final grades have been achieved or backfill is done, unless specified otherwise, in writing, by the Owner's Representative.

2. All subgrade which is allowed to freeze shall be thawed and compacted to 95% of the maximum density by the Contractor at no expense to the Owner, unless specified otherwise, in writing, by the Owner's Representative.

3.03 FILL AND BACKFILL

A. General

1. Fill and backfill consists of the placement of classified and/or unclassified material in layers to the required elevations.

2. The Contractor shall keep all fills and backfill well-shaped, drained, and maintained.

3. Where fill is designated to be placed over areas that are cleared by not grubbed or excavated, the initial lift of fill may be placed to a depth of 2 feet.

4. The finished surface of fills and backfills shall be smooth with no soft or yielding areas and shall be graded to not more than 0.05 feet above or below the design grade.

5. The Contractor shall backfill excavations as promptly as the work permits, but not until completion of the following:

   a. Owner's acceptance of construction below finish grade such as culverts, subdrains, and other utilities.

   b. Inspection, testing, approval, and recording locations of underground utilities.

   c. Removal of shoring and bracing, and backfilling of any resulting voids with satisfactory materials. Cut off temporary sheet piling driven below the bottom of structures and remove in a manner to prevent settlement of the structure or utilities; or leave in place if required.

   d. Removal of trash and debris.

   e. Placement of permanent or temporary horizontal bracing on earth retaining wall.

B. Compaction

1. Building Pad and Building Driveway.
   Fills and backfills shall be constructed in lifts of twelve (12) inches maximum thickness, (six inches maximum thickness if hand operated compactors are used) and compacted to not less than 95% of maximum density.

2. All areas outside of Building Pad and Parking.

Fills and backfills shall be constructed in lifts of twelve (12) inches maximum thickness and compacted with a minimum of four passes with an 11 ton x 84" wide vibratory drum roller compactor.

C. Cold Weather Protection

1. Building Pad and Building Driveway.

a. The fill and backfill must be kept from freezing from the time earthwork begins until final surfacing is complete.

b. All fill and backfills which is allowed to freeze shall be thawed and compacted to 95% of the maximum density by the Contractor at no expense to the Owner, unless specified otherwise, in writing, by the Owner's Representative.

2. All areas outside of building pad.

a. The fill and backfill must be kept from freezing during haul, placement and compaction process.

b. Fill and backfill may be placed over frozen ground provided all snow and surface ice is removed from the surface upon which fill is to be placed, prior to placement of fill.

3.04 GEOTEXTILES

A. Subgrade preparation.

The subgrade shall be shaped according to the typical section shown on the drawings and as directed. The subgrade shall be free of large rocks, sticks, and deleterious material.

B. Placement.

Fabric shall be installed in full roll widths. All end and side joints shall be overlapped 2 feet minimum. Where indicated on the drawings, side and end seams shall be joined together by sewing. Sewn joints shall be made in accordance with contractors' recommendations.

C. Penetrations.

Where manholes, valve boxes, or other items will penetrate the fabric, the fabric shall be neatly cut in the shape of the penetration. A second piece of fabric shall then be placed on top of the main fabric. The second piece shall extend at least four feet in all directions from the penetration.

D. Fill Placement over Geotextile.

Fill and backfill shall be dumped and spilled over the fabric. No equipment shall operate directly on the filter fabric. Filter fabric must be covered with at least one foot of classified material backfill before equipment is allowed to operate over it.

END OF SECTION

SECTION 02275
EROSION, SEDIMENT, AND POLLUTION CONTROL

PART 1 GENERAL

1.01 DESCRIPTION. Plan, provide, inspect, and maintain control of erosion, sedimentation, water pollution, and hazardous materials contamination.

1.02 DEFINITIONS.

A. BMP (Best Management Practices). A wide range of project management practices, schedules, activities, or prohibition of practices, that when used alone or in combination, prevent or reduce erosion, sedimentation, and/or pollution of adjacent water bodies and wetlands. BMP include temporary or permanent structural and non-structural devices and practices. The Department describes common BMPs in its *Alaska Storm Water Pollution Prevention Plan Guide*.

B. ESCP (Erosion and Sediment Control Plan). The general plan for control of project-related erosion and sedimentation. The ESCP normally consists of a general narrative and a map or site plan. It is developed by the Department and included in the project plans and specifications. It serves as a resource for bid estimation and a framework from which the Contractor develops the project SWPPP.

C. Final Stabilization. A point in time when all ground-disturbing activities are complete and permanent erosion and sediment controls are established and functional. The stabilized site is protected from erosive forces of raindrop impact and water flow. Typically, all unpaved areas except graveled shoulders, crushed aggregate base course, or other areas not covered by permanent structures are protected by either a uniform blanket of perennial vegetation (at least 70% cover density) or equivalent permanent stabilization measures such as riprap, gabions or geotextiles.

D. HMCP (Hazardous Material Control Plan). The Contractor's detailed plan for prevention of pollution that stems from the use, containment, cleanup, and disposal of hazardous material, including petroleum products generated by construction activities and equipment.

E. NOI. Notice of Intent to commence ground-disturbing activities under the NPDES General Permit. Use EPA Form 3510-9.

F. NOT. Notice of Termination of coverage under the NPDES General Permit. Use EPA Form 3510-713.

G. NPDES General Permit. The Storm Water General Permit for Large and Small Construction Activities, issued by the Environmental Protection Agency (EPA) under the National Pollutant Discharge Elimination System (NPDES). It requires an approved SWPPP and NOIs listed as active status by the EPA prior to ground-disturbing activities for the project.

H. SPCC Plan (Spill Prevention, Control and Countermeasure). The Contractor's detailed plan for oil

spill prevention and control measures, that meets the requirements of 40 CFR 112.

I. SWPPP (Storm Water Pollution Prevention Plan). The Contractor's plan for erosion and sediment control and storm water management under the NPDES General Permit. The SWPPP is developed by the Contractor and describes site-specific controls and management of issues identified for the project. The approved SWPPP replaces the ESCP.

1.03 SUBMITTALS.

A. For all projects that disturb one acre or more of ground submit three copies each of Contractor's SWPPP and HMCP to the Owner's Representative for approval. Submit one copy of SPCC Plan to the Owner's Representative. Sign all submittals. Deliver these documents to the Owner's Representative no less than five calendar days prior to the preconstruction conference.

B. The Department will review the SWPPP and HMCP submittals within 14 calendar days. Submittals will be returned to you as either requiring modification, or as approved by the Department. The approved SWPPP must contain a certification, and be signed by you according to the Standard Permit Conditions of the NPDES General Permit, Part 8, Appendix G. You must receive an approved SWPPP before you submit your NOI.

C. For projects that disturb five acres or more of ground, submit a copy of approved and signed SWPPP, with the required permit fee to the Alaska Department of Environmental Conservation (ADEC) Storm Water Coordinator. Transmit proof of this submission to the Owner's Representative.

D. Submit signed NOI to EPA (electronic submission may be available). Submit copies of your signed NOI to the Owner's Representative and to ADEC. Transmit proof of your ADEC submission to the Owner's Representative. The Department will transmit the Department's NOI to the EPA. Allow adequate time for state and federal processing, prior to commencing ground-disturbing activities.

E. The active status NOIs, approved SWPPP, approved HMCP, and submitted SPCC Plan (when required) become the basis of the work required for the project's erosion, sediment, and pollution control.

F. When the Project is stabilized, as determined by the Owner's Representative, submit your signed NOT to EPA with a copy to the Owner's Representative. The Department will transmit the Department's NOT to the EPA.

PART 2- PRODUCTS

2.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.

A. For projects that disturb one acre or more of ground, you must prepare a Storm Water Pollution Prevention Plan. Use the Department's ESCP to develop a SWPPP based on your scheduling, equipment, and use of alternative BMPs. Follow the format presented in the *Alaska Storm Water*

Pollution Prevention Plan Guide. The plan must consider first preventing erosion, then minimizing erosion, and finally trapping sediment before it enters waterways.

B. The plan must address your site-specific controls and management plan for the construction site as well as for all material sites, waste disposal sites, haul roads, and other affected areas, public or private. The plan must also incorporate all the requirements of the project permits.

C. Specify the line of authority and designate your field representative for implementing SWPPP compliance. Designate one representative for each subcontractor who performs earth disturbing activities, or who install and maintain erosion and sediment control measures.

2.02 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS.

A. Prepare a HMCP for the handling, storage, cleanup, and disposal of petroleum products and other hazardous substances. (See 40 CFR 117 and 302 for listing of hazardous materials.)

B. List and give the location of all hazardous materials, including office materials, to be used and/or stored on site, and their estimated quantities. Detail your plan for storing these materials as well as disposing of waste petroleum products and other hazardous materials generated by the project.

C. Identify the locations where storage, fueling and maintenance activities will take place, describe the maintenance activities, and list all controls to prevent the accidental spillage of oil, petroleum products and other hazardous materials.

D. Detail procedures for containment and cleanup of hazardous substances, including a list of the types and quantities of equipment and materials available on site to be used.

E. Detail plan for the prevention, containment, cleanup, and disposal of soil and water contaminated by accidental spills. Detail plan for dealing with unexpected contaminated soil and water encountered during construction.

F. Specify the line of authority and designate field representative for spill response and one representative for each subcontractor.

2.03 SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN REQUIREMENTS.

A. Prepare and implement a SPCC Plan that is certified by a licensed Professional Owner's Representative, when required by 40 CFR 112, including:

1. When oil spills may reach navigable waters; and

2. Your total above ground oil storage capacity is greater than 1,320 gallons.

B. Comply with 40 CFR 112 and address the following issues in your SPCC Plan:

1 Operating procedures that prevent oil spills;

2 Control measures installed to prevent a spill from reaching navigable waters; and

3 Countermeasures to contain, clean up, and mitigate the effects of an oil spill.

PART 3 – EXECUTION

3.01 CONSTRUCTION REQUIREMENTS.

A. Do not begin ground-disturbing work until the EPA has acknowledged receipt of your NOI and Department's NOI, and has listed them as active status. The EPA will post the status of the NOIs on the EPA website.

B. Post at the construction site:

1. NPDES Permit number, if available, and a copy of the NOI,

2. Name and phone number of your local contact person, and

3. Location of a SWPPP available for viewing by the public.

C. Comply with all requirements of the approved HMCP, the submitted SPCC Plan, and all state and federal regulations that pertain to the handling, storage, cleanup, and disposal of petroleum products or other hazardous substances. Contain, clean up, and dispose of all discharges of petroleum products and/or other materials hazardous to the land, air, water, and organic life forms. Perform all fueling operations in a safe and environmentally responsible manner. Comply with the requirements of 18 AAC 75 and AS 46, Oil and Hazardous Substances Pollution Control. Report oil spills as required by federal, state and local law, and as described in your SPCC Plan.

D. Comply with all requirements of the NPDES General Permit, implement all temporary and permanent erosion and sediment control measures identified in the SWPPP, and ensure that the SWPPP remains current. Maintain all temporary and permanent erosion and sediment control measures in effective operating condition.

E. Perform inspections and prepare inspection reports in compliance with the project SWPPP and the NPDES General Permit.

1. Joint Inspections. Prior to start of construction, conduct a joint on-site inspection with the Owner's Representative and the Contractor's field representative to discuss the implementation of the SWPPP. Conduct the following additional joint on-site inspections with the Owner's Representative:

a. During construction, inspect the following at least once every seven days and within 24 hours of the end of a storm exceeding 1/2 inch in 24 hours (as recorded at or near the project site):

(1) Disturbed areas that have not been finally stabilized.
(2) Areas used for storage of erodible materials that are exposed to precipitation.
(3) Sediment and erosion control measures.
(4) Locations where vehicles enter or exit the site

b. Prior to winter shutdown, to ensure that the site has been adequately stabilized and devices are functional.

c. At project completion, to ensure final stabilization of the project.

2. Winter Inspections. During winter shutdown, conduct inspections at least once every month and within 24 hours of a storm resulting in rainfall of 1/2 inch or greater. The Owner's Representative may waive monthly inspection requirements until one month before thawing conditions are expected to result in a discharge, if all of the following requirements are met:

a. Below-freezing conditions are anticipated to continue for more than one month.

b. Land disturbance activities have been suspended.

c. The beginning and ending dates of the waiver period are documented in the SWPPP.

3. Inspection Reports. Prepare and submit, within three working days of each inspection, a report on state Form 25D-100, with the following information:

a. A summary of the scope of the inspection.

b. Name(s) of personnel making the inspection.

c. The date of the inspection.

d. Observations relating to the implementation of the SWPPP.

e. Any actions taken as the result of the inspection.

f. Incidents of non-compliance

F. Where a report does not identify any incidents of non-compliance, certify that the facility is in compliance with the SWPPP and NPDES General Permit. You and the Owner's Representative will sign the report according to the Standard Permit Conditions of the NPDES General Permit, Part 8, Appendix. Include all reports as an appendix to the SWPPP.

G. Retain copies of the SWPPP, and all other records required by the NPDES General Permit, for at least three years from the date of final stabilization.

H. If unanticipated or emergency conditions threaten water quality, take immediate suitable action to preclude erosion and pollution.

I. Submit amendments to the SWPPP to correct problems identified as a result of any:

1. Storm or other circumstance that threatens water quality, and

2. Inspection that identifies existing or potential problems.

J. Submit SWPPP amendments to the Owner's Representative within seven days following the storm or inspection. Detail additional emergency measures required and taken, to include additional or modified measures. If modifications to existing measures are necessary, complete implementation within seven days.

K. Stabilize all areas disturbed after the seeding deadline within seven days of the temporary or permanent cessation of ground-disturbing activities.

L. Submit a signed NOI to EPA and the Owner's Representative:
   1. When the project site (including all material sources, disposal sites, etc.) has been finally stabilized and all storm water discharges from construction activities authorized by this permit have ceased, or

   2. When the construction activity operator (as defined in the NPDES General Permit) has changed.

M. If Contractor fails to coordinate temporary or permanent stabilization measures with the earthwork operations in a manner to effectively control erosion and prevent water pollution, the Owner's Representative may suspend Contractor's earthwork operations and withhold monies due on current estimates for such earthwork items until all aspects of the work are coordinated in a satisfactory manner.

If Contractor fails to:

1. Pursue work required by the approved SWPPP,

2. Respond to inspection recommendations and/or deficiencies in the SWPPP, or

3. Implement erosion and sedimentation controls identified by the Owner's Representative, the Owner's Representative may, after giving written notice, proceed to perform such work and deduct the cost thereof, including project Owner's Representative costs, from progress payments.

The Owner's Representative may, after giving written notice to the Contractor, proceed to perform such work and deduct the cost thereof, including project engineering costs, from payments to Contractor.

END OF SECTION

Section 02340
Geotextile

PART 1 - GENERAL

1.01 DESCRIPTION

Geotextile to stabilize and reinforce an aggregate cover material for an unpaved or paved roadway, building pad or other engineered fill.

1.02 RELATED SECTIONS

A. Section 02300 - Earthwork

1.03 REFERENCES

A. AASHTO Standards:

1. T88 - Particle Size Analysis of Soils
2. T90 - Determining the Plastic Limit and Plasticity Index of Soils
3. T99 - The Moisture-Density Relations of Soils Using a 5.5lb (2.5 kg) Rammer and a 12in (305 mm) Drop.
4. M288-06 - Geotextile Specification for Highway Applications

B. American Society for Testing and Materials (ASTM):

1. D123 - Standard Terminology Relating to Textiles
2. D276 - Test Method for Identification of Fibers in Textiles
3. D422 - Standard Test Method for Particle-Size Analysis of Soils
4. D4354 - Practice for Sampling of Geosynthetics for Testing
5. D4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
6. D4439 - Terminology for Geotextiles
7. D4491 - Test Methods for Water Permeability of Geotextiles by Permittivity
8. D4595 - Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
9. D4751 - Test Method for Determining Apparent Opening Size of a Geotextile
10. D4759 - Practice for Determining the Specification Conformance of Geosynthetics.
11. D4884 - Standard Test Method for Strength of Sewn or Thermally Bonded Seams of Geotextiles
12. D4873 - Guide for Identification, Storage, and Handling of Geotextiles
13. D5321 - Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method
14. D6241 - Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe1
15. D6706 - Standard Test Method for Measuring Geosynthetic Pullout Resistance in Soil1
16. D6767 - Standard Test Method for Pore Size Characteristics of Geotextiles by Capillary Flow Test

C. American Association for Laboratory Accreditation (A2LA)

D. Geosynthetic Accreditation Institute (GAI) - Laboratory Accreditation Program (LAP)

E. International Standards Organization (ISO) - 9001:2000

F. National Transportation Product Evaluation Program (NTPEP)

1.4 DEFINITIONS

Minimum Average Roll Value (MARV): Property value calculated as typical minus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed value reported.

1.5 SUBMITTALS

A. Submit the following:

1. Certification: The contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number, and chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile. The Certification shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer. Certifications from Private Label distributors will not be accepted.

2. Quality Standards: The contractor shall provide to the Engineer the Manufacturer's Quality Control Plan along with their current A2LA, GAI-LAP, and ISO 9001:2000 certificates.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. The geotextile Manufacturer shall have all of the following credentials:

a. ISO 9001:2000 Quality Management System.

b. Geosynthetic Accreditation Institute (GAI) Laboratory Accreditation Program (LAP).

c. American Association for Laboratory Accreditation (A2LA)

B. The geotextile Manufacturer shall have a GAI-LAP accredited laboratory at the location of production capable of performing the ASTM tests as outlined in the specification.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Geotextile labeling, shipment, and storage shall follow ASTM D4873. Product labels shall be color-coded to specifically identify each product and clearly show the Manufacturer's name, style name, and roll number.

B. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.

C. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: site construction damage, precipitation, extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases,

flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical property values of the geotextile.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Geotextile For Subgrade Reinforcement.
TenCate Geosynthetics 365 South Holland Drive Pendergrass, GA, USA 30567, 1-800-685-9990, 1-706-693-2226, 1-706-693-4400 fax, www.tencate.com

B. Geogrid for Landscape Block Retaining Wall Reinforcement.
TenCate Geosynthetics 365 South Holland Drive Pendergrass, GA, USA 30567, 1-800-685-9990, 1-706-693-2226, 1-706-693-4400 fax, www.tencate.com

2.02 MATERIALS

A. Geotextile for Subgrade Reinforcement:

1. The geotextile shall be woven from super high-tenacity polypropylene yarns with a weave pattern to maximize strength, water flow, soil interaction and soil retention. The yarns shall be from high-tenacity long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins or polyesters. They shall form a stable network such that the filaments or yarns retain their dimensional stability relative to each other, including selvages.

2. The geotextile shall meet the requirements of Table 1. All numeric values in Table 1 except AOS represent MARV in the specified direction. Values for AOS represent maximum average roll values.

3. All geotextile products shall have a separation factor of 0.9 or higher per ASTM D422, Modified.

TABLE 1 - SUBGRADE STABILIZATION GEOTEXTILE

	Test Method	Unit	Minimum Average Roll Value
STRENGTH			
Tensile Modulus @ 2% strain (CD)	ASTM D4595	kN/m (lbs/ft)	1,313 (90,000)
HYDRAULIC			
Flow Rate	ASTM D4491	l/min/m_2 (gal/min/ft_2)	3,056 (75)
Permittivity	ASTM D4491	sec-1	1.0
SOIL RETENTION			
Apparent Opening Size (AOS)1	ASTM D4751	mm (U.S. Sieve)	0.43 (40)
Pore Size 095	ASTM D6767	microns	3503
Pore Size 050	ASTM D6767	microns	1853
SOIL INTERACTION			
Interaction Coefficient2	ASTM D5321	--	0.9
Factory Seam Strength	ASTM D4884	kN/m (lbs/ft)	43.8 (3,000)
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	80

1 ASTM D 4751: AOS is a Maximum Opening Diameter Value
2 Interaction Coefficient value is for sand or gravel
3 Typical Values

When sewn seams are required. Refer to **Section 3 - Execution** for overlap / seam requirements.

4. Approved geotextiles are **Mirafi® RS580i** or approved equivalent.

B. Geogrid for Landscape Block Retaining Wall backfill Reinforcement.

1. Geogrid shall be composed of high molecular weight, high tenacity polyester multifilament yarns which are woven in tension and finished with a PVC coating.
2. Inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	**Test Method**	**Unit**	**Minimum Average Roll Value Machine Direction**
Tensile Strength (at ultimate)	ASTM D6637	lbs/ft (kN/m)	4700 (68.6)
Tensile Strength (at 5% strain)	ASTM D6637	lbs/ft (kN/m)	1740 (25.4)
Creep Reduced Strength	ASTM D5262	lbs/ft (kN/m)	2975 (43.4)

Physical Properties	**Unit**	**Typical Value**
Grid Aperture Size (machine direction)	in (mm)	1.2 (30.5)
Grid Aperture Size (cross machine direction)	in (mm)	1.0 (25.4)
Mass/Unit Area (ASTM D5261)	oz/yd2 (g/m2)	9.0 (305)
Roll Dimensions (width x length)	ft (m)	12 x 150 (3.6 x 46)
Roll Area	yd2 (m2)	200 (165)
Estimated Roll Weight	lbs (kg)	140 (63)

3. Approved geotextiles are Miragrid 5XT or approved equivalent.

2.3 QUALITY CONTROL

A. Manufacturing Quality Control: Testing shall be performed at an on-site laboratory accredited by GAI-LAP and A2LA for tests required for the geotextile, at frequency meeting or exceeding ASTM D4354.

B. Sewn Seam Strength shall be verified based on testing of either conformance samples obtained using Procedure A of ASTM D4354, or based on manufacturer's certifications and testing of quality assurance samples obtained using Procedure B of ASTM D4354. A

lot size for conformance or quality assurance sampling shall be considered to be the shipment quantity of the given product or a truckload of the given product, whichever is smaller.

C. Soil Interaction Coefficient (C_I) and Coefficient of Direct Sliding (C_{DS}) shall be verified by an independent laboratory on samples of the actual geotextile, and using either the actual project fill soil(s) or other fill soil(s) exhibiting identical mechanical properties to the project fill soil(s), as approved by the Engineer.

PART 3 - EXECUTION

3.01 PREPARATION

A. The installation site shall be prepared by clearing, grubbing and excavation or filling the area to the design grade.

3.02 GEOTEXTILE INSTALLATION

A. The geotextile shall be laid smooth without wrinkles or folds on the prepared subgrade in the direction of construction traffic. Adjacent geotextile rolls shall be overlapped, sewn or joined as required in the plans. Overlaps shall be in the direction as shown on the plans. See table below for overlap requirements.

Soil CBR	**Method of Joining**
Greater than 3	300 - 450 mm (12 - 18 in) overlap
1 - 3	600 - 1000 mm (24 - 40 in) overlap
0.5 - 1	1000 mm (40 in) overlap or sewn
Less than 0.5	Sewn
All roll ends	1000 mm (40 in) overlap or sewn

B. On curves, the geotextile may be folded or cut to conform to the curves. The fold or overlap shall be shingled in the direction of construction and held in place by pins, staples, or piles of fill or rock.

C. Prior to covering, the geotextile shall be inspected by a certified representative or inspector of the Engineer to ensure that the geotextile has not been damaged during installation. Damaged geotextile, as identified by the Engineer, shall be repaired immediately. Cover the damaged area with a geotextile patch which extends an amount equal to the required overlap, or a minimum of two feet beyond the damaged area.

D. The aggregate base or subbase shall be placed by end dumping onto the geotextile from the edge of the geotextile, or over previously placed subbase aggregate. On subgrade soils having a CBR value greater than 3, most rubber-tired vehicles can be driven at slow speeds, less than 16 km/h (10 mph) and in straight paths over the exposed geotextile without causing damage to the geotextile. Sudden braking and sharp turning should be avoided. Tracked construction equipment should not be operated directly upon the geotextile. A minimum fill soil thickness of 15cm (6 in) is required prior to operation of tracked vehicles over the geotextile. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geotextile. Turning of vehicles shall not be permitted on the first lift above the geotextile.

E. On subgrades having a CBR value of less than 1, the aggregate base or subbase should be spread in its full allowable lift thickness as soon as possible after dumping to minimize the potential of localized subgrade failure due to overloading of the subgrade.

F. Any ruts occurring during construction shall be filled with additional subbase material, and compacted to the specified density.

G. If placement of the backfill material causes damage to the geotextile, the damaged area shall be repaired as previously described above. The placement procedure shall then be modified to eliminate further damage to the geotextile from taking place.

3.02 GEOGRID INSTALLATION

A. Install per manufacturers recommendations and as required under Section 02950

END OF SECTION

SECTION 02513
ASPHALT PAVEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall provide all labor, material, equipment and supervision necessary for the furnishing and placing of the aggregate leveling course and asphalt concrete pavement as shown on the contract drawings.

1.02 ALASKA DEPARTMENT OF TRANSPORTATION

A. Conform to Alaska Department of Transportation and Public Facilities Standard Construction Specifications for Highway Construction, Division 300-Bases and 400-Asphalt Pavements and Surface Treatments.

1.03 SUBMITTALS

A. The Contractor shall submit for approval manufacturer's specifications, drawings, and recommendations for all materials incorporated into the project. The submittal shall include manufacturer's published data, engineering data, letter of certification or certified test laboratory report indicating that each material complies with specified standards and other requirements.

B. Contractor shall submit gradation test results for all aggregate materials to be incorporated into the project. Contractor shall submit other aggregate test results specified in Part 2.

C. Contractor shall submit for approval Asphalt Test Results and Job Mix results.

1.04 TESTING STANDARDS FOR LEVELING COURSE

A. Gradation: ASTM C 136. "Sieve Analysis of Coarse and fine Aggregate".

B. Density: ASTM D 2922 and ASTM D 3017. "Density of Soil-Aggregate in Place by Nuclear Methods, Shallow Depth". "Moisture Content of Soil in Place by Nuclear Methods, Shallow Depth".

C. Maximum Density: ASTM D 1557. "Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Using 10 lbs. (4.54 kg) Rammer and 18 Inch (457 mm) Drop".

1.05 TESTING STANDARDS FOR ASPHALT CONCRETE PAVEMENT

A. Cores: ASTM D979. "Sampling Bituminous Paving Mixtures".

B. Core Density: ASTM D 2726. "Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface Dry Specimens".

C. Thickness: ASTM D 3549. "Thickness and Height of Compacted Bituminous Mixture Specimens".

D. Nuke Density: ASTM D 2950. "Density of Concrete in Place by Nuclear Method".

E. Asphalt Content: ASTM D 4125. "Asphalt Content by Nuclear Method".

F. Gradation: ASTM C136. "Sieve Analysis of Coarse and Fine Aggregate".

G. Marshall Analysis (Stability):ASTM D 1559 and D 2726. "Resistance to Plastic Flow of Bituminous Paving Mixtures Using Marshall Apparatus". "Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface Dry Specimens".

H. Extraction: ASTM D 2172. "Quantitative Extraction of Bitumen from Bituminous Paving Mixtures".

PART 2 - PRODUCTS

2.01 CRUSHED AGGREGATE LEVELING COURSE

A. Leveling course shall conform to Alaska Department of Transportation & Public facilities requirements for Base Course, Gradation D-1.

2.02 ASPHALT CONCRETE PAVEMENT

A. Asphalt Concrete Pavement shall conform to Alaska Department of Transportation & Public facilities requirements for Asphalt Concrete Pavement, Type III Gradation, ½" maximum aggregate size.

PART 3 - EXECUTION

3.01 TESTING AND INSPECTION

A. General

1. The Contractor shall provide certified copies of test data and results to verify the acceptability of the materials to be used. The tests shall be those referenced in this section and shall be performed by an approved independent laboratory. No

materials requiring testing shall be incorporated into the project until the Owner's Representative has reviewed and approved the test copies.

2. Asphalt materials shall be approved prior to use in the work; provided, however, the Owner's Representative may accept a certified analysis from the refinery laboratory when a copy of the certified analysis accompanies each shipment of asphalt to the project. The Owner's Representative shall reserve the right to make check tests of the asphalt received on the job and, if the system of certified analysis proves to be unsatisfactory he may discontinue this arrangement.

B. Frequency of Testing by Contractor

1. Asphalt Gradation- 1 for every day of paving.

2. Asphalt Cement Content-1 for every day of paving.

3. Leveling Course Compaction- 1 for every 1,000 square feet of Leveling Course surface area.

4. Asphalt Compaction-1 for every 1,000 square feet of Asphalt Pavement surface area.

3.02 JOB MIX

A. The Contractor, at his expense, shall submit for approval a job mix formula.

3.03 CONSTRUCTION STAKING

A. The Contractor shall provide construction staking (blue tops) for establishing proper grades on the leveling course on a nominal 50 ft grid plus all breaks in grade.

3.04 LEVELING COURSE CONSTRUCTION

A. The purpose of the leveling course material is to provide a smooth, stabilized surface on which to place the pavement. The leveling course shall be placed to the lines and grades shown on the plans and shall consist of the materials specified. The thickness of the leveling course shall be 2 inches unless otherwise shown on the drawings.

B. Preparation shall consist of dressing, shaping, moisture control and compacting of the underlying granular material to a minimum density of 95% at or near optimum moisture. Surfaces shall be cleaned of all foreign substances and debris. Any ruts, or soft yielding spots that may appear in the subbase surface shall be corrected by loosening, removing and adding approved material, reshaping and re-compacting the affected areas to line and grade and to the specified density requirements.

C. The approved leveling course material shall be deposited and spread in a uniform layer to the required contour and grade and to such loose depth that when compacted to the density required, the layer will be the required depth as shown on the drawings. The material shall be spread uniformly on the prepared surface from moving vehicles or spreading boxes, then leveled to the required contour and graded with blade graders. Portions of the layer which become segregated in spreading shall be removed and replaced with a satisfactory mixture or shall be remixed to the required gradation.

D. The leveling course shall be rolled until the top 6 inch layer, including the leveling course, is compacted to at least 95 percent of maximum density. Blading, rolling and tamping shall continue until the surface is smooth and free from waves and inequalities. The finished leveling course shall be maintained by the Contractor in the above condition until the pavements applied.

E. The surface of the leveling course, when finished, shall not show any deviation in excess of 3/8 inch when tested with a ten foot straightedge applied parallel with and at right angles to the centerline of the area to be paved. The surface grade shall not deviate more than 0.05 foot from the plan grade. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the requirements.

3.05 ASPHALT PAVING EQUIPMENT

A. Mixing Plant

1. All plants used by the Contractor shall be designed, coordinated and operated to produce a mix uniformly within the job-mix tolerances as listed herein. The plant may be either a weight batch type or a volumetric proportioning, continuous mixing type, provided the equipment has demonstrated that it is suitable for producing finished mixtures complying with the job-mix formula specified herein. All plants shall be equipped with a positive means to govern the time of mixing. Mixing time shall not be altered unless so ordered by the Owner's Representative.

2. The plant shall be equipped with the necessary equipment for storing, handling, drying, heating and mixing the aggregate and asphalt. Satisfactory means shall be provided for aggregate and asphalt control as to quantity and temperature.

Adequate safety measures shall be provided on stairs, gears, pulleys, chains, sprockets, and all other dangerous moving parts. Frequent gradation analysis of the hot aggregate of the completed mix shall be made. If the mix is found to be outside the hot-mix formula tolerances, or outside the specifications limits, corrections shall be made in quantities measured from the hot bins and suitable changes made at the cold bin feeders.

B. Batch Type Plant

1. When the mix is produced in a batch type plant, the aggregate shall be accurately weighed in the proper proportions to provide the batch weight. The Contractor shall determine the time of both dry and wet mixing periods to insure a uniformly and completely coated mix. A dry mixing period of not less than 10 seconds shall precede the addition of the asphalt to the mix. Excess wet mixing shall be avoided. Wet mixing shall continue as long as is necessary to obtain a thoroughly blended mix but shall not exceed 75 seconds or be less than 30 seconds.

C. Continuous Type Plant

1. Continuous mix plants shall in general be controlled in the same manner as batch plants.

D. Pavers

1. Pavers shall be self-powered, capable of placing the mix true to the line, grade and crown indicated on the plans and equipped with hoppers and distributing screws to place the mix evenly in front of the adjustable screeds. They shall be equipped with a quick and efficient steering device, and shall be capable of traveling both forward and in reverse. The term "screed" includes any strike-off device operated by cutting, crowding or other action which is effective on mixes at workable temperatures, without tearing, shoving or gouging them, and which produces a finished surface of an even and uniform texture. The screed shall be adjustable as to level and section.

E. Rollers

1. Rolling equipment shall consist of a combination of both steel wheel and pneumatic-tire rollers of sufficient weight to satisfactorily compact the pavement to the required density. Rollers shall be equipped with adjustable scrapers to keep the rollers clean and with efficient means of keeping the wheels wet to prevent mixes from sticking to the rollers. Rollers shall be free of flat areas, openings or projections which will mar the surface of the pavement.

2. Pneumatic-tire rollers shall be self-propelled. They shall be equipped with not less than 9 pneumatic-tired wheels arranged in such a manner that the rear group of the tires will not follow in the tracks of the forward group and will be centered between the forward wheels. The tires shall be uniformly inflated. The rollers shall be weighted with not less than 4.5 tons of ballast. The tires shall have smooth flat treads.

F. Trucks

1. Truck beds shall have tight metal bottoms and shall be free from dust, screenings, petroleum oils, volatiles or other mineral spirits which may affect the mix being hauled. Truck beds shall be cleaned as often as required, but at least once a day and thoroughly drained. When required, trucks shall be suitably insulated and provided with covers of canvas to protect the load from adverse weather conditions and to maintain the required mix temperatures.

G. Hand Tools

1. Only lutes or rakes with covered teeth shall be used during the spreading operation and when finishing by hand.

2. Tamping irons shall weigh not Less than 25 pounds and shall have a bearing area not exceeding 48 square inches. Mechanical compaction equipment, satisfactory to the Owner's Representative, may be used instead of tamping irons.

3. Straightedges 10 and 16 feet in length, to test the finished surface shall be provided by the Contractor.

3.06 ASPHALT PAVING METHODS

A. Weather Limitations

1. The mixing and placing of hot-mix asphalt shall be performed only when weather conditions are suitable. No mix shall be placed when water is observed on the surface or when the temperature of the surface on-which the mix is to be placed is less than 45 degrees Fahrenheit except that, with the permission of the Owner's Representative, asphaltic mixes may be placed upon surfaces having temperatures of not less that 35 degrees Fahrenheit provided hot-mix asphalt shall be delivered continuously in covered and insulated vehicles.

B. Mechanical Spreading

1. The mix shall be delivered to the paver at a temperature between 250 and 325 degrees Fahrenheit.

2. Longitudinal joints and edges shall be constructed to true line markings. When backing trucks to the finisher, care shall be taken not to jar the Finisher.

3. As soon as the first load of material has been spread, the texture of the unrolled surface shall be checked to determine its uniformity. The adjustment of the screed, tamping bars, feed screws, hopper feed, etc., shall be checked frequently to assure uniform spreading of the mix. Segregation of materials shall not be

permitted. If segregation occurs, the spreading operation shall be immediately suspended until the cause is determined and corrected.

4. Any irregularities left by the paver shall be corrected by trimming directly behind the machine by use of lutes or covered rakes. Immediately after trimming, the edges of the course shall be thoroughly compacted by tamping. Distortion of the pavement during this operation shall be avoided.

5. Edges against which additional pavement is to be placed shall be vertically formed to true line. A lute or covered rake shall be used immediately behind the finisher, when required, to obtain a true line and vertical edge. Any irregularities in the surface of the pavement course shall be corrected directly behind the paver. Excess material forming high spots shall be removed by a shovel or lute.

   Indented areas shall be filled with hot-mix and smoothed with the back of a shovel being pulled over the surface. The Contractor shall have a water hose or large buckets of water available to physically test For adequate runoff prior to pavement set. Immediate corrections shall be made as required. On longitudinal joints, the paver shall be positioned so that, in spreading, the material overlaps the edge of the lane previously placed by one or two inches and sufficiently high to allow for compaction. The coarse aggregate in the material overlapping the joint shall be and broomed up and wasted. In no case shall scattered rocks be rolled into the surface of either lane.

C. Hand Spreading

1. In small areas where the use of mechanical finishing equipment is not practical, the mix may be spread and finished by hand. The material shall be thoroughly loosened and uniformly distributed by lutes and rakes.

D. Compaction

1. A pneumatic-tire roller and a tandem finish roller shall be required at all times. A vibratory roller may be substituted for one of the above rollers if approved by the Owner's Representative, in writing.

   The general plan of rolling as outlined in the Asphalt Institute Manual (MS-8), "Asphalt Paving Manual", July 1983 Edition, shall be used.

2. The completed pavement for a day's production shall have a density equal to, or greater than 96% of the maximum laboratory density as determined by ASTM D 2726 for that day's production.

E. Surface Tolerance

1. The final surface shall be of a uniform texture conforming to true grade, and cross-sections as shown on the plans.

2. To check tolerances, the 16 foot straightedge shall be used on straightaway sections and the 10 foot straightedge on vertical curves or crown. The straightedge shall be held in successive positions parallel to the road centerline in contact with the surface, and the entire area checked from one side to the other.

   Advance along the pavement in successive stages of not more than half the length of the straightedge. All irregularities which vary more than 3/16 inch in 10 feet, or 5/16 inch in 16 feet shall be corrected. Irregularities which may develop before the completion of rolling shall be remedied by loosening the surface mix and removing or adding material as may be required.

3. When requested by the Owner's Representative, the Contractor shall, without charge, provide test samples of asphalt concrete cored from the completed pavement. All cores shall be at least 4 inches in diameter. The Owner's Representative shall determine the location of cores. Holes shall be patched within 24 hours.

All work shall be included in the Lump Sum Bid. No separate measurement or payment will be made for Asphalt Pavement.

END OF SECTION

SECTION 02600
WATER SERVICE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers all Labor, equipment, material and supervision to connect to the existing underground water line and extend service to the new building is covered by this Section.

1.02 SUBMITTALS

A. The Contractor shall submit for approval manufacturer's specifications, drawings, and recommendations for all materials incorporated into the project. The submittal shall include manufacturer's published data, engineering data, letter of certification or certified test laboratory report indicating that each material complies with specified standards and other requirements.

1.03 RELATED WORK

A. SECTION 02200 EARTHWORK

1.04 TRENCH COMPACTION TESTING

A. Where compaction density is specified, the maximum density shall be determined in accordance with the current requirements of ASTM D 4253.

B. The in-place soil density may be determined by use of:

Nuclear Densometer - ASTM D 2922.
Sand cone - ASTM D 1556.
Rubber balloon - ASTM D 2167.

C. Compaction tests shall be taken on each lift of fill or backfill, including trenches, at the average rate of one test per 200 feet of trench. failing tests shall be retested at no additional cost to the Owner.

D. A gradation test, in accordance with ASTM D 422, shall be performed on each type of material used in fills and backfills. If material is to be non-frost susceptible, hydrometer tests shall be performed in accordance with ASTM D 422.

PART 2 - PRODUCTS

2.01 PIPE

A. General

1. NSF Approval: All pipe, fittings, valves and other materials that will be in contact with potable drinking water shall bear markings indicating National Sanitation Foundation (NSF) approval for potable water use.

2. Lead. All materials that will come into contact with potable water shall be lead free.

B. HDPE Pipe:

1. Pipe shall be high density polyethylene SDR 11, manufactured of PE 3408 resin, with thermally fused joints. Pipe shall bear markings indicating National Sanitation Foundation (NSF) approval for potable water use.

C. Fittings:

1. Molded Fittings: Fittings shall be molded High density Polyethylene, SDR 11.

2. Connection to existing Copper: 'Polycam' Series 911 Brass Male Flare Nut transition adaptor.

3. Valve: 'Polyvalve' HDPE, fusion weld ends.

D. Valve Box, Riser and Cover

1. Cast iron

a. Sliding adjustable height with round bottom hood sections to fit over top of valve.

b. Top section recessed to receive close fitting "eared" lid with the word "water" cast into it.

c. Casting shall be smooth with a 5/16" minimum thickness and a minimum of 5" internal diameter and of sufficient length to extend from the pipe to the ground surface. Valve box sections shall be dipped in coal-tar pitch. Dust pans shall be installed in all valve boxes.

d. East Jordon Iron Works 3669, or approved equal.

PART 3 - EXECUTION

3.01 UNDERGROUND PIPING

A. Construction Staking

1. The Contractor shall provide a competent surveyor to maintain line and grade during all pipe laying operations with a transit and engineer's level at no additional cost to the Owner.

2. All survey work shall be incorporated to provide complete as-built drawings of the water system

B. Trench Excavation

1. General

a. Contractor shall accomplish all excavation required by the contract drawings through whatever substances encountered. All excavation shall be accomplished in accordance with the State of Alaska safety code and other applicable safety requirements.

b. Unauthorized excavation below the required grade line shall be backfilled with approved material and mechanically compacted to 95% of maximum density at the expense of the Contractor.

c. If material encountered in the trench is unsuitable for use as trench backfill as determined by the Owner's Representative, the material shall be designated as 'Unusable Excavation' and hauled off and disposed of at a Contractor furnished disposal site. Type III classified material shall then be provided by the Contractor to replace the disposed material.

2. Water Removal

a. During excavation and pipe installation, the Contractor shall remove by pumping or other approved means, all water above the bottom of trench.

3. Limits on Open Trenches

a. The maximum length of open trench shall be 400 feet; however, should this maximum length be considered detrimental to public safety, it may be reduced at the discretion of the Owner's Representative. No more than 100 feet of trench may remain open over night.

C. INSTALLATION

1. Pipe

a. All water line shall be laid in a bed of compacted classified material, all of which passes a 2" screen. The bedding shall extend 6" below the pipe and at least 12" on either side. Bedding may be deleted at the direction of the Owner's Representative.

b. All pipe shall be laid in compliance with AWWA C-600 with a minimum of 10 feet of cover and shall not be less than 10 feet below finished grade of ground at pipe centerline. Backfill under and around the pipe shall be fully tamped so that no voids exist that will allow bridging or settlement of the pipe.

c. All faulty workmanship and all materials found to be defective before or after installation shall be replaced, repaired or corrected to meet the specification requirements without additional expense to the Owner.

d. Cutting of pipe shall be done in a workmanlike manner as recommended by the manufacturer and approved by the Owner.

e. Open ends of pipe and appurtenances shall be protected with an approved plug at all times to prevent earth or other substances from entering the pipe.

2. Joints

a. Except where otherwise noted on the drawings, all pipe joints for shall be thermally fused and shall be accomplished in accordance with the manufacturer's recommendations.

3. Flushing

a. Before the pressure or leakage tests are performed and before the system is sterilized, all newly laid mains shall be thoroughly flushed to remove all foreign material. The Contractor shall provide for "open bore" flushing at each end of the system so that all parts will be cleaned. The use of fire hydrants for this initial flushing will not be permitted. Flushing times shall be at the discretion of the Owner and utility.

b. In the event repeated flushing is necessary to approve and certify the system, such flushing shall done at the expense of the Contractor.

c. A representative of the Owner and Contractor shall be present for all flushing and testing.

4. Connect to Existing Waterline

a. Connections to the existing waterlines shall be coordinated with the Owner to minimize impacts to Owner's continued operation of the water treatment plant. The Owner shall be given 48 hours notice prior to Contractor's proposed shutdown of existing water lines.

5. Sewer Line Crossing

a. Where water mains cross below or within three feet above an existing sewer line, the Contractor shall replace the sewer main for a minimum distance of 10 feet each side of the water main measured perpendicular to the water main with cast iron or ductile iron pipe using watertight joints, or encase the sewer line in concrete 10 feet each side. Encasement shall be 4 inch minimum thickness all around pipe and reinforced with 4"X4" 14/14 welded wire fabric all around.

b. The waterline shall not cross a sewer line with less than 18" clearance. If an existing sewer line is found to be closer than 18" from the proposed waterline, deflect the line as required to provide 18" clearance. Advise Owner's Representative of proposed changes as soon as possible.

9. Valves and valve box.

a. Valves and valve boxes shall be installed where shown on the plans. Valves shall have the interiors cleaned of all foreign matter before installation. The valve shall be inspected in the open and closed position to insure that all parts are in working condition.

b. The base of the hood section for valve boxes shall rest on compacted fill and should be approximately two inches above the pipe.

c. The valve box assembly shall be plumb and accurately centered over the valve operating nut. The top section shall be so set as to permit vertical adjustment above or below finished grade. On gravel streets the top of the valve box shall be set three inches below the surface and on paved streets one quarter inch (¼) below finished surface of the pavement. Earth fill shall be carefully compacted around each valve box. Burlap or rubber shall be wrapped around the base of the valve box. Dust pans shall be installed in all valve boxes. An alignment pole shall be used on each valve to insure the bottom and 10 foot sections are straight. Valve box shall be wrapped with two layers of 6 mil polyethylene sheeting.

d. Valve box shall be marked with a 2 inch diameter x 6' long steel pipe valve marker posts painted yellow with black letters facing valve box with number of feet to valve box. Marker post shall be installed with bottom 30 inches below grade.

D. BACKFILL

1. General

a. After the lines have been inspected and tested, the trenches shall be backfilled. Backfill may be accomplished prior to testing at the Contractor's risk.

b. Unsuitable or surplus excavated materials shall be removed from the area. Contractor shall furnish additional backfill materials, if required, from off-site sources.

c. The Contractor shall carefully place and thoroughly compact backfill around and above the pipe to 95 percent of maximum dry density.

d. Material shall be compacted in maximum 12 inch lifts. The Owner's Representative may require shallower lifts to facilitate proper compaction.

E. TESTING

1. General

a. After open bore flushing, and prior to installing water service connections, all newly laid water mains and appurtenances shall be subjected to pressure and leakage tests as specified herein. Said testing shall be done at the expense of the Contractor. This work shall be considered incidental to the installation of the water utility system, and shall not be paid for separately.

b. A representative of the Owner, the City of Homer, and the Contractor shall be present for all testing.

2. Pressure Test

a. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the Contractor shall install corporation cocks at such points so that air can be expelled as the is filled with water. The newly laid piping, or any valved section thereof, shall be subjected to a hydrostatic pressure test of 150 psi. After the required test pressure has been reached, the pumping will be terminated. If the pressure (150 psi) remains constant for 30 minutes without the aid of a pump, the waterline will not be subjected to any

further hydrostatic test. If the pressure does not remain constant for 30 minutes, a leakage test will follow. All valves within the section of line being tested will be closed and reopened after the required pressure (150 psi) has been obtained and prior to the 30 minute constant pressure test.

3. Leakage Test

a. The duration of each leakage test shall be at least two hours and during the test the main shall be subjected to a constant pressure of 150 psi for two hours. Leakage for any newly laid pipe or any valved section thereof is defined as the quantity of water that is necessary to maintain the specified leakage test pressure after the pipe had been filled with water and the air is expelled.

b. The allowable leakage per 100 feet of main at 150 psi is as follows:

Pipe Diameter (Inches)	Gallons per Hour
6	.06
8	.08
10	.10
12	.12

c. Cracked or defective pipe, gaskets, mechanical joints, fittings, valves or hydrants discovered as a consequence of the hydrostatic tests shall be removed and replaced with sound material at the contractor's expense. The test shall then be repeated until the results are satisfactory.

4. Continuity Test

a. The electrical continuity test will be taken with a gasoline powered welder. The continuity will have to register a minimum load of 600 amperage for a period of 15 minutes. Such test will be performed by the Contractor with a representative from the Owner present.

F. DISINFECTION

1. General

a. After pressure, leakage, and continuity tests and before being placed into service, all newly laid water mains shall be thoroughly disinfected by the Contractor.

2. Method of Disinfection

a. Calcium hypochlorite solution shall be supplied by Contractor for sterilization.

b. The chlorinating agent shall be applied at the beginning of the section adjacent to the feeder connection and shall be injected through a corporation cock, hydrant, or other connection insuring treatment to the entire line. Water shall be fed slowly into the new line with chlorine applied in amounts to produce a dosage of 40 to 50 ppm through the entire extent of the new system. The disinfecting agent shall be allowed to stand in the mains for at least 24 hours.

c. A residual of not less than 5 ppm chlorine shall remain in all parts of the line after 24 hours of detention time. During the chlorination process, all intermediate valves and accessories shall be operated. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. After chlorination, all water with a higher chlorine content than that at the permanent source of supply shall be thoroughly flushed from all parts of the new system.

d. All test coppers and air vent coppers shall be disconnected and removed from the main and the corporation stop turned off before the line is accepted.

G. Existing Utilities

1. Contractor is responsible for the protection of all existing underground, surface and overhead utilities and for the protection of adjacent structures. Plan locations of existing underground facilities are to be considered approximate only and shall be verified with the owning utility by the Contractor. The methods used to protect existing utilities, appurtenances, structures, etc., shall be subject to the approval of the Owning Agency.

2. Contractor shall verify location of and elevations of existing waterlines that new lines tie into prior to construction.

H. As-Built Drawings

1. The Contractor shall provide a red-lined blueline drawing prior to final payment showing as built information for the following:

a. Horizontal location and elevation at least every 100 feet along the pipe and of all tees, bends, changes in grade and end of any dead-end runs.

b. Horizontal location for all valves, hydrants, bleeders, change in pipe size or class. In addition to stationing, location of valves shall also be shown by three (3) swing ties from each valve to appropriate prominent features. Swing ties shall not exceed 100' in length without the written consent of the Owner's Representative.

c. Horizontal and vertical location of any other utilities intercepted in the trench.

d. Type and depth of bedding used, if any.

e. Accurate detail and location of any unique tie-ins, special combination of fittings, etc.

f. On service key boxes, show station on mainline for corporation stop, length and size of service line, location of key box by 2 or more swing ties and station and offset to terminus. Swing ties to be as close to 90 degrees to one another as possible and shall not exceed 100' in length.

g. If adequate as-built data is not provided as defined above, the Owner may perform an as built survey and deduct the cost from moneys due the Contractor.

END OF SECTION

SECTION 02700
SANITARY SEWER SYSTEM

PART 1-GENERAL

1.01 DESCRIPTION OF WORK

A. Work included:

This Section covers the pipe laying, jointing and testing of sanitary sewers systems and extension to existing sewer systems. The construction of these systems shall meet the requirements herein and as shown on the Plans.

B. Related Work Specified Elsewhere

1. Earthwork Section 02200

C. Subsurface Data:

It is expressly understood that neither Owner's Representative, Engineer, nor Owner will be responsible for interpretations or conclusions drawn regarding subsurface conditions by Contractor.

D. Dewatering:

All work necessary to dewater the excavation as will be necessary to construct items covered in this section.

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen:

1. To perform the work of this section, employ at least one thoroughly experienced supervisor who is familiar with the materials, equipment, and operations required, and who shall be present at all times during actual construction and direct all operations under this section.

2 Employ competent personnel for the establishment of lines and grades.

B. Referenced Standards

The latest revision of the following standards of the American Society for Testing and Materials (ASTM), The American Association for State Highway Officials (AASHTO), the

American Standards Association (ASA), and the American Water Works Association (AWWA) are hereby made a part of these specifications.

ASTM C-564	Cast Iron Pipe and Fittings
CISPI C-301	Hubless cast iron soil pipe and fittings.
CISPI C-310	Coupling for hubless cast iron soil pipe.
ASTM C-478-AASHTO-199	Specification for Precast Reinforced Concrete
ASTM C-150	Specification for Portland Cement
AWWA C-151-ASTM A-746	Ductile Iron pipe
AWWA C-104	Cement Mortar for Ductile iron Pipe
AWWA C-100	Ductile iron Fittings
AWWA C-111	Rubber Gasket Fittings for D.I. Pipe
AWWA C-104 ASA A-21.4	Cement Mortar for Cast Iron Pipe
ASA A-21.10	Cast Iron Fittings
ASA A-21.11	Cast Iron Joints
ASTM C-76	Specification for Reinforced Concrete
AASHTO M-45	Sand for Cement Mortar
ASTM C-6	Hydrated Lime
ASTM A-48, ASTM A-438	Strength Requirements for Manhole Frames and Covers

1.03 SUBMITTALS

Submit manufacturer's product data and installation instructions for each product specified for installation.

1.04 ABBREVIATIONS

Ductile Iron Pipe	DIP
Corrugated Metal Pipe	CMP
Gauge	Ga.
Invert	Inv.
Top of Casting	TC
Catch Basin	CB
Manhole	MH
North	N.
South	S.
East	E
West	W
Edge of Pavement	EP
Diameter	D
Slope	S

PART 2-PRODUCTS

2.01 EQUIPMENT

The Contractor shall utilize equipment both suitable for the work intended and appropriate for the weather and conditions encountered.

2.02 MATERIALS

A. Pipe and Fittings for 4" and 6"Diameter:

1. Pipe shall be hubless cast iron conforming to CISPI Standard 301 and Federal Standard WW-P-401(E) Type III.

2. No-Hub Fittings shall neoprene with stainless steel shield and clamp assembly conforming to ASTM standard C-564, CISPI Standard 301 and Federal Standard WW-P-401(E) Type III.

B. Pipe and Fittings for 8" Diameter and Larger:

1. Pipe and Fittings shall be Cement Mortar lined Ductile Iron conforming to AWWA C-151 and AWWA C-104, Class 50.

2. Fittings shall be cast iron and all bell conforming to AWWA C-100 Class "D". Short body fittings, otherwise meeting said AWWA Specifications may be used.

3. Rubber gasket joints for ductile iron pipe fittings shall conform to AWWA C-111. Special fittings shall be as specified on the Drawings.

C. Manholes and Catch Basin Manholes

1. Materials used in the construction of manholes shall conform to the requirements of ASTM Specification Designation C-478 and Standard Details. Cones shall be Type (b), eccentric, unless otherwise approved.

2. Forty-eight (48) inch reinforced concrete pipe may be used for manhole riser sections as an alternate. This pipe shall conform to ASTM specifications Designation C-76 with a minimum thickness of five (5) inches.

3. Each precast concrete barrel section shall be set and sealed by use of a plastic gasket pipe joint sealer as manufactured by K.T. Snyder Co., Inc., Ram-Nek Gasket Division, 2100 Travis Street, Houston, TX or equal. Installation of pre-molded plastic gaskets shall be strictly in accordance with the manufacturers printed instructions. Ram-Nek gaskets shall be trimmed on the inside of the manhole to prevent the excess gasket material from entering the sanitary sewer lines.

4. Cement for mortar used in the construction of manholes shall conform with ASTM Specifications Designation C-150, Type II. Sand shall conform with AASHTO Specifications M-45. The mortar shall be composed of one(1) part cement and three (3) parts sand. The joints shall be made so as to produce a smooth, regular watertight surface. Only enough water shall be added to provide plasticity in placing the mortar.

5. The requirement for tensile strength of the gray cast iron shall be 30,000 PSI minimum as per ASTM A 48 and the requirement for transverse breaking load shall be 2,000 pounds as per ASTM 438

D. Insulation

Insulation shall be DOW HI-40 Extruded Polystyrene Insulation, or approved equal. Insulation shall be furnished in 2'x8'x2" thick sheets.

E. Lift Station

1. General. Single grinder pump packaged lift station with motor controls hardwired to level controls.

2. Connections:
   a. Inlet: 4: inlet grommet.
   b. Discharge: 1 ¼”

3. Tank: HDPE

4. Capacity: 150 gallon tank, 1500 gallons per day, 15gpm@0psig / 11gpm@ 40psig / 7.8 gpm@80psig.

6. Pump with internal non-clog check valve.

7. 110v 60Hz single Phase thermally protected pump motor.

8. Basis of Design: Lift Station shall be E-One, Model DH151.

PART 3-EXECUTION

3.01 JOB CONDITIONS

A. Inspection:

Prior to beginning any of the operations of this section, become thoroughly familiar with the site, site conditions, and all portions of the work affected by the installation of the sewer system.

B. Discrepancies:

In the event of discrepancy, ambiguity, interference, or any other unanticipated condition which might impede timely installation under this section immediately notify the Owner's Representative and do not proceed in the questioned areas until resolution or clarification has been obtained.

C. Survey:

The Contractor shall be responsible for all construction surveying of underground sewer pipe utilities. Construction surveying shall include offset hubs and stakes set for each manhole, cleanout and all other appurtenances and grade breaks shown on the Plans or as indicated by the Owner's Representative.

3.02 INSTALLATION

A. TRENCH EXCAVATION AND BACKFILL

This work shall consist of all excavation and backfill required for pipe installation, manholes and all other related work as specified in this section.

1. Excavation

All excavation shall be unclassified and the Contractor shall do all excavation of whatever substances encountered, including rock and frozen ground, to the depth shown on the plans. where distinct surface layers are encountered, of topsoil, clay, silt, peat or other materials undesirable for inclusion in the backfill, these materials shall be segregated into separate stockpiles during the excavating.

Lines and grades shall be carried by means of transit and level, or approved equivalent. Whenever there is an indication of a discrepancy in grade, the Owner's Representative shall be consulted and the grade changed or approved before proceeding with work.

a. Clearing:

The Contractor shall clear all brush, trees, debris, trash, garbage, etc. from right-of-way or easement areas as is necessary to accomplish the sewer construction and to prevent such extraneous materials from being utilized in the backfill. All areas shown on the plans to be cleared shall be cleared to the limits indicated.

b. Removal of existing lift station:

There is an abandoned lift station where the new lift station it to be installed. The abandoned lift station has been filled in with sand or cement/sand slurry. The abandoned lift station shall be disconnected from the existing inlet and discharge lines and shall be removed and disposed of offsite. Care shall be taken to avoid damage to the existing discharge line which is to be reconnected to the new lift station.

c. Trench Section:

Unless otherwise approved by the Owner's Representative, the maximum width of the trench for pipe up to thirty-three (33) inches in diameter shall be O.D. + 18 inches; for pipe over thirty-three (33) inches in diameter, the maximum width shall be O.D. + 24 inches. The width of the trench shall be six (6) inches minimum on each side of a pipe joint.

d. Utilities:

All water lines, sewers, gas lines, or other utilities encountered in excavation of the trench or appurtenances shall be supported and protected from injury throughout the entire construction period until adequate backfill has been completed.

e. Water Removal:

Ground adjacent to the excavations shall be graded to prevent water from running into the trench. The Contractor shall remove, by pumping or other means, any water accumulated in the excavation which is detrimental to the proposed installation of the sewer lines, appurtenances and structures.

f. Bracing and Shoring:

The Contractor shall, at his own expense, do all bracing, sheathing, shoring and underpinning of the excavation walls and adjacent structures and shall perform such bracing, shoring, etc., for all subsurface utilities and structures and all surface utilities and structures.

g. Unauthorized Excess Excavation:

All excavation below the required grade shall be backfilled with native material and thoroughly compacted. All unauthorized excess excavation and backfill shall be at the expense of the contractor.

h. Limit of Open Trenches:

The total length of open trench per trenching machine shall not exceed eight hundred (800) feet.

2. Backfill.

After the pipe lines and appurtenances have been properly completed and inspected, the trenches and appurtenant structure shall be backfilled. Backfill from six (6) inches below the pipe to one (1) foot of cover over the top to the pipe shall be of approved screened native material or equivalent and shall contain no large rocks or frozen clods. Any large rocks or frozen clods occurring in the material used for select backfill shall be removed by hand picking, prior to backfilling. Approved selected backfill may be material from the excavation or material selected from the sides of the trenches. Backfill to one (1) foot of cover over the top of the pipe shall be evenly placed and carefully deposited under, around and over the pipe in maximum six (6) inch layers which shall be thoroughly compacted. The remainder of the backfill shall be free of extraneous material such as trees, stumps, trash and large boulders. Backfill shall be placed in lifts and compacted in a manner such that 95% of maximum density is obtained.

B. PIPE LAYING

1. All pipe shall be laid with Class C Bedding unless otherwise indicated on the plans or ordered by the Owner's Representative. Pipe laying shall in all cases proceed upgrade with the spigot ends of the pipe pointing in the direction of the flow. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe. The alignment of the installed pipe shall appear straight to the naked eye and shall be such that a full circle of light can be seen between manholes, etc., when sighting along all points of the pipe circumference. Each section of pipe shall be handled carefully and placed accurately; the spigot end shall be fully inserted. Care shall be exercised to avoid over-insertion. Each section of pipe shall be properly supported to insure true alignment and an invert which is smooth and free from roughness or irregularity.

2. At all times, when work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no undesirable substances will enter the pipe or fittings.

3. Where a project outfalls into an existing sanitary sewer construction of the physical connection to the existing line shall be delayed until all upstream under-ground construction, including exfiltration testing, is complete and accepted unless special permission is granted by the Owner. Care shall be exercised during construction, flushing and testing operations of this connecting link to assure that water is not diverted into any portion of a sanitary sewer line in service or a sanitary sewer line

which is not a portion of the construction project for which the Contractor is responsible.

4. Pipe Grade and Alignment:

a. Variance of individual pipe sections from established line and grade shall not be greater than those listed in the table below, providing that such variance does not result in a level of reverse sloping invert.

Diameter Inches	Tolerance Feet	Diameter Inches	Tolerance Feet
4 to 8	0.03	14	0.04
10	0.03	16	0.04
12	0.03	18*	0.05

*note: For all pipe over 18 inches diameter, tolerance not to exceed 0.05 feet.

b. Wherever work is in progress, the Contractor shall have instruments such as transits, levels, laser devices, and other facilities for transferring grades from offset hubs or for setting of batter boards or other construction guides from the control points and bench marks provided to the contractor by the owner. He also shall have in his employment a man who is qualified to use such instruments and who shall have the duty and responsibility for placing and maintaining such construction guides.

5. Test of Workmanship

a. General. The Contractor shall clean and flush all sanitary sewer pipe after installation. All sand, debris, mortar and other foreign materials shall be removed from sanitary sewer pipe and manholes prior to testing or final inspection.

b. Exfiltration Test Using Water. On completion of a section of sanitary sewer between manholes or otherwise, the Owner will require that the ends of all pipe be plugged, including service connections, and the pipe subjected to a hydrostatic pressure.

i. A minimum head of six (6) feet of water above the crown at the upper end of the test section shall be maintained for a period of four (4) hours during which time it will be presumed that full absorption of the pipe body has taken place and thereafter for a further period of one (1) hour for the actual test of leakage. During this one-hour period the measured loss shall not exceed the rate given in the following formula:

E=0.004DL
E=Allowable leakage in gallons per hour
D=Nominal inside diameter of pipe in inches
L=Length of pipe being tested in feet

ii. Exfiltration in greater amounts than shown in the table will be cause for rejection of the sanitary sewer and all repairs necessary to meet these requirement and/or retesting will be at the expense of the Contractor.

C. LIFT STATION INSTALLATION

1. The Lift Station access manhole covers shall be brought to the grades shown on the Plans unless otherwise approved by the Owner's Representative. Manhole rings shall be set in a full bed of mortar and made secure.

2. Manholes shall be installed at the locations shown on the plans such that inlet and outlet leads enter radially at the invert elevations required to match existing discharge line and new inlet line. The base section shall be set plumb on a prepared surface.

3. Connection to Existing Sewer. Connection to existing sewer shall be made as shown on the drawings. Special care shall be taken to avoid damaging existing pipes and cables. The existing pipe shall be extended to the new lift station as necessary with materials and fittings similar to the existing pipe. Adaptor fittings shall be installed as required.

4. Backfill. Material that is excavated from around the existing lift station may be used as backfill provided that it is not excessively moist, and may be properly placed an compacted. If excavated material is not suitable for use as backfill, provie non frost susceptible, Type IIA. Place backfill around new lift station in 1 foot lifts and compact to 95% of maximum dry density.

5. Provide (4) 4” diameter x 8’ long steel pipe bollards, symmetrically placed in 5’ diameter circle around lift station. Embed bollards 5’ below grade. Fill bollards with concrete. Prime and paint with 2 coats polyurethane ‘Safety Yellow’.

3.03 CLEANING UP

A. General

During the time that the work is in progress, the Contractor shall make every effort to maintain the sites in a neat and orderly condition. All refuse, broken pipe, excess fill material, cribbing, etc. shall be removed as soon as practicable.

The pipe laying shall not progress ahead of backfilling of ditches more than 400 feet. Should the cleanup not be maintained in a prudent manner, the Owner may cause the work to stop and payments to be withheld until the "cleanup" portion of the work had been done to the satisfaction of the Owner.

B. Sanitary Sewers

The Contractor shall flush and clean all sanitary sewers. All sand, debris mortar and foreign material shall be removed from the sanitary sewers and manholes. All cleanup work including repair to private property, and/or removal of debris or spoil from private property, will be finished before Final Inspection.

END OF SECTION

SECTION 03300
CAST IN PLACE CONCRETE

PART 1-GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Cast in place concrete required for this project is shown in the Drawings and includes, but is not necessarily limited to footings, foundation walls, slabs on grade, floor slabs, concrete tanks, concrete reinforcement, curbs and sidewalks.

2. Resurfacing and Repair of Concrete.

1.02 QUALITY ASSURANCE

A. Codes and Standards:

In general, all concrete work on this Project shall comply with current American Concrete Institute Manuals of Concrete Practices. Comply with all applicable codes and regulations and pertinent portions of the following referenced standards and other standard publications referenced in subsequent articles, which shall become a part of these specifications to the extent of their applicability to the particular product, system, assembly, or item specified:

1. ACI 301: "Specifications for Structural Concrete for Buildings".
2. ACI 302: "Guide for Concrete Floor and Slab Construction."
3. ACI 304: "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete."
4. ACI 311: Recommended Practice for Concrete Inspection".
5. ACI 315: "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
6. ACI 318: "Building Code Requirements for Reinforced Concrete".
7. ACI 347: "Recommended Practice for Concrete Formwork".

B. Conflicts:

In the event of conflict or inconsistency between or among referenced standards and any provisions of this specification, or other Contract Documents, the most stringent requirement shall prevail, and shall be enforced.

C. Testing:

1. Conduct tests of the concrete during construction in accordance with ACI 301. Submit results of tests for approval. Remove and replace concrete which fails to achieve minimum 28 day compressive strength shown on the Drawings, at Contractor's expense.
2. Test all concrete for footings, slabs, walls, curbs and sidewalks.
3. Reject concrete which fails to meet specified criteria for slump, air content, and temperature.
4. Contractor shall notify owner at least 48 hours prior to placement of concrete. Owner will be responsible for concrete testing.

D. Frequency of Testing:

1. Slump tests - ASTM C-143:
   Perform one test for each set of compressive strength test specimens.
2. Air content - ASTM C-231:
   Perform one test for each set of compressive strength test specimens.
3. Concrete temperature:
   Test hourly when ambient air temperature is $40^{O}F$ and below, and each time a set of compression test specimens are made.
4. Compression test specimen - ASTM C-31:
   One set of three standard cylinders for each compressive strength test. Field cure.
5. Compressive strength tests - ASTM C-39:
   Samples for strength tests for each class of concrete placed each day shall be taken not less than one a day nor less than once for each 20 cu. yd. of concrete, nor less than once for each 1,000 sq. ft. of surface area for slabs.

1.03 SUBMITTALS

Make all submittals in conformance with applicable section of these specifications. Conform with ACI 315 for nomenclature and conventions used in shop and placement drawings:

A. Concrete Materials:

Submit concrete design specification, laboratory test results, and materials list showing source and gradation of all aggregates, type and brand of portland cement, admixtures source and quality of mixing water, and other aspects of the concrete design.

B. Reinforcing Steel:

Provide Materials Certificates signed by manufacturer and Contractor certifying that each material item complies with, or exceeds, specified requirements.

C. Admixtures:

Provide Materials Certificates signed by manufacturer and Contractor certifying that each material item complies with, or exceeds, specified requirements and that chloride content complies with specification requirements.

D. Provide product literature for epoxy patching mortar.

1.04 PRODUCT HANDLING

A. Delivery and Storage:

Do not permit delivery of any of the products of this section to the project site until proper facilities, away from traffic, are available for their proper storage and which will permit sorting and handling without endangering the materials themselves or materials for installations of other sections. Store all reinforcing steel on wood dunnage to keep it from direct contact with the ground surface.

B. Repairs & Replacements:

In the event of damage make all repairs and replacements necessary to restore to undamaged condition and do not proceed in those areas until all repairs have been made. Repairs and replacements shall be subject to approval of the Contracting Agency and shall be accomplished at no additional expense to the Owner.

1.05 PROJECT CONDITIONS

A. Protection Against Freezing:

Cover work with temporary or permanent cover as required to protect concrete against possibility of freezing during placement of concrete, and for at least 14 days after placement of concrete.

PART 2-PRODUCTS

2.01 FORMS

A. Material:

Provide new, except as permitted in PART 3 of this section for re-use:

1. Plywood:
   U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill oiled and edge sealed, with each piece bearing legible grade mark of a recognized and approved inspection agency.
2. Dimensional lumber:

B. Hem-Fir number two grade, seasoned.

Ties and Spreaders:

1. Provide type providing minimum working strength of 3,000 lbs. when fully assembled, which does not leave open holes through the concrete, and which permits neat and solid patching.
2. Metal shall not be closer than 3/4" to surface when forms are removed.
3. Do not use wire ties and wood spreaders.
4. Ties shall have rubber water stops installed prior to installation.
5. Provide ties with a minimum breakback distance of ¾".

C. Alternate Forming Systems:

Alternate systems will be considered upon submittal.

D. Coatings and Parting Compounds:

Provide commercial fabrication that will not bond with stain or adversely effect concrete surfaces and will not impair subsequent treatment of concrete surfaces to be cured with water or compounds conforming to FSTT-3-001657.

E. Joint Fillers:

Provide premolded, resilient, waterproof, compressible type with minimum 75% recovery conforming to FS HH-F- 341E, Type II; 1/2" thick for interior joints and 1/2" thick for exterior walks.

F. Other Materials:

Provide all other materials required for complete installation as selected by Contractor subject to the approval of the Contracting Agency.

2.02 REINFORCING

All concrete reinforcement shall be new, free from rust, and shall comply with the following reference standards:

A. Reinforcing Bars:

Provide ASTM A-615 grade 40 or 60 except where noted otherwise.

B. Wire:

Provide ASTM A-82 #16 double annealed iron wire.

C. Welded Wire Fabric:

Provide ASTM A-185 in Flat Sheets.

D. Accessories and Supports:

Provide supports, bolsters, chairs, spacers and other devices and accessories conforming to recommended Concrete Reinforcing Steel Institute (CRSI) practices. Provide galvanized accessories within 1-1/2" of surface of concrete with plastic tip chairs for exposed finish surfaces. Concrete dobie or other block, brick, or wood supports will not be permitted, except where specifically noted.

E. Welding Electrodes:

Conform to AWS Code D12.1.

F. Other Materials:

Provide all other materials, not specifically described but required for a complete and proper installation of concrete reinforcement, as selected by the Contractor, subject to the approval of the Contracting Agency.

2.03 CONCRETE

A. General:

Concrete mixes shall be designed to produce the tabulated properties below, and shall be subject to the approval of the Owner's Representative.

B. Footings, Foundations, Walls, Beams and Slabs:

1. Provide concrete having 4**,000 psi** minimum 28 day compressive strengths for footings, walls, slabs, sidewalks, curb and gutter and other concrete.
2. Provide concrete with maximum aggregate of 3/4" for all concrete except concrete for exposed aggregate surfaces, which shall have a maximum aggregate size of 3/8".
3. Slump at placement shall conform to the following:

Location	Concrete Without Super Plasticizer	Concrete with Superplasticizer
a. Slab on Grade	3 inches	6 to 9 inches
b. Footings, Walls, Slabsand Beams	4 inches	6 to 9 inches

4. Entrained air content at placement shall be 6% with 1.5% tolerance.

C. Admixtures

1. Superplasticizer: ASTM C494-Type F, Rheobuild 3000 FC, 8-10 oz/100 lb of cement.

2. Water Reducing: ASTM C-494 Type F, Polyheed 997, 5-6 oz/100# cement.

3. Air Entraining: ASTM C260, Masterbuilders AE-90 or approved equal, if needed to achieve target air entrainment level.

4. Fiber Reinforcement: 'Hi-Tech', ¾" long fibers, 1.5 lb per cubic yard of concrete.

D. Cement:

Provide portland cement conforming to ASTM C-150, type I or II the product of a single manufacturer.

E. Aggregates:

1. Provide aggregates conforming to ASTM C-33, current edition, except as expressly permitted by the Contracting Agency.

2. Course aggregate size shall not exceed one-fifth the narrowest dimension between forms, one-third the depth of slabs, nor three-fourths the minimum clear spacing between individual bars or bundles of bars.

3. Fine aggregates shall be clean, sharp, natural sand, free from loam, clay, lumps, alkali, organic matter, or other deleterious substances.

4. Aggregates shall be well graded, clean, hard gravel and coarse sand, non-frost susceptible material, and free of vegetable matter and coatings of silt or clay. The gradations shall be determined by standard laboratory sieves with square openings. Material retained on a No. 4 screen shall be classified as coarse aggregate, which shall conform to the requirements of AASHTO M-80 and have the following limits of gradation:

Sieve	COARSE AGGREGATE FOR PCC Percent Passing per AASHTO M43 /M80 And ASTM C33, Size #67
1”	100
¾”	90-100
½”	xx
3/8”	20-55
#4	0-10
#8	0-5
#200	0-1

All material passing a No. 4 sieve shall be classified as fine aggregate and shall conform to the requirements of AASHTO M-6 and have the following gradation:

FINE AGGREGATE FOR PCC

Sieve	Percent Passing per AASHTO M6 and ASTM C 33
3/8”	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-3

Fineness Modulus: 2.44-2.84

F. Slab Chemical Sealer:
Dayton Superior ‘Safe Cure & Seal.

G. Water:
Provide mixing water from an approved source, clean, fresh, and free of acids, alkalis, oil, organic or other deleterious matter.

H. Miscellaneous Inserts:
Provide ASTM A-36 steel.

I. Epoxy Grout:
Provide Master Builder's "Masterflow 713", Sonneborn "Ferrolith", or approved equal.

J. Joint Sealer:
Provide Grace "Daraweld-U Traffic Grade" or approved equal.

K. Latex - cement leveling compound - Laticrete 4237 or approved equal.
Provide a smooth trowel finish to accept finishes as scheduled.

L. Other Materials:
Provide all other materials not specifically described but required for a complete and proper concrete installation, as selected by Contractor and subject to the approval of the Contracting Agency.

M. Calcium chloride additives are not permitted.

2.04 EPOXY MORTAR

A. General:

Unitex Pro-Poxy 2500 multipurpose, high strength, non-shrink epoxy patching mortar. (Anchorage Sand & Gravel)

PART 3-EXECUTION

3.01 JOB CONDITIONS

A. Inspection and Cleaning:

1. Sweep existing slab as required to remove all loose sand, gravel, broken concrete and other debris prior to placing insulation or new concrete.
2. Examine the surface of areas to which the concrete work is to be applied and determine that prior work is complete, that all subgrades have been properly compacted and graded, that all slab embeds and insulation are in place, and that

all previous work is complete and ready for erection of forms, setting of reinforcement, and placement of concrete.

3. Surfaces to receive concrete shall be free from frost, ice, mud, and water. Forms shall be in place, cleaned, coated and adequately supported in accordance with 3.03 FORMWORK. Reinforcing steel shall be in place. Cleaned, tied, and adequately supported in accordance with 3.04 PLACING REINFORCEMENT. Transporting and conveying equipment shall be in-place, ready for use, clean and free of hardened concrete and foreign material. Equipment for consolidating concrete shall be at the placing site and in proper working order. Equipment and material for curing and protecting concrete from weather or mechanical damage shall be at the placing sit, in proper working condition and in sufficient amount for the entire placement.

B. Discrepancies:

In the event of discrepancy, ambiguity, interference, or any other unanticipated condition which might impede the timely execution of the work of this section, promptly notify the Contracting Agency and do not proceed in the area of discrepancy until all questions in regard thereto have been resolved.

C. Certificates:

Obtain written acknowledgment(s) from the subcontractors or installers of the formwork, reinforcement, and concrete placement that the substrates affecting their work have been examined and found satisfactory for subsequent operations. Such acknowledgments countersigned by the Contractor and delivered to the Contracting Agency prior to the final inspection, shall be a condition of the acceptance of the work of this section.

D. Admixtures:

1. Superplasticizers:
   a. Add at concrete plant only through equipment furnished and/or approved by admixture manufacturer.
   b. Equipment shall provide for easy and quick visual verification of admixture amount used for each dose.
   c. Discharge amount to be added to each load of concrete into separate dispensing container, measured verified as to amount, then add to concrete.
   d. Redosing of Concrete: Not permitted except when approved by inspection agency monitoring concrete quality and only after quality tests show this practice does not decrease the quality specified for concrete.

3.02 NOTICE

Notify the Owner's Representative at least 48 hours prior to beginning any pour of concrete, or 24 hours prior to closing any forms.

3.03 FORMWORK

A. Design:

Design forms to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure, so that they may be readily removed without impact, shock, or damage to in place concrete and adjacent materials.

B. Construction:

1. Construct forms to conform with ACI 347, to sizes, shapes, lines, and dimensions shown or as required to obtain accurate alignment, location, grades, and level and plumb work in finished structure. Forms shall be set straight, plumb and true to within 1/4" in 10' of length.
2. Provide for openings, offsets, recesses, linkages, keyways, moldings, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts and other features required to attain the required configuration.
3. Use materials selected to achieve the indicated finishes. Solidly butt joints and provide back up to prevent leakage of cement paste.
4. Fabricate for easy removal without hammering or prying against concrete surfaces. Provide crush plates where stripping might damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.
5. Where interior area of formwork is inaccessible, provide temporary openings for cleanout, inspection prior to concrete placement, and for final placement. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.
6. Chamfer exposed corners and edges as shown or required using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

C. Form Ties:

Use factory fabricated, adjustable length, removable or snap-off metal form ties, designed to prevent form deflection, and prevent spalling concrete surfaces upon

removal. Position ties so portion remaining within concrete after removal is at least 1-1/2" inside the concrete and which will not leave holes larger than 1" diameter in the concrete surface.

D. Coordination With Other Trades:

Provide necessary coordination with other trades to determine size and location of openings necessary for work of those trades. Accurately place and securely support items built into forms.

E. Cleaning & Tightening:

Thoroughly clean forms and adjacent surfaces receiving concrete. Remove chips, wood, sawdust, dirt, and other debris prior to placement of concrete. Retighten forms after concrete placement if required to eliminate mortar leaks.

3.04 PLACING REINFORCEMENT

A. General:

1. Comply with specified codes and standards and CRSI recommended placing practices for details and methods of placing reinforcement and supports.
2. Store reinforcing steel on wood dunnage above the ground at all times.

B. Cleaning:

Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. Positioning:

1. Support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
2. Place reinforcement to obtain the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold in position during concrete placement. Set wire ties so ends are directed into concrete, not toward exposed surfaces.
3. Do not place reinforcing bars more than 2" beyond the last leg of continuous bar support. Do not use supports as bases for runways for conveying equipment or similar construction loads.

4. All reinforcing bars shall be securely tied in the correct position prior to placing concrete unless the contractor has written approval from the Owners representative to deviate.

D. Welded Wire Fabric:

1. Install welded wire fabric. Mats only. No rolled material will be acceptable. Lap adjoining mats a minimum of one and one half meshes and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps.
2. Support welded wire fabric with plastic chairs at intervals not exceeding 4 feet measured along both directions of the mesh. Support welded wire fabric to the middle of the slab thickness.
3. The practice of lifting the welded wire fabric off the subgrade as concrete is poured will be allowed only if after lifting the wire it is supported per Item D, 2 above.

3.05 JOINTS

A. Construction Joints:

1. Locate and install construction joints which are not shown on the drawings so as not to impair the strength and appearance of the structure, subject to the approval of the Contracting Agency.
2. Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.
3. All vertical and horizontal construction joints shall be water blasted or sand blasted to remove all laitance and loose material, and achieve a surface roughness amplitude of +/-1/8" prior to subsequent concrete placement.
   a. High Pressure water Jet – Use a stream of water under a pressure of not less than 3000 psi for cutting and cleaning. Its use shall be delayed until the concrete is sufficiently hard so that only the surface skin or mortar is removed and there is no undercutting of exposed aggregate particles. If the water jet is incapable of a satisfactory cleaning, the surface shall be cleaned by sandblasting
4. Concrete Surfaces to which other concrete is it be bonded shall be abraded in an approved manner that will expose the sound aggregate uniformly without damaging the concrete. Power wash to remove laitance and loose particles. Surfaces shall be thoroughly washed and shall be moist but without free water when concrete is placed.

B. Keyways:

Provide keyways at least 1-1/2" deep in all construction joints in walls, slabs, and between walls and footings; approved bulkheads designed for this purpose may be used for slabs.

C. Contraction Control Joints:

1. Construct preformed contraction control joints in slabs to form panels of patterns as shown on the drawings.

2. Provide “ZIPSTRIP” control joints in slabs. Provide 2” ZIPSTRIP at 8” nominal floor slab in a pattern as shown on the drawings , maximum 15’ o/c.

D. Expansion Joints.

1. Expansion joints shall be placed where shown on the Drawings.

2. Expansion joint material shall conform to the requirements at ASTM D-994 and AASHTO M-33.

3. Expansion joint material shall extend the full width of the structure and shall be cut to such dimensions that the base of the expansion joint shall extend to the subgrade and the top shall be depressed not less than one-quarter (1/4) inch nor more than one-half (1/2) inch below the finished surface of the concrete.

4. The material shall be of one (1) piece in the vertical dimension and shall be securely fastened in a vertical position to the existing concrete face against which fresh concrete is to be poured.

5. After the concrete has set, the expansion joints shall be filled flush to the finish concrete surface with asphalt cement, two hundred (200) to three hundred (300) penetration. Application temperature of the sealing asphalt shall be between 250 degrees and 350 degrees Fahrenheit.

6. Sealing asphalt shall be applied by pouring from a bucket with a V-shaped spout, equipped with a positive shutoff to prevent spilling or dripping of asphalt. Before sealing, the joint shall be cleaned of all dirt, gravel, concrete mortar or other extraneous material. Sealing shall be done in a neat workmanlike manner. Sloppy work in sealing of expansion joints will not be tolerated.

3.06 EMBEDDED ITEMS

Set and build into the work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast in place concrete. Use approved setting drawings,

diagrams, instructions, and directions provided by suppliers of the items to be attached thereto. No concrete shall be placed prior to installation of all embedded items, and an inspection of the installation.

Before Placement of concrete determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Conduit and other embedded items shall be free oil and other foreign matter such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids.

3.07 PREPARATION OF FORMS

Coat the contact surfaces of forms with an approved coating compound before placement of concrete, and according to manufacturer's instructions. Thin only with approved thinners according to manufacturer's recommendations. Do not permit application of excessive coating compound or allow it to accumulate in the forms or come into contact with concrete surfaces against which fresh concrete will be placed.

Coat steel forms with a non-staining, rust preventative form oil or otherwise protect against rusting. Rust stained steel formwork will not be acceptable and will be rejected.

3.08 CONCRETE PLACEMENT

A. Pre-placement Inspection:

Before placement of concrete, inspect the formwork and reinforcement and verify that all prior work has been completed to the point that placement of the concrete may be executed in complete conformance with the original design, the approved submittals and the referenced standards. Determine that all embedded items, supports, backing, and other provisions for items supported by or attached to the concrete have been provided for. Coordinate with other trades whose work will be affected by the operations of this section. Obtain all written acknowledgments specified in 3.01C above.

B. General:

Comply with ACI 304 and as herein specified.

1. Deposition: Deposit continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as specified in 3.05. Deposit concrete as nearly as practicable to its final location to avoid segregation due to re-handling or flowing.

2. Consolidation: Immediately after placing, consolidate each layer of concrete by internal vibrators, except for slabs 4” thick or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; keep a spare vibrator at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 10,000 vibrations per minute, and amplitude of at least 0.025 inch, and the head diameter shall be appropriate for the structural member and concrete mixture being placed. Insert vibrators vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a reasonable amount. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then withdrawn slowly while operating. Form vibrators shall not be used unless specifically approved and unless forms are constructed to withstand their use. Vibrators shall not be used to move concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Excessive vibration of lightweight concrete resulting in segregation or flotation of coarse aggregate shall be prevented. Grate tampers “jitterbugs” shall not be used.

C. Footings and Walls:

1. Deposit in forms in horizontal layers not exceeding 24" in depth and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while previous layer is still plastic to avoid cold joints. Where vertical drop is more than three feet, elephant trunks shall be used.
2. Consolidate by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309 to suit type of concrete and project conditions.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the placed layer and at least 6" into the previous layer. Do not insert vibrators into lower layers of concrete that have begun to set. Limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.

D. Slabs:

1. Deposit and consolidate in a continuous operation within the limits of construction joints, until the placing of a panel or section is completed.
2. Consolidate by previously specified methods, working concrete around reinforcement, embedded items, and into corners.
3. Bring slab surfaces to the correct level with a straight edge and strikeoff. Use bull floats or darbies to smooth the surface, leaving it free of humps and hollows. Do not sprinkle water onto the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.
4. Maintain reinforcing in the proper position during all placement and consolidating operations.

E. Sidewalks, Curb and Gutters:

Concrete shall be handled from transport vehicle to the place of final description in a continuous manner as rapidly as practicable. The rate of placement shall not exceed the rate at which the various placing and finishing operations can be performed in accordance with these specifications. Where the vertical drop is more than three (3) feet, elephant trunks shall be used.

If concrete is to be placed by the extruded method, the Contractor shall demonstrate to the satisfaction of the Contracting Agency that the machine is capable of placing a dense, uniformly compacted concrete to exact section, line and grade.

F. Cold Weather Placement:

Protect placed concrete from physical damage or reduced strength which could be caused by frost, freezing action, or low temperatures, in compliance with ACI 306 and as follows:

1. When ambient temperature has fallen to or is expected to fall below 40^{O}F., uniformly heat water and aggregates prior to mixing to maintain mixture temperature not less than 50^{O}F. and not more than 80^{O}F. at point of placement.
2. Do not use frozen materials or materials containing ice or snow and do not allow concrete to placed on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other material containing anti-freeze agents or chemical accelerators unless specifically permitted by the Contracting Agency for the particular situation encountered.

3.09 FINISHING FORMED SURFACES

A. Rough Form Finish:

For formed surfaces not exposed to view in the finish work or by other construction, unless otherwise indicated, provide a surface having the texture imparted by the form facing material used with tie holes and defective areas repaired and patched and fins and other projections chipped down and rubbed off.

B. Smooth Form Finish:

For formed surfaces exposed to view, or that are to be covered with a coating or covering material applied to or bonded directly to the concrete, such as waterproofing, damp proofing, painting or other similar system, provide a surface obtained by selecting form facing material, arranged symmetrically orderly with a minimum of seams. Repair and patch defective areas with fins and projections completely removed and smoothed.

C. Smooth Rubbed Finish:

Provide smooth rubbed finish which has received smooth form finish treatment not later than the day after removal of the forms. Moisten the surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is attained. Do not apply cement grout other than the created by the rubbing process.

D. Grout Cleaned Finish:

Provide grout cleaned finish as scheduled to surfaces which have received smooth form finish by combining one part of portland cement to 1-1/2 parts fine sand by volume, and mixing with water to the consistency of thick paint. Blend standard portland cement and white portland cement in amounts determined by trial patches so that final color of dry grout will closely match adjacent surfaces. Thoroughly wet concrete surfaces and apply grout immediately to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

E. Related Unformed Surfaces:

At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching the adjacent surface. Continue the final surface treatment uniformly across adjacent informed surfaces unless otherwise indicated.

3.10 SLAB FINISHES

A. Scratch Finish:

Where scheduled or shown provide scratch finish on monolithic slab surfaces that are to receive topping or mortar setting beds for tile, terrazzo, or other bonded cementitious finishes.

After placement of slab, plane surface to a tolerance not exceeding 1/4" in 24". Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, rakes, or brooms.

B. Float Finish:

Apply float finish to monolithic slab surfaces that are to receive trowel finish and other finishes described in subsequent paragraphs, and surfaces which are to be covered by membrane or elastic waterproofing, roofing, or other finishes as scheduled.

After screeding and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit floating of surface. Consolidate surface with power or hand floats or both, using hand floats in small or inaccessible areas. Float surface to a tolerance not exceeding 1/4" in 10' when tested with a 10' straight edge. Cut down high spots and fill in low spots by floating. Do not apply cement or cement and sand mixture for filling in, use only grout removed from high spots. Uniformly slope to drains. Immediately after leveling refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish:

Apply trowel finish to slab surfaces that are to be exposed to view and surfaces that are to be covered by resilient flooring, paint, or other thin-film finish systems.

After floating, begin first troweling operation with power driven or hand trowels. Begin troweling when surface produces a ringing sound as trowel is moved over surface. Hand trowel as necessary to obtain a smooth surface free of trowel marks and of a uniform texture and appearance, and with a tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge.

D. Broom Finish:

Apply broom finish to exterior and interior platforms, steps, stoops, walks, and ramps, and elsewhere as shown or scheduled.

Immediately after trowel finishing, slightly roughen surface by brooming with a fiber bristle broom perpendicular to direction of travel. Coordinate final finish with Contracting Agency before application.

E. Chemical Hardener Finish:

Apply chemical hardener finish to interior floors, after complete curing and drying of the concrete surface. Chemical hardeners shall be coordinated with adhesive to be used in conjunction with other flooring materials.

1. Apply uniformly, using a garden-type sprayer, industrial sprayer or roller.
2. Do not add a thinner.
3. When using a short-nap roller, if the rolling action starts to create tiny bubbles on the surface, slow down the rolling motion.
4. Do not overlap; avoid thick applications.
5. Do not "pull" the material when applying.
6. Application rate 350 S.F./gallon.

F. Exposed Aggregate:

1. Provide exposed aggregate surface at locations indicated in the Drawings.

2. Concrete with a maximum slump of 3" shall be used in exposed aggregate areas. Air entrainment shall be in accordance with specifications.

3. Aggregate shall be 3/8" maximum.

4. Screed concrete to proper level. Do not jitterbug or tamp concrete.

5. Floating shall be limited to amount required to ensure that aggregate is surrounded and only slightly covered by mortar, leaving no holes in the surface.

6. Shortly after floating, Masterbuilders Confilm surface retarder may be sprayed over the surface to allow sufficient time to elapse before exposing operation begins.

7. Exposing operation should begin as soon as brushing and hosing of the surface can be done without over-exposing or dislodging the aggregate. Finishers are to stay off the newly exposed surface to avoid breaking the aggregate bond. If it is necessary for finishers to move about on the newly exposed surface, kneeboards are to be used. Kneeboards shall be gently placed on the surface, and shall not be slid or twisted when on the surface.

8. Exposed aggregate slabs shall be cured thoroughly.

3.11 CURING & PROTECTION

A. General:

Protect freshly placed concrete from premature drying and excessive cold, and maintain without drying at a relatively constant temperature for a period of time necessary for hydration of cement and proper hardening. Conduct all curing operations in compliance with ACI 301 & ACI 308.

1. Initiate curing process as soon as free water has disappeared from the concrete surface. Weather permitting, keep continuously moist for not less than 72 hours.

2. Begin final curing procedures immediately following initial curing and before concrete has dried.

3. Continue curing for a minimum of 10 days after initial placement unless otherwise permitted in writing by Contracting Agency.

4. Avoid rapid drying at end of curing period.

5. Maintain concrete surface temperature at least 50^{O}F. for 7 days after following placement of concrete. At least once each shift and once per day on non-work days, an inspection shall be made of all areas subject to cold-weather protection. Any deficiencies shall be noted, corrected, and reported.

B. Curing Methods:

1. Moisture Curing:
   a. Keep concrete surface continuously wet by covering with water or continuous fog spray.

   b. Cover concrete surface with specified absorptive cover, thoroughly saturated with water, and keeping continuously wet. Place absorptive cover to provide coverage at edges, with 4" lap over adjacent absorptive covers.

2. Moisture-cover Curing:
   Cover concrete surfaces with moisture retaining cover, placed in widest practicable width with sides and lapped a minimum of 3" and sealed with waterproof tape or adhesive. Immediately repair any holes or tears occurring during curing period using cover material and waterproof tape.

3. Membrane Curing:
   Do not use membrane curing compounds on surfaces which are to be covered with a coating material applied directly to the concrete such as liquid floor sealer

waterproofing, damp proofing, membrane roofing, flooring paint, or other coatings unless specifically approved by Contracting Agency in writing.

a. Apply membrane forming curing compound to concrete surfaces as shown as final finishing operations are complete (within 2 hours).

b. Apply uniformly in continuous operation by power spray or roller according to manufacturer's instructions.

c. Recoat areas which have been subject to rainfall within 3 hours after application.

d. Maintain continuity of coating and repair damage occurring during curing period.

C. Formed Surfaces:

Cure formed surfaces including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above as applicable.

D. Unformed Surfaces:

Cure formed surfaces such as slabs, floor topping and other similar flat surfaces by application of the approved curing method.

Use moisture retaining curing method for surfaces which are to receive liquid floor hardener or finish flooring, unless otherwise specifically directed in writing by the Contracting Agency.

3.12 FORM REMOVAL

A. Non-Supporting Forms:

Formwork not supporting concrete, such as sides of footings, may be removed after cumulatively curing at not less than 50^{O}F. for a minimum of 24 hours after placement, provided concrete has sufficiently hardened not to be damaged by removal operations, and providing curing operations are maintained.

B. Supporting Forms:

Formwork supporting weight of concrete such as beam soffits, joints, slabs and other similar structural elements shall not be removed in less than 14 days, and not until design minimum compressive strength for 28 days has been attained, as determined by testing of field cured specimens representative of actual location of the members in question

C. Metal decking forms shall be left in place.

3.13 RE-USE OF FORMS

Re-use of forms will be permitted only under the following conditions, subject to the approval of the Contracting Agency in each instance:

A. Clean and repair all contact surfaces to achieve capability equal to that of new forms.

B. Split, frayed, delaminated, or otherwise deteriorated facing or supporting materials will not be permitted.

C. Apply new coating compound to contact surfaces as specified for new work.

D. Where forms are extended for successive placement, thoroughly clean all surfaces and tighten to close joints. Align and secure joints to avoid offsets.

E. Do not use "Patched" forms for expressed surfaces unless specifically permitted in writing by Contracting Agency in each particular instance.

3.14 SURFACE REPAIRS

A. General:

Repair and patch defective areas with cement mortar immediately after removal of forms, but only when acceptable to Contracting Agency.

1. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete, but in no case greater than 1".

2. Make edges of cuts perpendicular to the concrete surface.

3. Dampen the area to be patched with water and brush coat with neat cement grout or proprietary bonding agent.

B. Exposed to View Surfaces:

1. Blend white portland cement and standard portland cement so that when dry patching mortar will match color of surrounding surface. Provide test areas at inconspicuous location to verify match.
2. Compact mortar in place and stake off slightly higher than surrounding surface.
3. Apply appropriate finish as provided in 3.09.

C. High Areas:

Correct high areas by grinding, after concrete has cured at least 14 days.

D. Low Areas:

Correct low areas during or immediately after completion of surface finishing operations by cutting out the low area and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used upon approval of the Contracting Agency.

E. Other Repairs:

1. Repair defective areas, except random cracks and single holes not exceeding 1" dia. by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete, and brush with neat cement grout coating or concrete bonding agent. Mix patching concrete of same materials to provide concrete of the same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

2. Repair isolated random cracks and single holes not over 1" in dia. by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose cement grout coating or concrete bonding agent. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing #16 screen, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

F. Other Methods:

Repair methods not specified may be used, subject to the approval of the Contracting Agency.

SECTION 05100
STRUCTURAL STEEL FRAMING

PART 1-GENERAL

1.01 DESCRIPTION

A. Work Included:

Structural metal framing for this Work is indicated in the Drawings and includes but is not necessarily limited to:

1. Beams
2. Bases
3. Structural Steel Accessories
4. Columns

B. Related Work Described Elsewhere:

1. Rough Carpentry: Section 06100

1.02 QUALITY ASSURANCE

A. Qualifications of Suppliers and Personnel:

1. For the fabrication of the structural steel employ only a firm regularly established in the fabrication of structural steel.
2. For the erection of the structural steel employ only a firm regularly established in the erection of structural steel.
3. For welding of structural steel, (except for welds which do not carry calculated stresses) employ only welders who are currently qualified as prescribed in "Qualification Procedure" of the American Welding Society.
4. Credentials of welders are to be presented to the Owner's Representative prior to work starting. Credentials to include current welders certificate indicating type of test, position of welds, etc.

B. Codes and Standards:
In addition to complying with all pertinent codes and regulations, comply with:

1. "Specifications for the Design Fabrication and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.

2. "Code for Welding in Building Construction" of the American Welding Society.

1.03 SUBMITTALS

Provide certificates of compliance with referenced standards, and certification of selected fabricator's and erector's qualifications. Submit professional shop drawings and an erection plan to the owners representative for review.

1.04 PRODUCT HANDLING

Do not deliver any of the structural steel to the jobsite until an secure area away from traffic is available for its storage, permitting its sorting and handling without endangering other stored materials. Take all measures necessary to protect the structural steel from damage and to protect the installed work and materials of all other trades. Store all steel on wood dunnage to keep it from direct contact with the ground surface.

In the event of damage to either the structural steel, or to other materials or work, make all repairs and replacements necessary to restore the original undamaged conditions. Repairs and replacements shall be subject to the approval of the Architect and shall be accomplished at no additional expense to the Owner.

PART 2-PRODUCTS

2.01 STRUCTURAL STEEL

A. Shapes and Plates:
Provide steel plates and shapes conforming to ASTM A-36, (Fy) = 36ksi.

B. Wide Flange Shapes:
Provide ASTM A992 min yield strength (Fy) = 50 ksi

C. Hollow Structural Sections:
Provide rectangular, square and round steel tubing complying with ASTM A-500, Grade B with yield strength (Fy) = 46 ksi.

D. Structural Pipe
Provide round steel pipe complying with ASTM A-53, with yield strength (Fy)=35ksi.

2.02 BOLTS AND NUTS

A. Machine and Anchor Bolts:

Comply with ASTM A-325.

2.03 SHEAR STUDS

A. Welded carbon steel 'Nelson Shear Connector Studs" or approved equal.

2.04 PRIMER PAINT

Provide primer paint which is compatible with finish coatings specified in Section 09900. Where no finish coating is specified, provide primer complying with FS TT-P-31D.

2.05 OTHER MATERIALS

All other materials, not specifically described but required for a complete and proper installation of structural steel shall be new, free from rust, first quality of their respective kinds, and subject to the approval of the Architect.

PART 3-EXECUTION

3.01 FABRICATION

A. General:

Fabricate all structural steel in strict accordance with the approved shop drawings and the referenced standards.

B. Shop Cleaning and Priming:

1. Shop paint all structural steel one coat except steel to be encased in concrete and surfaces requiring field welding.

2. Thoroughly clean all steel for concrete encasement.

3.02 WELDING

Unless Otherwise Specifically Noted:

A. Follow applicable portions of American Welding Society specifications in all welds.

B. Use ASTM A-233, E-60, or E-70 electrodes. Store electrodes in on site warming ovens at all times.

C. Make all finish welds 3/16" minimum.

D. Make all butt welds full penetration, using back up or chip and back weld.

E. Install shear studs in full compliance with manufacturer's recommendations and ICBO Evaluation Report 2614.

3.03 EXISTING STRUCTURAL STEEL AND

3.04 JOB CONDITIONS

Determine that all previous work is complete and ready for the erection of the structural steel. Utilize a professional surveyor to verify that all anchor bolts and embeds are ready for the erection of structural steel. Promptly notify the engineer and owners representative of discrepancies and do not proceed in the questioned areas until fully resolved.

3.05 ERECTION

Erect all structural steel in accordance with the original design and the approved submittals, all pertinent codes and regulations, and the referenced standards.

Align structural steel straight, true, square and plumb, and within a tolerance of 1 in 500.

No Erection shall take place until the owners representative has signed off on a well-developed erection plan.

After erection is complete, touch up all shop priming coats damaged during transportation and erection, and prime all field welds using same primer paint approved for shop priming.

END OF SECTION

SECTION 05500
METAL FABRICATIONS

PART 1-GENERAL

1.01 DESCRIPTION

A. Work Included:

1. Shop fabricated ferrous metal items, galvanized and prime painted.

2. Refer to Schedule at end of this Section.

B. Related Work Described Elsewhere:

1. Painting Section 09900

C. References:

1. American Society for Testing and Materials (ASTM):

a) A27-85 Steel Castings, Carbon, for General Application.
b) A36-84a Structural Steel.
c) A47-84 Malleable Iron Castings.
d) A53-86 Hot-Dipped, Zinc-coating Welded and Seamless Steel Pipe.
e) A167-84 Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip.
f) A307-86a Carbon Steel Externally Threaded Fasteners.
g) A123-84 Zinc-Coating (Hot-Dip) on Assembled Steel Products.
h) A500-84 Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
i) A510-82 General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel
j) C827-87 Early Volume Change of Cementitious Mixtures.
k) D1187-82 Asphalt-Based Emulsions for Use as Protective Coatings for Metal.

2. American Welding Society (AWS) :

a. D1.1 Structural Welding Code.

3. Federal Specifications (FS) :

a. TT-P-31 Paint, Oil: Iron Oxide, Ready Mix, Red and Brown.
b. TT-P-645 Primer, Paint, Zinc Chromate, Alkyd Type.

1.02 QUALITY ASSURANCE

A. Welder's Qualifications:

1. Perform shop and field welds by operators currently certified in tests as prescribed in AWS Qualification Procedure.

2. Submit proof of current certification for each welder employed on Project.

1.03 SUBMITTALS

A. Submit shop drawings under provision of Section 01340.

B. Indicate profiles, sizes, connections, attachments, reinforcing, anchorage, size and type of fasteners and accessories.

C. Include erection drawings, elevations and details where applicable.

D. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

PART 2- PRODUCTS

2.01 MANUFACTURERS

A. Steel Sections: ASTM A36.

B. Steel Tubing: ASTM A500, Grade B.

C. Steel Pipe: ASTM A53, Grade B, Schedule 40 as indicated.

C. Steel Rod: ASTM A510.

D. Steel Wide Flange Sections: ASTM A992

E. Fasteners:

1. Bolts, Nuts, and Washers: ASTM A307.
2. Lag Bolts: Square head type, FS FF-B-561.
3. Wood screws: Flathead carbon steel, FS FF-S-111.
4. Machine screws: Cadmium plated steel, FS FF-S-92.
5. Plain washers: Round carbon steel, FS FF-W-92.
6. Lock washers: Helical spring type carbon steel, FS FF-W-84.
7. Expansion Bolts: Parabolts, or acceptable substitute.

F. Concrete Inserts: Threaded or wedge type, galvanized castings. Furnish with bolts, washers and shims as required.

1. Malleable Iron: ASTM A47
2. Cast Steel: ASTM A27.

G. Non-Shrink Grout: ASTM C827, US Fire Star grout.

H. Welding Materials: AWS D1.1; type required for materials being welded.

I. Primer: FS TT-P-31, for shop application and field touch-up.

J. Touch-up Primer for Galvanized Surfaces: FS TT-P-645.

K. Protective Coating: Non-fibrated aluminum paint conforming to ASTM D1187, Type A.

L. Stainless Steel Plate: ASTM A167, Type 304.
L. Galvanized Coating: G90, hot dipped.

2.02 ANCHORING DEVICES

A. General: Unless otherwise indicated use self-drilling, flush type anchors for attachment of work to concrete and solid masonry. Diamond "Di-Ex" machine bolt anchors, Parabolt "Drop-Ins" or Phillip's "Red Head".

1. Use powder driven studs and pins only where load is acting in shear on anchor (parallel with surfaces), where there is no possibility of anchor's withdrawal, and where structural stability and strength are not impaired.

2. Design anchors to resist leverage vibration, and shock as conditions require.

3. Use anchors indicated, or where not otherwise indicated, use anchors having ultimate holding capacity in direction of applied load, based on manufacturer's published literature, equal to 4 times load to be supported. Verify loads with Owner's Representative.

2.03 FABRICATION

A. Verify dimension on site prior to shop fabrication.

B. Fabricate items with joints tightly fitted and secured.

C. Fit and shop assembly in largest practical section, for delivery to site.

D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.

F. Make exposed joints butt tight, flush, and hairline.

G. Furnish components required for anchorage of metal fabrications. Fabricate anchorage and related components of same materials and finish as metal fabrication, except where specifically noted otherwise.

2.04 FINISH

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Galvanize items to minimum 1.25 oz/sq ft. zinc coating in accordance with ASTM A123.

C. Do not prime surface in direct contact bond with concrete, or where field welding or sprayed fireproofing is required.

D. Prime paint scheduled items with one coat except two coats on surfaces inaccessible after assembly or erection. Change color of second coat to distinguish from first coat.

E. Stainless Steel: Polished and buffed.

PART 3- EXECUTION

3.01 PREPARATION

A. Obtain Owner's acceptance prior to site cutting or making adjustments not scheduled.

B. Clean and strip site primed steel items to bare metal where site welding is scheduled.

C. Make provision for erection loads with temporary bracing. Keep work in alignment.

D. Furnish items required to be cast into concrete with setting templates, to appropriate Sections.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion and defects.

B. Perform field welding in accordance with AWS D1.1.

C. After installation, touch-up field welds, scratched or damaged surfaces with primer and touch-up primer as applicable.

3.03 SCHEDULE

A. Provide items listed in Schedule and shown on Drawing with anchorage and attachments necessary for installation. Schedule lists principal items only. Refer to Drawing details for items not specifically scheduled.

B. Steel Wall Ladders: 3/8 x 2 in side rails 20 in. o.c. unless otherwise shown, rungs 1 in. diameter solid rod spaced 12 in. o.c., spaced from wall surface as indicated, with steel mounting brackets and attachments; galvanized finish.

C. Ledge and Shelf Angles and Channels and Plates not Attached to Structural Framing for Support of Metal Decking: Prime paint finish, unless otherwise indicated.

D. Lavatory counter support brackets as shown; A36 steel primed for field finish specified in Section 09900.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Rough carpentry work, including but not limited to the following:

1. Non-structural office partition framing up to 6' high, where occurs.
2. Miscellaneous furring and stripping for wall finishes
3. Plywood wainscot at Tipping Floor walls.
4. In wall wood blocking for support of accessories.
5. Plywood mounting boards for electrical and telephone equipment.
6. Fire Retardant treatment of wood blocking and sheeting where required by local code.

B. Coordination with appropriate sections of all requirements for backing and blocking.

1.2 RELATED SECTIONS

A. Section 06200 - Finish Carpentry: Casing, molding, trim and site fabricated casework.

1.3 REFERENCES

A. SPIB - Southern Pine Inspection Bureau.

B. WCLIB - West Coast Lumber Inspection Bureau.

C. WWPA - Western Wood Products Association.

D. APA - American Plywood Association.

E. AWPA - American Wood Preservers Association.

F. AWPB - American Wood Preservers Bureau

G. PS 1 - Construction and Industrial Plywood.

H. PS 20 - American Softwood Lumber Standard.

I. N.F.P.A. - National Design Specification for Wood Construction.

1.4 QUALITY ASSURANCE

A. All wood materials to bear a visible grade stamp, of agency certified by National Forest Products Association (N.F.P.A.).

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store in weather protected, ventilated areas with a constant, minimum temperature of 60 degrees F maximum relative humidity of 25 to 55 percent.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

A. Dimensions: Specified dimensions are nominal, actual dimensions to conform to PS 20.

B. Surfacing: Surface four sides (S4S), unless specified otherwise.

2.2 MATERIALS

A. Lumber: Provide new, sound and thoroughly seasoned lumber conforming to requirements of PS 20; graded in accordance with established Grading rules; fire retardant treated if required by code; of following species and grades:

1. Non-Structural Light Framing (less than 2 in thick): Hem-Fir (WCLIB or WWPA), SPF (WWPA) or Southern Pine kiln dried (SPIB); moisture content 19% maximum at time of dressing "S-DRY", or 15% maximum "MC-15" or "K-D"; graded as follows:

   a. General framing: No. 2 & Better.

   b. Plates, blocking, curbs, and nailers:

      1) Up to 2 x 4 in. No. 2 & Better
      2) Over 2 x 6 in. No. 2 & Better.

   c. General utility purposes: No. 2 & Better.

B. Softwood Plywood/Sheathing: Conform to requirements of PS-1. Provide panels bearing appropriate APA grade, and trade mark. Provide exterior grade plywood where any face or edge is exposed to the weather.

C.

1. Equipment Backing Panels: Plywood, APA B-C EXT, Plugged, Exterior glue; identification index Group 2; fire-retardant treated if required by code; 5/8 in. min thickness or as shown on plans.

2. Wall Wainscot Panels: APA B-C EXT., Plugged, Exterior glue; identification index Group 2; fire-retardant treated if required by code; 3/4" min. thickness or as shown on plans.

3. F.R.T. Plywood: (location—200-series room interior non-load-bearing partitions.) Plywood, APA B-C EXT, Plugged, Exterior glue, identification index Group 2; Fire Retardant Treated, 5/8 inch thick or as shown on plans. Pressure-treated kiln-dried fire retardant product, type: FR-S. Basis of design: Boise Cascade, Hoover Treated Wood Products, “Exterior Fire-X” F.R.T. plywood.

D. Nails, Spikes and Staples: Galvanized or zinc-coated for unheated locations, high humidity locations and treated wood; plain finish for other interior locations; size and type to suit application and in accordance with manufacturer's recommendations.

E. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; sized to suit application and in accordance with manufacturer's recommendations; galvanized or zinc-coated for unheated locations, high humidity locations and treated wood; plain finish for other interior locations.

F. Joist Hangers and Framing Accessories: Simpson Company or prior approved equal, sized and profiled to suit application and in accordance with manufacturer's recommendations; galvanized finish.

G. Fasteners: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolts or power activated type for anchorage to steel.

H. Building Paper: ASTM D336, 15 lb. asphalt felt.

I. Power Driven Fasteners:

1. Pnuetek, Inc.: Pneumatically driven fastener with .143" shank diameter, .315" head diameter, and .073" head thickness installed with 1-1/2" wide 18 gauge galvanized steel strap, ICBO #3447. Contact local Pnuetek representative or Pnuetek, Inc.; Hudson, NH.; 603/883-1660.

2. Hilti: "DN" powder driven fastener with 1-7/16" diameter by .060" thick washer, ICBO #2388.

2.3 ACCESSORIES

A. Dust and Vapor Barrier (07210): reinforced flame retardant polyethylene sheets, 6 mil minimum thickness.

B. Polypropylene Vapor Barrier Tape (07210): Flame retardant self-adhering type, 2" wide.

2.4 PRESERVATIVE TREATMENT

A. Shop pressure treat and deliver to site ready for installation.

B. Wood Preservative (Pressure Treatment): Apply in conformance with AWPA Standard P5, using water-borne preservatives complying with AWPA Standard C27-93, ASTM D2898-94 and ASTM D3201-94. After treatment, kiln-dry to maximum moisture content of 15%.
1. Apply treatment complying with AWPA Standard C2.

2.5 FIRE RETARDANT TREATMENT

A. Factory treat and deliver to site ready for installation, wood materials requiring UL fire rating. Provide UL approved identification on treated materials.

B. Comply with the applicable AWPA Standard as follows:
1. Plywood: AWPA Standard U1, Doug Fir sheathing, UL data: BUGV R7003, Exterior Type (at interior rooms).

PART 3 - EXECUTION

3.1 BLOCKING

A. Fasten wood blocking to framing with fasteners capable of withstanding loads to be applied to blocking. Install blocking for support of items as required.

B. Install continuous pieces of longest possible lengths, cut to fit and fully bearing on framing.

C. Blocking installed in Installation Bay is to be installed during the Best Buy store fixturing process to insure that the blocking is installed in the proper location. Blocking will be required on any masonry walls of this space. This blocking is to be painted prior to installation. Verify with Best Buy Project Construction Manger for any differences.

3.2 ROOF RELATED WOOD BLOCKING

A. Anchor blocking to metal decking and framing as detailed with 1/2” bolts set a maximum of 4’-0” o.c.

B. Where blocking is more than 6” wide, anchor with 1/2” bolts set at 2’-6” o.c. and stagger alignment.

C. Where blocking is required on roof deck, build-up, shim, or cut as required to set top of blocking flush with the top of the adjacent insulation.

D. Cover wood blocking with temporary waterproof covering until permanent flashing is installed.

3.3 PLYWOOD SHEATHING

A. Install with face grain perpendicular to direction of framing.

B. Allow minimum space 1/16" between end joints and 1/8" at edge joints for expansion and contraction of panels; double these spaces under wet or humid conditions.

C. Fasten 6" o.c. along panel edges and 12" o.c. at intermediate supports with non-corrosive screws.

D. Install telephone and electrical panel backboards with plywood sheathing material where required.

3.4 WAINSCOT

A. Install plywood panels vertically to metal girt substructure with fasteners per structural engineering drawings. Paint plywood wainscot per section 09900.

END OF SECTION

SECTION 06200
FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Finish carpentry work, including but not limited to the following:
   1. Interior Finish Carpentry:
      a. Casing, molding and trim.
      b. Special fabricated casework and hardware.
   2. Fasteners and Accessories.
   3. Coordination with Section 06100 for all requirements for backing and blocking.

1.2 RELATED SECTIONS

A. Section 07900 - Joint Sealers: Joint sealers and fillers.
B. Section 09900 - Painting: Finishing of finish carpentry.

1.3 REFERENCES

A. AWI - Architectural Woodwork Institute Quality Standards and Guide Specifications.
B. NWMA - National Wood Manufacturers Association.
C. PS 20 - American Softwood Lumber Standard.

1.4 QUALITY ASSURANCE

A. Installation and materials: AWI Standards.

1.5 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:
   1. Shop Drawings: Indicate materials, component profiles, fastening methods, assembly methods, joint details, accessory listings, and schedule of finishes.
   2. Product Data: Submit product data for each item of hardware. Provide data on specified component products.
   3. Samples: Submit two samples representative of each scheduled surface, color and pattern, 4" x 4" in size illustrating color, texture, and finish.

B. Quality Assurance Submittals: Submit the following under provisions of Section 01400:
   1. Manufacturer's Certificate: Indicating that products meet specified burning characteristics.

1.6 JOB CONDITIONS

A. Conditioning: Installer to advise General Contractor of temperature and humidity requirements for woodwork installation areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store indoors, in ventilated areas with a constant, minimum temperature of 60 degrees F, maximum relative humidity of 25 to 55 percent.

PART 2 PRODUCTS

2.1 MATERIALS - WOOD

A. Grade: Custom.
B. Softwood Lumber: PS 20; graded in accordance with the requirements of AWI; maximum moisture content of 6 percent for interior work.
C. Hardwood Lumber: Graded in accordance with AWI; maximum moisture content of 6 percent.

2.2 SHEET MATERIALS

A. Wood Particle Board: Per AWI standard, composed of wood chips, made with high density board with waterproof resin binders; of grade to suit application. All semi-exposed surfaces to have a white melamine finish surface.

2.3 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate General: NEMA LD 3, GP-50 for horizontal surfaces and GP-28 for vertical surfaces. Color and Manufacturer as scheduled.
B. Laminate Backing Sheet: Backing grade, undecorated plastic laminate.
C. Adhesive: Contact type, for shop fabricated work, of type recommended by millwork manufacturer to suit application.

2.4 BATHROOM VANITY

A. Fabricate plastic laminate finished casework using "Flush Overlay" style, "Custom" grade, as defined by AWI standards.
   1. Plastic Laminate 0.050" thick; Color:
      a. Break Room Countertop/ Backsplash: Formica #3512 “Metal Earth”.
      b. Break Room Upper & Base Cabinets: Formica #902 “Platinum”.
      c. Unisex Restroom Countertop/ Backsplash: Formica #3698 Beluga Beige”.

B. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
C. Fit doors and exposed edges with matching plastic laminate edging. Use full-length pieces only. Laminate faces of doors after edges are laminated.
D. Door and Drawer Fronts: 3/4" thick.
E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Make corners and joints hairline. Slightly bevel arises.
G. Cabinet Liner and shelving: Melamine.
H. Cap exposed plastic laminate edges with material of same finish and pattern.
I. Mechanically fasten backsplash to countertops with steel brackets at 16" on center.
J. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
K. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal contact surfaces of cut edges.

2.5 ACCESSORIES

A. Adhesive: Contact type complying with ANSI/NWMA 1S-1 Series and recommended by laminate manufacturer to suit application.

2.6 HARDWARE

A. Fasteners: Size and type to suit application.
B. Nails, Spikes and Staples: Galvanized for exterior locations, high humidity locations and treated wood; plain finish for other interior locations; size and type to suit application and in accordance with manufacturers' recommendations.
C. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; sized to suit application and in accordance with manufacturer's recommendations; galvanized for exterior locations, high humidity locations and treated wood; plain finish for other interior locations.

D. Cabinet Hardware Standards: ANSI A 156. 9, Type 2 Institutional quality; US26 brushed chrome finish, unless otherwise noted.
E. Drawer Slides: White Epoxy coated, 150 lb. capacity, extension 4 inches less than length – Blum or equal.
F. Countertop Connectors: Concealed type; KV, #516 or equal.
G. Hinges: Snap closing European style, 35 mm, Clip type – min. 95 degree opening for upper cabinets and min. 165 degree for lower – Blum or equal.
H. Adjustable Shelf Supports: Steel, nickel plated, ¼ inch "L" shape. Provide holes for adjustment, max. 4 inches OC full height of cabinet.
I. Grommets: Doug Mockett & Company, Model No. SG-3. Color to match adjacent surface. Provide cap with 5/8" cord slot.
J. Pulls: 5/16" diameter wire, 4" long Stanley 34-8315 or equal, 26D finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Ensure that substrate is ready to receive work prior to commencement of installation.

3.2 FABRICATION

A. Fabricate finish carpentry items in accordance with recommendations of AWI.
B. Use exposed fastening devices or nails only when unavoidable.

3.3 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
B. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.
C. Prior to installation of architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including back priming and removal of packing.
D. Coordinate with other trades to ensure that items supplied by others, but required to fit into casework or other fabricated items, will fit.
E. Locate backing devices required for installation of wall supported units. Verify that back plates, extra studs, etc., are properly located to accept woodwork items.

3.4 PREPARATION FOR FINISHING

A. Set or countersink fasteners. Apply wood filler in exposed fastener indentations on material to receive opaque finishes. On material to receive transparent finishes, use wood filler which matches surrounding surfaces and of types recommended for applied finishes.
B. Leave in condition ready to receive applied finish, only requiring light sanding and clean up by finish applicator.

3.5 INSTALLATION

A. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including countertops); and with 1/16" maximum offset in flush adjoining surface, 1/8" maximum offsets in revealed adjoining surfaces.
B. Scribe and cut work to fit adjoining work, refinish cut surfaces and repair damaged finish at cuts.
C. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

D. Casework: Install without distortion so that doors and drawers will fit openings properly and be accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
E. Countertops: Anchor securely to base units and other support systems as indicated.
F. Miter inside and outside corners. Scarf joints.
G. Install continuous pieces in longest possible lengths.
H. Carefully scribe work that is against other building materials, leaving gaps of 1/16" maximum. Do not use additional overlay trim for this purpose.
I. Backprime all exterior finish carpentry.

3.6 ADJUSTMENT AND CLEANING

A. Repair damaged and defective woodwork wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
B. Clean hardware, lubricate and make final adjustments for proper operation.
C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged and soiled areas.
D. Complete the finishing work specified as work of this section, to whatever extent not completed at shop and prior to installation of woodwork.

END OF SECTION

SECTION 07210
BUILDING INSULATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fire safing insulation.
B. Board insulation/ protection board at perimeter foundation wall.
C. Sound attenuation blanket at interior partitions.
D. Blanket batt insulation at exterior metal building warm walls & interior warm walls.
E. Sheet vapor and air barrier.

1.2 RELATED SECTIONS

A. Section 09250 - Gypsum Board Systems: Sound attenuation insulation.
Section 13121- Metal Building Systems

1.3 REFERENCES

A. ASTM C516 - Vermiculite Loose Fill Insulation.
B. ASTM E84 - Surface Burning Characteristics of Building Materials.
C. FS HH-I-558 - Insulation, Board, Blanket, Felt, Sleeving (Pipe and Tube Coverings) and Pipe Cover Insulation.
D. UL 723 - Surface Burning Characteristics of Building Materials.

1.4 SYSTEM DESCRIPTION

A. Materials of this Section shall provide a continuous thermal, vapor and air barrier where required, at building enclosure elements.

1.5 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:
   1. Manufacturer's installation instructions.

1.6 REQUIREMENTS OF REGULATORY AGENCIES

A. Surface Burning Characteristics:
   1. Comply with applicable codes for Class I (Class A) flame/smoke ratings of 25 or less/450 or less for insulation types and accessories other than foamed plastic; when tested according to ASTM E84 (UL 723).
   2. Comply with applicable codes for Class II (Class B) flame/smoke ratings of 75 or less/450 or less for foamed plastic insulation types; when tested according to ASTM E84 (UL 723).

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. **INSUL-1**: Expanded Polystyrene Board Insulation (Below Grade): ASTM C578, Type IV, expanded polystyrene; 1.80 pcf density minimum; 25 psi minimum compressive strength; Less than 3% maximum water absorption by volume; square edges, manufacturer's standard board size, thickness per drawings, R-4.6 per inch for 20 years minimum per ASTM C518.

   1. Insulfoam (a Carlisle Company), R-Tech IV, zee-fold, 2” thickness or equivalent with same performance and warranty.

B. **INSUL-2**: Glass Fiber Blanket/Batt Insulation (Unfaced); ASTM C665, Type I, preformed glass fiber blanket without facers, thicknesses per drawings.
   1. CertainTeed Corporation, Unfaced Building Insulation.
   2. Johns Manville, Thermal-Shield Unfaced Insulation Blankets.
   3. Owens-Corning Fiberglass Corp., Unfaced Glass Fiber Insulation.
   4. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

C. **INSUL-3**: FOAM IN PLACE INSULATION
   1. Core-fill 500, Tailored Chemical Products
   2. Air-Krete, Therma-krete
   3. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

2.2 ACCESSORIES

A. Vapor/Air Barrier: Flame retardant polyethylene sheets, 6 mil minimum thickness at walls and ceilings where occurs at heated envelope.

B. Polyethylene Tape: Flame retardant self-adhering type, 2" wide minimum.

C. Foil Tape: Flame retardant pressure-sensitive type recommended by insulation manufacturer for application, 2" wide minimum.

D. Adhesive: Type recommended by insulation manufacturer for application.

E. Impaling Pins: Mechanical fasteners recommended by insulation manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify substrate and adjacent materials and insulation boards are dry and ready to receive insulation.

3.2 INSTALLATION - FOUNDATION PERIMETER

A. Install expanded polystyrene boards (INSUL-1) on foundation wall perimeter, vertically from the bottom of concrete slab downward to minimum depth below finished exterior grade, down to building code designated frost line or depth designated on drawings if insulating below grade stories. Butt edges and ends tight to adjacent board and to protrusions. Install per structural drawings and soils report recommendations.

3.3 INSTALLATION - BLANKET/BATT INSULATION

A. Install batt insulation (INSUL-2) in accordance with manufacturer's instructions.
B. Install batt insulation in exterior walls, roof and ceiling spaces without gaps or voids.
C. Trim insulation neatly to fit spaces. Use batts free of damage.
D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.
E. Fill cracks and voids around framing and blocking, other voids in exterior walls, and voids around wood cants, curbs, and blocking in and about the roof. Wedge in place, completely filling voids.

3.4 INSTALLATION - FOAM IN PLACE INSULATION

A. Install foam in place insulation (INSUL-3) in accordance with manufacturer's instructions.
B. Install foam in place insulation in exterior walls, roof and ceiling spaces without gaps or voids.
C. Trim insulation neatly overflow.

D. Fill foam in place insulation full into gaps and spaces where air infiltrates around window units and other gaps in thermal envelope. Leave no gaps or voids.

3.5 INSTALLATION - VAPOR AND AIR RETARDERS

A. Place vapor and air barrier on warm side of insulation by taping in place. Provide continuous, fully taped vapor retarder enclosure around upper mezzanine level by sealing tears, penetrations or cuts in vapor barrier with polyethylene 'vapor barrier tape' to prohibit vapor transmission. Vapor retarder in locations not covered by gypsum board is part of insulation specified. Coordinate vapor retarder installation with manufacturers' structural members for metal building selected.

B. Extend vapor and air barrier tight to full perimeter of adjacent window and door frames and other items interrupting the plane of membrane. Seal in place with polyethylene tape.

END OF SECTION

SECTION 07600
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Architectural flashing and sheet metal work.

B. Related Sections include but are not necessarily limited to:
   1. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.
   2. Division 1 - General Requirements.
   3. Section 07900 - Joint Sealants.
   4. Section 09900 – Paint.

1.2 QUALITY ASSURANCE

A. Referenced Standards:
   1. ASTM International (ASTM):
      a. B32, Standard Specification for Solder Metal.
   2. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA):
      a. Architectural Sheet Metal Manual, Fifth Edition, 1993.
         1) Including Addendum No. 1 dated October 31, 1997.

B. Qualifications:
   1. Sheet metal fabricator shall have minimum 10 years experience in fabrication of sheet metal items similar to items specified.
   2. Sheet metal installer shall have minimum five (5) years experience installing sheet metal items specified.

1.3 DEFINITIONS

A. Installer or Applicator:
   1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
   2. Installer and applicator are synonymous.

1.4 SUBMITTALS

A. Shop Drawings:
   1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
   3. Fabrication and/or layout drawings.

a. Scaled drawing showing expansion joint locations, special conditions, profile, fastening and jointing details.
   1) Minimum plan scale: 1/8 IN = 1 FT.
   2) Minimum detail scale: 1-1/2 IN = 1 FT.

4. Fabricator qualifications.
5. Installer qualifications.

B. Samples:
1. Finish and color samples for each product specified for Engineer preliminary color selection.
2. For final color selection, provide {two (2)} 2 IN x 3 IN colored metal samples for each color selected during the initial color selection.

C. Miscellaneous Submittals:
1. See Section 01340 for requirements for the mechanics and administration of the submittal process.
2. Warranty: Manufacturer's sample warranty language.

1.5 WARRANTY

A. Furnish five (5) year warranty on sheet metal work, signed jointly by Contractor and sheet metal installer.
1. Agree to repair or replace work which leaks water or, where applicable, air or deteriorates excessively, including color failure, or otherwise fails to perform as watertight and, where appropriate, airtight flashing.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

B. Submit request for substitution in accordance with Specification Section 01640.

2.2 MATERIALS

A. Fasteners: Non-ferrous compatible with sheet metal.

B. Retainer Clips and Continuous Cleats: Galvanized steel or stainless steel.

C. Solder: ASTM B32.

D. Dissimilar Metal Protection: Comply with Section 09900.

2.3 ACCESSORIES

A. Accessories as required to form a complete water and airtight system.

2.4 FABRICATION

A. Retainer Clips and Continuous Cleats:

1. Use 16 GA galvanized steel, G60 coating minimum with ferrous steel flashing, coping and counterflashing and standing seam metal roofing wall trim.

2. Use 0.050 inch stainless steel with aluminum or stainless steel.

B. Shop fabricate items to maximum extent possible.

1. Fabricate true and sharp to profiles and sizes indicated on Drawings.
   a. Shop fabricate and weld or solder all corners.

PART 3 - EXECUTION

3.1 PREPARATION

A. Provide items to be built into other construction to Contractor in time to allow their installation.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions, SMACNA, and as indicated on Drawings.

B. Solder steel and weld aluminum to achieve weathertight joints and required details; do not solder or weld slip joints and prefinished items.

C. Set top edges of membrane flashing and sheet metal flashing into reglets.

D. Fasten materials at intervals recommended by SMACNA.

E. Install slip joints to allow for thermal movement as recommended by SMACNA and manufacturer.
   1. Maximum spacing: 10 FT OC.
   2. Provide slip joint 24 IN from corners.
   3. Provide slip joint at each vertical expansion joint location in wall.
      a. Provide break in continuous cleat at each vertical expansion joint.

F. Caulk slip joints with two (2) beads of sealant on each side of slip joint overlap.
   1. Refer to Section 07900 for sealant.

G. Caulk all exposed joints of coping with sealant to match color of metal being sealed.

H. Form flashings to provide spring action with exposed edges hemmed or folded to create tight junctures.

I. Provide dissimilar metals and materials protection where dissimilar metals come in contact or where sheet metal contacts mortar, concrete masonry or concrete.
   1. Refer to Section 09900 for dissimilar metals protection.

J. Provide all components necessary to create watertight junctures between roofing and sheet metal work.

K. Provide all miscellaneous sheet metal items not specifically covered elsewhere, as indicated or required to provide a weather-tight installation.

END OF SECTION

SECTION 07900
JOINT SEALANTS

PART 1 - GENERAL

1.0 SECTION INCLUDES:

A. Sealant work.

1.1 SPECIFIER:

A. AReference those sections which may significantly impact the work of this Section and always reference Divisions 0 and 1. Do not list those sections impacted by this Section.

1.2 RELATED SECTIONS INCLUDE:

A. Division 0 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

B. Division 1 - General Requirements.

1.3 WORK INCLUDED:

A. Sealing all joints which will permit penetration of dust, air or moisture, unless sealing work is specifically required under other sections.
   1. Work may include the following:
      a. Flashing reglets and retainers.
      b. Exterior wall joints.
      c. Masonry control joints, exterior and interior and between masonry and other materials.
      d. Flooring joints.
      e. Isolation joints.
      f. Joints between paving or sidewalks and building.
      g. Concrete construction, control and expansion joints, exterior and interior.
      h. Sawed joints in interior concrete slabs.
      i. Joints between precast roof units, between precast roof units and walls, and all exterior and interior joints between precast wall panels.
      j. Joints at penetrations of walls, floors and decks by piping and other services and equipment.
      k. Exterior and interior perimeters of exterior and interior door and window frames, louvers, grilles, etc.
      l. Thresholds at exterior doors.
      m. Sealing of plumbing fixtures to floor or wall.
      n. Sealing around piping, duct or conduit penetrations through roof, floors, interior and exterior walls.
      o. Sealing perimeter and penetrations of sound insulated walls.
      p. Other joints where calking, sealant, expanding foam sealant or compressible sealant is indicated.

1.4 QUALITY ASSURANCE

REFERENCED STANDARDS:

A. American Concrete Institute (ACI):
   1. 302.1R, Guide for Concrete Floor and Slab Construction.

B. ASTM International (ASTM):
   1. C834, Standard Specification for Latex Sealants.
   2. C920, Standard Specification for Elastomeric Joint Sealants.

C. National Sanitation Foundation International (NSF).

D. Underwriters Laboratories, Inc., (UL).

1.6 QUALIFICATIONS:

A. Sealant applicator shall have minimum five (5) years experience using products specified on projects with similar scope.

1.7 MOCK-UPS:

A. Before calking work is started, a mock-up of each type of joint shall be calked where directed by the Engineer.
   1. The approved mock-ups shall show the workmanship, bond, and color of calking materials as specified or selected for the work and shall be the minimum standard of quality on the entire project.

1.8 DEFINITIONS

A. Specifier: Delete "wet areas" not used on your project or add areas as needed.

B. "CAULK(ING)," AND "SEALANT": JOINT SEALANT WORK.

C. "INTERIOR WET AREAS": TOILETS, SHOWERS, LABORATORIES, {TRUCK WASH BAY} {WET WELLS} AND SIMILAR AREAS. {ENTIRE AREA IS CONSIDERED WET.}

D. Installer or Applicator:
   1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
   2. Installer and applicator are synonymous.

E. Finish sealant: sealant material per this specification applied over face of compressible sealant or expanding foam sealant specified, to provide a finished, colored sealant joint.

F. Defect(ive): failure of watertightness or airtightness.

1.9 SUBMITTALS

A. Shop Drawings:
   1. See Section 01300 for requirements for the mechanics and administration of the submittal process.
   2. Product technical data including:
      a. Acknowledgement that products submitted meet requirements of standards referenced.
      b. Manufacturer's installation instructions.
      c. Manufacturer's recommendations for joint cleaner, primer, backer rod, tooling and bond breaker.

B. Warranty.

C. Certification from sealant manufacturer stating product being used is recommended for and is best suited for joint in which it is being applied.

D. Certification of applicator qualification.

1.10 SAMPLES:

A. Cured sample of each color for Engineer's color selection.

B. Color chart not acceptable.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Deliver material in manufacturer's original unopened containers with labels intact: labels shall indicate contents and expiration date on material.

1.12 WARRANTY

A. Material and Labor Warranty:
   1. Sealant work free of defects for a period of three (3) years from date of final acceptance.
   2. Remove any defective work or materials and replace with new work and materials.
   3. Warranty signed jointly by Applicator and sealant manufacturer.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the contract documents, the following manufacturers are acceptable:

B. Polyurethane sealants:
   1. Pecora.
   2. Sika Chemical Corp.
   3. Sonneborn - Rexnord.
   4. Tremco.

C. Silicone sealants:
   1. General Electric.
   2. Dow Corning Corp.
   3. Tremco.

D. Compressible sealant:
   1. Polytite Manufacturing Corporation.
   2. Emseal.
   3. Norton.
   4. Sandell.

E. Fire-resistant sealant: See Section 07840.

F. Acoustical sealant:
   1. Pecora.
   2. Sonneborn.
   3. Tremco.

G. Polysulfide rubber sealant:
   1. Pecora.
   2. Sonneborn.
   3. Morton Polymer Systems.

H. Expanding foam sealant:
   1. Macklanburg Duncan.
   2. Convenience Products.
   3. FAI International, Inc.
   4. Power Fasteners.

I. Polyurea joint filler:
   1. Dayton Superior Specialty Chemical Corporation.
   2. Euclid Chemical Co.
   3. L & M Construction Chemicals, Inc.
   4. Sonneborn.

J. Backer rod, compressible filler, primer, joint cleaners, bond breaker: As recommended by sealant manufacturer.

K. No like, equivalent or "or-equal" item {or substitution} is permitted.

L. Submit request for substitution in accordance with specification section 01600.

2.2 MATERIALS

A. Sealants - General:
1. Provide colors matching materials being sealed.
2. Where compound is not exposed to view in finished work, provide manufacturer's color which has best performance.
3. Nonsagging sealant for vertical and overhead horizontal joints.
4. Sealants for horizontal joints: Self-leveling pedestrian/traffic grade.

B. Polyurethane Sealant:
1. One (1) or two (2) components.
2. Paintable.
3. Meet ASTM C920 Type S or Type M, Grade NS or P, Class 25, Use NT, T, M, A and O.
   a. Pecora Dynatrol-IXL, Dynatrol II, Urexpan NR-200, NR-201.
   b. Sika Chemical Corporation Sikaflex-1a, Sikaflex-2C NS/SL.
   c. Sonneborn Sonolastic NP-1, NP-II, SL-1 SL-2.
   d. Tremco Dymonic or Dymeric, Vulkem 116,227,45,245.

C. Silicone Sealant:
1. One (1) component.
2. Meet ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, O.
   a. General Electric: Silpruf, Silglaze II.
   b. General Electric: Sanitary 1700 sealant for sealing around plumbing fixtures.
   c. Dow Corning: 786 for sealing around plumbing fixtures.
   d. Dow Corning: 790, 795.
   e. Tremco: Spectrem 1, Spectrem 3, Tremsil 600.
3. Mildew resistant for sealing around plumbing fixtures.

D. Compressible Sealant:
1. Size so that width of material is twice joint width.
2. Specifier: Use Polytite B as backer rod material when sealant is applied over compressible sealant. Most used type.
3. Foamed polyurethane strip saturated with polymerized polybutylene waterproofing coated on front face with nonreactive release agent that will act as bond breaker for applied sealant.
4. Polytite Manufacturing Corp. "Polytite-B."
5. Fire rated where required.

E. Joint cleaner, primer, bond breaker: as recommended by sealant manufacturer.

F. Sealant Backer Rod and/or Compressible Filler:
1. Closed cell polyethylene, polyethylene jacketed polyurethane foam, or other flexible, nonabsorbent, nonbituminous material recommended by sealant manufacturer to:
   a. Control joint depth.
   b. Break bond of sealant at bottom of joint.
   c. Provid e proper shape of sealant bead.
   d. Serve as expansion joint filler.

G. Adhesive, Compressible Sealant: as recommended by sealant manufacturer.

H. Fire-Resistant Sealant:

1. Fire Stop and Joint Sealant Systems: Fire-resistive joint sealing systems as listed in Underwriter's Laboratories Building Material Directory, Through-Penetration Firestop Devices. Materials and systems shall qualify for tests set forth in UBC Standard 43-1. Use only tested-listed assemblies.
   a. FS 2000 Non-Sag and FS 2003 Self Leveling, single component silicone sealant, by 3M.
   b. Biotherm 100/200 Self-Leveling, single component silicone sealant, by Bio Fireshield, Inc.
   c. Fyre Putty ceramic fiber hard setting putty, by Carborundum.
   d. CLK N/S and S/L Firestop Sealant, by Nelson Fire Stop Products.
   e. Rectoseal Metacaulk 835+.
   f. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

I. Expanding Foam Sealant:
1. One (1) or two (2) component fire rated moisture cured expanding urethane.
2. Shall not contain formaldehyde.
3. Density: Minimum 1.5 pcf.
4. Minimum 70 percent closed cell content.
5. R-value minimum 5.0/IN.
6. Flame spread: Less than 25.
7. Smoke developed: Less than 25.

J. Acoustical Sealant:
1. One (1) component siliconized acrylic latex sealant.
2. Non-staining, non-bleeding.
3. Compatible with paints specified for adjoining materials.
   a. See Section 09905.
4. Meet ASTM C834.
   a. Pecora - AC20+.
   b. Sonneborn - Sonolac.
   c. Tremco - Tremflex 834.

K. Polysulfide Rubber Sealant:
1. One (1) or two (2) component.
2. Meet ASTM C920.
   a. Pecora Synthacalk GC2+.
   b. Sonneborn - Sonolastic - two-part polysulfide sealant.
   c. Morton Polymer Systems - Thiokol Sealants.

L. Polyurea Joint Filler:
1. Two (2) component, semi-rigid material for filling control, sawcut and construction joints in interior concrete floors.
   a. Dayton Superior Specialty Chemical Corp. "Joint Fill, Joint Seal, Joint Saver II" as required for condition and recommended by manufacturer.
   b. Euclid Chemical Co. "EUCO QWIK" joint.
   c. L & M Construction Chemicals, Inc. "Joint Tite 750".
   d. Sonneborn "TF-100" control joint filler.
2. Comply with ACI 302.1R performance recommendations regarding control and construction joints.
3. Color: GraySpecifier: Utilize this Article to specify spare parts or products and extra materials.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before use of any sealant, investigate its compatibility with joint surfaces, fillers and other materials in joint system.

B. Use only compatible materials.

C. Where required by manufacturer, prime joint surfaces.
1. limit application to surfaces to receive calking.
2. mask off adjacent surfaces.

D. Provide joint depth for joints receiving polyurea joint filler in accordance with manufacturer's recommendations.

3.2 INSTALLATION

A. Install products in accordance with manufacturer's instructions and ul requirements.

B. Clean all joints.

C. Make all joints water and airtight.

D. Make depth of sealing compounds, except expanding foam and polyurea sealant, not more than one-half width of joint, but in no case less than 1/4 in nor more than 1/2 in unless recommended otherwise by the manufacturer.

E. Provide correctly sized backer rod, compressible filler or compressible sealant in all joints to depth recommended by manufacturer:
1. take care to not puncture backer rod and compressible filler.
2. provide joint backer rod as recommended by the manufacturer for polyurea joint filler.

F. Apply bond breaker where required.

G. Tool sealants using sufficient pressure to fill all voids.

H. Upon completion, leave calking with smooth, even, neat finish.

I. Where piping, conduit, ductwork, etc., penetrate wall, seal each side of wall opening.

J. Install compressible sealant to position at indicated depth.
1. Take care to avoid contamination of sides of joint.
2. Protect side walls of joint (to depth of finish sealant).
3. Install with adhesive faces in contact with joint sides.
4. Install finish sealant where indicated.

K. Install expanding foam sealant to minimum 4 in depth or thickness of wall being penetrated if less than 4 in or as indicated on drawings.
1. Provide adequate fire rated backing material as required.
2. Hold material back from exposed face of wall as required to provide backer rod and finish sealant.
3. Allow expanding foam sealant to completely cure prior to installing backer rod and finish sealant.
4. Material shall be minimum of 70 DegF prior to and during installation.
5. Trim off excess material flush with surface of the wall if not providing finished sealant.

3.3 SCHEDULE

A. Furnish sealant as indicated for the following areas:
1. Exterior areas: {Polyurethane} {Silicone}.

2. Interior wet areas: {Polyurethane} {Silicone}.
3. Interior wet, corrosive areas: {Polyurethane} {Polysulfide}.
4. Interior nonwet, corrosive areas: {Polyurethane} {Silicone}.
5. Interior nonwet, noncorrosive areas: {Polyurethane} {Silicone}.
6. Fire-rated construction: See Section 07840.
7. Compressible sealant: Where indicated.
8. Sealant which will be subject to prolonged contact with or submersion in water (except wastewater and sewage):
   a. Polysulfide or polyurethane: NSF approved for use in potable water tanks.
9. Penetrations exterior wall above grade:
   a. For non-corrosive areas, provide expanding urethane foam, with polyurethane finish sealant.
   b. For corrosive areas, provide expanding urethane foam, bond breaker and polysulfide finish sealant on corrosive side with polyurethane finish sealant on non-corrosive side.
10. Sealant exposed to or having the potential of being exposed to concentrated chlorine gas or chlorine liquid: Polysulfide.
11. Sealant which will be immersed in wastewater or sewage: Polysulfide.
12. Interior concrete floor control joints or sawed joints: Polyurea joint filler.
13. Sealing around plumbing fixtures: Silicone.
14. Plastic laminate casework, plastic laminate countertops and solid surface materials: Silicone.

END OF SECTION

SECTION 08100
STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Provide Fire-rated and Non-rated steel doors and frames.

B. Interior window frames.

C. Glazing stops.

1.2 RELATED WORK

A. Section 08710 - Hardware: Hardware for doors and frames.

B. Section 09900 - Painting: Field painting of doors and frames.

1.3 REFERENCES

A. ANSI A224.1 - Test Procedure and Acceptance Procedure for Prime Painted Steel Surfaces.

B. ASTM A366 - Steel Carbon, Cold-Rolled Sheet, Commercial Quality.

C. ASTM A653-96, "Spec for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process."

D. ASTM E152 - Methods of Fire Tests of Door Assemblies.

E. DHI (Door Hardware Institute) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

F. NFPA 80 - Fire Doors and Windows.

G. NFPA 252 - Fire Tests for Door Assemblies.

H. SDI-100 - Standard Steel Doors and Frames.

I. SDI-105 - Recommended Erection Instructions for Steel Frames.

J. UL 10B - Fire Tests of Door Assemblies.

K. UL 10C: Fire Tests of Door Assemblies.

L. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

1.4 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard Steel Doors and Frames" ANSI/SDI-100 and as herein specified.

B. Installed frame and door assembly to conform to NFPA 80 for fire rated class indicated in Schedule.

1.5 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300.

1. Shop Drawings:
   a. Provide schedule of doors and frames using same opening numbers referenced on the drawings.
   b. Indicate frame gauge and configuration, fire label, anchor types and spacing, location of cutouts for hardware, and reinforcement.
   c. Indicate door elevations, hardware group, core material, internal reinforcement, closure method, and cut outs for glazing and louvers.

1.6 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01600.
1. Protect doors and frames with resilient packaging sealed with heat shrunk plastic.
2. Break seal on-site to permit ventilation.

PART 2 - PRODUCTS

2.1 GENERAL

B. It is the intention of the designers that this system meets the requirements of ADAAG.

2.2 STEEL DOORS

C. Exterior Doors: “Maximum Detention” SDI-100 Grade III, Model 4; minimum 14 gauge zinc coated galvanized steel sheet faces complying with ASTM A525, A60; fully welded seamless edges, composite construction; injected polyurethane foam, 18 gauge vertical stiffeners, full length hinge reinforcement. Exterior doors shall have a minimum "U" value of 0.09

D. Interior Non-Fire-Rated Doors: SDI-100 Grade II, Model 4; minimum 18 gauge cold rolled steel sheet complying with ASTM A366; spot welded and bondo filled seamless edges, composite construction; honeycomb or polystyrene core laminated to the inside of both face sheets.

2.3 STEEL FRAMES

E. Exterior Frames: MAXIMUM DUTY DETENTION GRADE. Minimum 12 gauge galvanized steel complying with ASTM A525, A60. Weld and finish mitered corners. Provide integrated conduit for security wiring and reinforced hardware plates.

F. Interior Frames: Minimum 16 gauge cold rolled steel complying with ASTM A366 at all other locations.

2.4 ACCESSORIES

G. Glazing Stops: Provide for glazed lites as indicated on Drawings complying with SDI vision panel designations V, N and G. Construct glazing stops of not less than 18 gauge steel. Fit and install stops in the factory. Form neat hairline joints.
   1. Provide in tumescent glazing system for fire rated doors to comply with requirements of UL 10C and UBC 7-2.
   2. Acceptable Manufacturers and Products:
      a. Zero: Intumet Glazing Tape FS1001.
      b. Zero: Intumet Glazing Strips FS3003.
      c. Comparable products from other manufacturers.

H. Rubber Silencers: Resilient rubber.

2.5 FABRICATION

I. Fabricate exterior and double door frames fully welded with corners and stops fully mitered. Grind exposed surfaces smooth with no joints anywhere on the frame.
J. Fabricate interior frames knock-down with mitered corners.
K. Provide frames of required throat depth for wall thickness.
L. Fabricate frames and doors with hardware reinforcement plates welded in place. Hinge reinforcement shall be not less than 7 gauge plated steel. Other reinforcements shall be minimum of 12 gauge steel. Comply with SDI-100 for minimum hardware reinforcing requirements. Provide mortar guard boxes.
M. Fabricate doors without seams on faces or vertical edges of door. Door cores shall have 18 gauge vertical stiffeners spaced no more than 6” o.c. extending full width of door, spot welded to face sheets at 5” o.c. Continuously weld vertical edge seams, and grind smooth.
N. Reinforce frames wider than 48" with roll formed steel channels fitted tightly into frame head, flush with top.
O. Provide ¾” galvanized steel flex conduit with in exterior door frames for electrified hardware wiring to top control box above head of frame.
P. Prepare frame for silencers. Provide three single rubber silencers on strike jamb for single doors, and two single silencers on frame head at double doors.
Q. Attach fire rated label to each frame and door unit, where required.

R. Reinforce top and bottom edges with a minimum 16 gauge channel welded to face sheets.
S. Reinforce top hinge with “high frequency hinge” reinforcing straps.
T. Close top edge of exterior door flush with inverted 16 gauge steel channel closure. Seal joints watertight.
U. Provide fixed glazing stops on outside of exterior doors and on secure side of interior doors.
V. Provide floor clips for frames. Provide jamb anchors spaced not over 30" on center for frames. Furnish temporary spreader bars and bracing.
W. Thoroughly clean, phosphate treat, and apply one coat of rust inhibitive primer containing at least 50% rust inhibitive pigments. Prime frames under removable glazing stops and prime back side of removable stops.
X. Provide full length 7’ latch guard welded or thru-bolted to exterior doors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install frames in accordance with SDI-105.

B. Install doors in accordance with DHI "The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames, and Builders Hardware.
C. Install fire rated doors and frames in accordance with NFPA 80.
D. Coordinate with cast concrete and wallboard wall construction for anchor placement.
   1. Cast concrete construction: Install frames on 18 gage steel stud bucks anchored to concrete with powder-actuated fasteners, 3 per jamb minimum.
   2. Wallboard Construction: Install frames up to 60" high in wallboard construction with minimum 3 jamb anchors each jamb; add an additional anchor for every 24" or fraction thereof.
E. Coordinate installation of glass and glazing.

3.2 TOLERANCES

A. Maximum Diagonal Distortion: 1/16" measured with straight edge, corner to corner.

3.3 ADJUSTING AND CLEANING

A. Adjust hardware for smooth and balanced door movement.

END OF SECTION

SECTION 08220
Fiberglass Reinforced Plastic (FRP) Doors and Frames

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Fiberglass Reinforced Plastic (FRP) Doors

B. Fiberglass Reinforced Plastic (FRP) Frames

1.2 RELATED SECTIONS

A. Division 1 - General Conditions, Supplementary Conditions

B. Division 4 - Unit Masonry

C. Division 8 - Finish Hardware

D. Division 8 - Glass and Glazing

1.3 QUALITY ASSURANCE

A. General Qualifications:
   1. Manufacturer Qualifications: A company that specializes in manufacturing FRP doors and frames with a minimum of 30 years experience.
   2. Quality Assurance: Obtain all FRP doors and FRP frames from a single manufacturer to ensure consistent quality.
   3. Quality Assurance: Hardware and accessories for all FRP doors and FRP frames shall exactly adhere to the Architect's specification.
   4. Quality Assurance: Glass for windows in doors shall be furnished per the Architect's instructions and specifications.

B. Regulatory Requirements:
   1. Fire-rated door, panel and frame construction conforms to products tested under ASTM E152, UL10C & NFPA 252.
   2. Install doors, panels and frames conforming to NFPA 80 for fire-rated class, ANSI A117.1 specifications for handicap accessibility, ADA requirements, ANSI A250.4-2011 cycle swing in excess of 1,000,000 cycles with no failure of any design features of the door.
   3. Flame Spread: All rated FRP component parts, including the finish, shall have a flame spread classification of 25 or less per ASTM E84 and shall be self extinguishing per ASTM D635, unless operating conditions dictate otherwise.
   4. Resins and coatings to meet with USDA standards for incidental food contact, if applicable to this project.

5. Products manufactured—if so specified—that have passed the Florida Building Code (FBC), including Miami-Dade High Velocity Hurricane Zone (HVHZ).

C. Warranty:
To include ten (10) years free from defects in material and workmanship from date of shipment, and lifetime from corrosion from date of shipment, provided that the structural integrity of the doors and frames have not been violated or compromised.

1.4 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01300.

B. Shop Drawings – Include the following:
1. Elevation of each door type including door size, handing and finish
2. Cutout locations for lites and hardware
3. Internal reinforcement
4. Frame configuration, anchor types and spacing

C. Product data including manufacturer's literature, fabrication descriptions and installation instructions.

D. Construction and/or color samples as requested.

1.5 DELIVERY, STORAGE AND PROTECTION

A. Doors and frames will be individually packaged in cardboard cartons. Cartons will be clearly labeled with project information and will include fasteners and installation instructions, if required. Only remove cartons upon arrival if cartons are wet or damaged.

B. Deliver and store doors and frames at the job site in such a manner as to prevent damage; out of weather and/or extreme temperatures. The doors shall be stored in a vertical position on blocking, clear of the floor and with blocking between the doors to permit air circulation between the doors.

C. All damaged or otherwise unsuitable doors and frames, when so ascertained, shall be immediately removed from job site.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Products manufactured by the following companies complying with these specifications will be acceptable:
CORRIM Company,
Fib-R-Dor, a Div. of Chase Doors, Inc

B. Substitutions may be considered provided the manufacturer can comply with the specifications as written and the products are manufactured in the United States of America. Requests for substitutions must be submitted in writing no less than ten (10) business days prior to the bid date. Substitution requests shall include a physical sample and written documentation that the product meets the specific manufacturing methods as stated herein.

2.2 FRP DOORS

A. Door Fabrication:
1. Total door thickness to be a nominal 1-3/4 inches thick.
2. Lock stiles on non-rated and rated active leaves shall be factory beveled 1/8" in 2".
3. Provide doors with completely seamless construction on all six (6) surfaces.

B. Face Sheets: FRP face sheets shall be manufactured using a corrosion resistant resin system with light stabilizing additives. The resin shall be reinforced with fiberglass, 50% average by weight for enhanced strength. Face sheets shall be a minimum of 0.125 inch thick fiberglass. Face sheets will be Architect's choice of smooth, pebble or woodgrain seamless finish.

C. Stiles and Rails: Stiles and rails shall be 1-1/2 inch square pultruded fiberglass tubes. Pultrusion is a fiberglass fabrication process that results in a much stronger, more durable product. Non-rated and 20 minute doors will have a full width horizontal 1-1/2 inch square pultruded fiberglass tube every 24 inches in height for internal reinforcement. A 1-1/2 inch square solid fiberglass block shall be used at all hardware reinforcements and corner intersections. A minimum of 1,150 pounds screw withdrawal force shall be required per screw. The bottom rail shall allow for 1-1/4 inches of height alterability without loss of the panel's integrity. Absolutely no metal or wood reinforcements, including #2 SPF (Spruce Pine Fir), will be allowed in any part of the stile and rail configuration.

D. Core Options:
1. Polyurethane Foam Core: A 1-1/2 inch thick rigid block of polyurethane shall be laminated to the interior of the panels. The "R" factor shall be 12. The polyurethane insulation shall be Class A and CFC free. Foam properties comply with ASTM E-84 and The International Building Code (IBC).
2. Balsa Core: 1-1/2 inches thick Balsa core, of end grain construction for enhanced

strength, shall be laminated to the interior of the panels. The balsa shall have a density of 8.5 – 9.0 lbs/cu. Ft. Compressive strength, perpendicular to the door panel surface shall be 1400 psi.

3. Honeycomb Core: Phenolic impregnated resin paper honeycomb.
4. Mineral Core: for 30 minute to 90 minute fire rated FRP doors.

E. Hardware Preparations: Doors shall be reinforced and mortised for hardware with 1-1/2 inches x 1-1/2 inches of solid fiberglass to allow application of hinges and locks, in accordance with the hardware schedule, hardware manufacturer's instructions and templates.

1. Reinforcement Blocking: Non-swelling polymer or firestop blocking will be used for all lockset, surface mounted hardware and thru-bolted hardware blocking.
2. Pilot holes for full mortise butt hinges will be pre-drilled by factory.
3. All hardware shall be attached / installed by using pilot hole and stainless steel wood screws.

F. Door Accessories

1. Glazing: Glazing support structures shall ensure that the glass area is weather sealed as not to permit moisture from entering the core of the door. This is to be accomplished by utilizing pultruded 1-1/2 inch square FRP tubes to fabricate the window opening. Glazing must allow for ready access for repair in the event of damage or replacement, without affecting the sealed integrity of the cutout in the door panel itself. Openings cut directly into the core material will not be allowed.
2. Louvers: Louvers shall be fabricated with pultruded FRP material of an inverted "V" design, and shall be subject to the same performance guarantee as the door panel. The louver opening will be fabricated in the same method as for glazing above.
3. Fasteners: Provide countersunk stainless steel fasteners as required for glazing openings and louvers.
4. Transoms: All transom panels will be identical to the doors in construction, materials, thickness, color and reinforcement.
5. Astragals: Astragals for pairs of doors to be fabricated with FRP material of manufacturer's standard flat design.

2.3 FRP FRAMES

A. Fabrication: FRP frames shall be rigid, neat in appearance, free from defects and the finish shall match the doors. Fabricate FRP doors and frames as shown on the drawings and in accordance with best shop practices. Field measurements shall be taken as required for coordinating with adjoining work.

1. Provide frames for doors, transoms, sidelites and borrowed lites, as required.
2. All frames shall be 100% pultruded fiberglass with an average 50% glass content by weight which results in an industrial fiberglass frame as strong as a 14 gauge hollow metal frame.
3. Non-rated and 20 minute UL labeled: Standard one piece FRP profile with integral stop: 5-3/4" x 2" equal rabbet
4. 30 – 90 minute UL labeled FRP Frames: Standard one piece FRP profile with integral stop: 5-3/4" x 2" equal rabbet. Frames that must be grouted solid with

mortar in the field to achieve label are not acceptable.

5. Head and jamb members shall be standard 45 degree miter, providing a neatly mitered corner connection, fabricated for Knocked Down (KD) field assembly.

B. Reinforcements and Braces / Supports

1. Frames shall be reinforced and mortised for hardware in accordance with the hardware schedule, manufacturer's instructions and templates. Absolutely no metal reinforcements will be allowed in any part of the FRP frame configuration.

2. Corner Reinforcement: 4 inches x 4 inches x 5-3/8 inches x 1/4 inch thick pultruded fiberglass angle. Attached to head bar at factory using stainless steel screws.

3. Mortise Hinge Reinforcement: 3 inches x 7 inches x 9/16 inch (or 3/8 inch) thick FRP material attached to frame by means of bonding and stainless steel countersunk screws.

4. Closer Reinforcement: 1-1/2 inches x 19 inches x 3/16 inch thick FRP material attached to frame by means of bonding.

5. Strike Reinforcement: 1-1/2 inches x 9 inches x 3/4 inch thick FRP material attached to frame by means of bonding and stainless steel countersunk screws.

6. Anchoring Systems - Furnish at least three (3) anchors in each jamb of frames up to 90 inches high and one (1) additional anchor for each 30 inches in height above 90 inches, in shapes, sizes and spacing shown or required for anchorage into adjoining wall construction.

a. New Masonry: T-Strap or Wire Anchor (stainless steel T-Strap)

b. New Stud (before sheathing): New Stud Anchor

c. Butt Existing Wall: Existing Opening Anchor; Masonry, Steel or Wood (concealed)

d. Wrap Existing Wall: Compression Anchor

e. Consult factory for additional anchoring options.

2.4 FINISH

A. Seamless 25 mil matte gelcoat (smooth faces only), selected by Architect, from manufacturer's full range of colors

B. Finish on door and frame units will match

PART 3 – EXECUTION

3.1 INSPECTION

Installer shall examine the substrate and conditions under which fiberglass reinforced plastic work is to be installed and notify the General Contractor in writing of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.2 INSTALLATION

A. Doors and frames will be delivered in individual cartons with the identifying mark number listed on each carton.
B. Install FRP doors, frames and accessories in accordance with manufacturers printed instructions, final shop drawings, NFPA 80 standards at fire rated openings and / or HVHZ standards for FBC labeled openings.
C. Provide clearance for doors of 1/8 inch at jambs and heads; 1/4 inch clearance above threshold. D. Fire labeled doors, frames and accessories must be installed by qualified, licensed installers adhering to the latest version of NFPA 80.

3.3 ADJUSTING

At substantial completion, adjust all operable components to ensure proper installation. Doors shall function smoothly and swing freely without binding. Doors shall remain open at any angle without being affected by gravitational influence.

3.5 CLEANING

Remove dirt and excess sealant from exposed surfaces. Follow the manufacturer's recommended cleaning techniques and procedures for cleaning all surfaces. Only use cleaning products that will not scratch or damage the surfaces and are recommended by the manufacturer.

END OF SECTION

SECTION 08310
ACCESS DOORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Non-rated access doors and frames.

1.2 RELATED SECTIONS

A. Section 09250 - Gypsum Board Systems: Openings in partitions and ceilings.
B. Section 09900 - Painting: Field paint finish.

1.3 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:
   1. Shop Drawings: Include sizes, types, finishes, scheduled locations, and details of adjoining work.
   2. Product Data.

PART 2 - PRODUCTS

2.1 NON-FIRE RATED ACCESS PANELS

A. Gypsum Board Access Panels: 16 gauge steel or 0.060" extruded aluminum frame with drywall flange and 14 gage steel door panels; concealed continuous steel piano hinge which allows 175 deg. opening. Provide manufacturer's standard factory applied baked enamel primer.
   1. Cesco Products, Inc., SR-III.
   2. J.L. Industries, Model WB.
   3. Karp Associates, Inc., Model KDW.
   4. Milcor, Inc., Style DW.
   5. Nystrom, Inc., WB Series.
   6. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify rough openings for door and frame are correctly sized and located.
B. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

A. Install frame plumb and level in wall and ceiling openings.
B. Position to provide convenient access to concealed work requiring access.
C. Secure rigidly in place in accordance with manufacturer's instructions.

END OF SECTION

SECTION 08360

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Insulated Sectional Overhead Doors.

B. Electric Operators and Controls.

C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.

B. Section 04810 - Unit Masonry Assemblies: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.

C. Section 05500 - Metal Fabrications: Steel frame and supports.

D. Section 07900 - Joint Sealers: Perimeter sealant and backup materials.

E. Section 09900 - Paints and Coatings: Field painting.

F. Section 16130 - Raceway and Boxes: Empty conduit from control station to door operator.

G. Section 16150 - Wiring Connections: Electrical service to door operator.

1.3 REFERENCES

A. ANSI/DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

B. ASTM A 123 - Zinc hot-dipped galvanized coatings on iron and steel products.

C. ASTM A 216 - Specifications for sectional overhead type doors.

D. ASTM A 229 - Steel wire, oil-tempered for mechanical springs.

E. ASTM A 653 - Steel sheet, zinc-coated galvanized by the hot-dipped process, commercial quality.

F. ASTM D 1929 - Ignition temperature test to determine flash and ignition temperature of foamed plastics.

G. ASTM E 84 - Tunnel test for flame spread and smoke developed index.

H. ASTM E 330 - Structural performance of exterior windows, curtain walls, and doors by uniform static air pressure difference.

I. ASTM E 413 - Classification for Rating Sound Insulation

J. ASTM E 1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation.

K. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Wind Loads: Design and size components to withstand loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with applicable code.
   1. Basic Wind Speed of 120 MPH
   2. Exposure Category D
   3. Importance Factor 1.15

B. Wiring Connections: Requirements for electrical characteristics.
   1. 115 volts, single phase, 60 Hz.

C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened labeled packaging until ready for installation.

B. Protect materials from exposure to moisture until ready for installation.

C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

1.9 WARRANTY

A. Warranty: Manufacturer's limited door and operators System warranty for 10 year against delamination of polyurethane foam from steel face and all other components for 3 years or 20,000 cycles, whichever comes first.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Wayne-Dalton Corp., which is located at: 2501 S. State Highway 121 Bus. Suite 200 ; Lewisville, TX 75067; Toll Free Tel: 800-827-3667; Email: request info (aisham@wayne-dalton.com); Web: www.wayne-dalton.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 INSULATED SECTIONAL OVERHEAD DOORS

A. Insulated Steel Sectional Overhead Doors: Wayne Dalton Thermospan 200 insulated sectional overhead steel doors. Units shall have the following characteristics:
   1. Door Sections: Shall be of steel/polyurethane/steel sandwich type construction with thermal break.
      a. Panel Thickness: 2 inches (51 mm).
      b. Exterior Surface: Flush non-repeating random stucco texture and 1/4 inch wide pinstriping.
      c. Exterior Steel: .022 inch (.56 mm), hot-dipped galvanized.
      d. Interior Steel: .022 inch (.56 mm), hot-dipped galvanized. Sections roll formed with two 1-3/4 inch integral struts sealed with polypropylene rib caps per section.
      e. Thermal Values: R-value of 17.50; U-value of 0.057.
      f. Air Infiltration: 0.07 cfm at 15 mph.
      g. Sound transmission class 22 when tested in accordance with ASTM E 413.
      h. Outdoor-indoor transmission class 19 when tested in accordance with ASTM E 1332.
      i. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
         1) Insulated sections tested in accordance with ASTM E 84 and achieve a Flame spread Index of 10 or less, and a Smoke Developed Index of 210 or less.
         2) Insulation material tested in accordance with ASTM D 1929 and achieve a minimum Flash Ignition temperature of 734 degrees F, and a minimum Self Ignition temperature of 950 degrees F.
         3) Insulated sections shall meet all requirements of the UBC 17-5 corner burn.
      j. Ends: Hot-dipped galvanized steel, full height with end caps.
         1) 14 gauge.
      k. Spring Counterbalance: Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of die cast aluminum with high strength galvanized aircraft cable. Sized with a minimum 5 to 1 safety factor.
         1) High cycle spring: 50,000 cycles.
   2. Finish and Color:
      a. Two coat baked-on polyester:
         1) Interior color, white.
         2) Exterior color, white.
   3. Windload Design: Provide to meet the Design/Performance requirements specified.
   4. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
   5. Weatherstripping:
      a. Flexible bulb-type strip at bottom section.

b. Flexible Jamb seals.
c. Flexible Header seal.

6. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
   a. Size: 3 inch (76 mm).
   b. Type: Standard lift.
   c. Vertical track shall be graduated to provide wedge type weathertight closing with continuous angle mounting for steel or wood jambs, and shall be fully adjustable to seal door at jambs.
7. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
   a. Entrapment Protection: Required for momentary contact, includes radio control operation.
      1) Photoelectric sensors monitored to meet UL 325/2010.
   b. Operator Controls:
      1) Push-button operated control stations with open, close, and stop buttons.
      2) Surface mounting.
      3) Interior location.

8. Glazing: Provide (4) 6” x 24” glazing panels at nominal 6’ above finish floor in each door.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until openings have been properly prepared.

B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

C. Verify electric power is available and of correct characteristics.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.

B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.

C. Anchor assembly to wall construction and building framing without distortion or stress.

D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

E. Fit and align door assembly including hardware.

F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

G. Instruct Owner's personnel in proper operating procedures and maintenance schedule.

3.4 ADJUSTING

A. Test for proper operation and adjust as necessary to provide proper operation without binding or distortion

B. Adjust hardware and operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean doors, frames and glass using non-abrasive materials and methods recommended by manufacturer.

B. Remove labels and visible markings.

C. Touch-up, repair or replace damaged products before Substantial Completion.

3.6 PROTECTION

A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

B. Protect installed products until completion of project.

END OF SECTION

SECTION 08560
VINYL (PVC) WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fixed Window Units.

B. Casement Window Units.

1.2 RELATED SECTIONS

A. Section 05400 - Cold Formed Metal Framing.

B. Section 06100 - Rough Carpentry.

C. Section 07900 - Joint Sealers.

D. Section 13121 - Metal Building Systems.

E. Section 13122 – Preformed Roof and Wall Panels.

1.3 REFERENCES

A. AAMA/NWWDA 101/I.S. 2-97 - Voluntary Standard for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors.

B. NFRC 100 - Thermal Properties; National Fenestration Rating Council.

C. NFRC 200 - Solar Heat Gain; National Fenestration Rating Council.

D. ASTM D 3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Fiber Yarn.

E. ASTM D 3678 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Interior Profile Extrusions.

F. ASTM D 4028 - Standard Specification for Solar Screening Woven from Vinyl-Coated Fiber Glass Yarn.

G. ASTM E 774 - Standard Specification for Sealed Insulating Glass.

H. IGCC - Classification of Insulating Glass Units; Insulated Glass Certification Council.

I. U.S. Department of Energy - Energy Star Windows Program.

1.4 SUBMITTALS

A. Submit under provisions of Division 1, Article 4.2 Submittals.

B. Product Data: Manufacturer's standard details and catalog data demonstrating compliance with referenced standards; include manufacturer's standard installation

instructions.

C. Drawings: Manufacturer's product drawings showing details of fabrication, hardware, weather-stripping, fasteners, screens, glazing, accessories, and related items.

D. Verification Samples: Operating sample of each window type specified illustrating fabrication, hardware, glazing, screen, and finish.

E. Test Reports: For each window type specified, furnish test reports from accredited independent testing laboratory certifying that identical or larger window units meet requirements specified for air infiltration, water penetration and structural performance by AAMA/NWWDA 101/I.S. 2-97, for thermal performance by NFRC-97, and for seal integrity of insulating glass units by IGCC.

1. Test reports to test standards other than those listed will not be accepted.

F. Closeout Submittals: Warranty documents, properly executed.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten (10) years experience producing vinyl (PVC) windows.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver windows to project site in undamaged condition; handle windows to prevent damage to components and to finishes.

B. Store windows out of contact with ground; protect windows from weather and construction traffic in well-ventilated area.

1.7 WARRANTY

A. Furnish manufacturer's standard warranty against deficiencies in materials or fabrication.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer & Product:

1. Northerm Vinyl Windows, insulated glass casement and fixed windows.

2. Standard Color per architects finish schedule on drawings.

3. Provide heavy duty stainless steel hardware, insect screen, regular exterior brick molding and nailing flange for fastening to steel sub-structure in girt line.

4. Comply with Northerm window performance standards and Lifetime warranty.

B. Substitutions will be reviewed as equivalent products.

2.2 FABRICATION

A. Window/Door Units: Assemble units completely in factory, including operating hardware and glazing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Openings are in correct location, and of correct size, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installer's Examination:
   1. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.

   2. Transmit two copies of installer's report to Engineer within 24 hours of receipt.

   3. Beginning construction activities of this section before unacceptable conditions have been corrected is prohibited.

   4. Beginning construction activities of this section indicates installer's acceptance of conditions.

3.2 INSTALLATION

A. Install products specified in this section square, plumb and level, in accordance with approved shop drawings and manufacturer's installation instructions.

B. Installation of joint sealers is specified in Section 07900.

3.3 ADJUSTING

A. Adjust operating hardware for correct operation in accordance with manufacturer's installation instructions.

3.4 CLEANING

A. Clean interior and exterior surfaces free of labels, mortar, plaster, paint, joint sealers, and other foreign matter to prevent damage to weather-strip, and to prevent interference with operation of hardware.

3.5 PROTECTION

A. Protect ventilators and operating parts from dirt and damage caused by subsequent construction activities.

B. Replace units damaged by subsequent construction activities.

END OF SECTION

SECTION 08710

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.

C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 80 - Fire Doors and Windows.
4. NFPA 101 - Life Safety Code.
5. State Building Codes, Local Amendments.

D. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series

1.2 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to project site.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.3 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

1.4 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturers, agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Ten years for manual door closers.

1.5 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous six months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

2. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.

a. Permanent cylinders, cores, and keys to be installed by Owner.

B. Substitutions: Requests for substitution and product approval for door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, stainless steel, bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Heavy or Standard weight, stainless steel material, bearing hinges as indicated in Hardware Sets.

4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:

a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:

1) Out-swinging lockable doors.

5. Acceptable Manufacturers:

    a. Hager Companies

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified manual flush bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8" in length. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.

1. Acceptable Manufacturers:

    a. Door Controls International
    b. Rockwood Manufacturing (RO)
    c. Trimco

2.4 CYLINDERS AND KEYING

A. General: Master key or grand master key locks to Owner's existing system policy.

B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:

1. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
2. Mortise cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.

D. Keying System: Cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:

1. Master Key System: Cylinders are operated by a change key and a master key.
2. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
3. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
4. Keyed Alike: Key all cylinders to same change key.

E. Key Quantity: Provide the following minimum number of keys:

1. Top Master Key: One
2. Change Keys per Cylinder: Two
3. Master Keys (per Master Key Group): Two
4. Grand Master Keys (per Grand Master Key Group): Two

5. Construction Control Keys (where required): Two
6. Permanent Control Keys (where required): Two

F. Construction Keying: Provide construction master keyed cylinders or temporary keyed construction cores where specified. Provide construction master keys in quantity as required by project Contractor. Replace construction cores with permanent cores. Furnish permanent cores for installation as directed under specified "Keying Conference".

G. Key Registration List: Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

2.5 MECHANICAL LOCKS

A. Mortise Locksets: Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped 12 gauge minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2 3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.

1. Provide mortise lock bodies functionally compatible with a rose-less lever trim option.

2. Acceptable Manufacturers:

a. Schlage L – Series Commercial Heavy Duty Mortise Locks L900 Full Face escutcheons and #6 Handles

B. Exit Devices: Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant stainless steel, stamped 12 gauge minimum formed steel. Lockset trim to be the product of a single manufacturer.

1. Acceptable manufacturers: Yale Model 2100 or approved equal.

C. Lock Trim Design: As specified in Hardware Sets.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Dustproof Strikes: BHMA A156.16.

2.7 DOOR CLOSERS

A. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units and high impact, non-corrosive plastic covers standard.

1. Acceptable Manufacturers:

a. LCN Model - 4040XP Series Aluminum Finish

2.8 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Acceptable Manufacturers:

a. Rockwood Manufacturing (RO)
b. Trimco

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:

a. Rixson Door Controls (RF)
b. Rockwood Manufacturing
c. Sargent Manufacturing

2.9 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated.

B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

C. Acceptable Manufacturers:

1. Pemko Manufacturing (PE)
2. Reese Enterprises, Inc.

2.10 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.11 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of hardware to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Architect will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.8 DOOR HARDWARE SCHEDULE

A. The hardware sets represent the design intent and direction of the Owner and Architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the Architect with corrections. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. Manufacturer's Abbreviations:

MK - McKinney
PE – Pemko
RO - Rockwood
RF - Rixson
SA – Sargent
HA - Hager
SL – Schlage
LCN – LCN
VD – Von Duprin

Hardware Schedule

Set: 1.0-Exterior Doors

*	Hinge (heavy weight)	BB1199 4.5"x4.5" Stainless Stl 32D	HA
1	Lock Set & Latch	L9000 Stainless Stl	SL
1	Deadbolt	B600 SERIES 6 PIN GRADE 1 SS	SL
1	Outside Front Plate	(submit model)	
1	Door Closer	4040XP Aluminum finish	LCN
1	Door Stop	234W	HA
1	Threshold	252x3AFG	PE
1	Gasketing	S88D	PE
1	Door Bottom	216APK	PE
1	Sweep	368CN	PE
1	Panic Hardware	Series 98-99 Stainless Steel	VD
1	Kick Plate	190S Stainless Steel	HA

Set: 2.0 Office

*	Hinge (heavy weight)	BB1199 4.5"x4.5" Stainless Stl	32D	HA
1	Office and Inner Entry Lock	L-Series Stainless	32D	SL
1	Concealed Overhead Stop	1-X36	630	RF
1	Door Closer	4040XP Aluminum finish		LCN
3	Silencer	608		RO

Set: 3.0 Bathroom

*	Hinge (heavy weight)	BB1199 4.5"x4.5" Stainless Stl	32D	HA
1	Bath/Bedroom Lock	L-Series Stainless	32D	SL
1	Concealed Overhead Stop	1-X36	630	RF
3	Silencer	608		RO

Set: 4.0 Mechanical Room

*	Hinge (heavy weight)	BB1199 4.5"x4.5" Stainless Stl	32D	HA
1	Storeroom Lock	L-Series Stainless	32D	SL
1	Door Closer	4040XP Aluminum finish		LCN
1	Threshold	252x3AFG		PE
1	Gasketing	S88D		PE
1	Rain Guard	346C		PE
1	Door Bottom	216APK		PE
1	Sweep	90100CNB		PE
3	Silencer	608		RO
1	Latch Protector	325	26D	RO

END OF SECTION

SECTION 09260

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data.

B. STC-Rated Assemblies: Provide materials and construction identical to assemblies whose STC ratings were determined according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

C. Fire-Resistance-Rated Assemblies: Provide materials and construction identical to assemblies tested according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide framing at interior partitions capable of withstanding loads within limits and under conditions indicated.
   1. Interior Design Load: 5 psf.
   2. Interior Non-Load Bearing Partition Wall Framing: Horizontal deflection of 1/120 of the framing member span.

PART 2 - PRODUCTS

2.1 BOARD

A. Gypsum board products in maximum lengths available to minimize end-to-end butt joints.

   1. Gypsum Wallboard: ASTM C 36, with manufacturer's standard edges, 5/8 inch thick, Type X, unless otherwise indicated.

   2. Moisture Resistant Gypsum Board: ASTM C 630, 5/8 inch thick, Regular type, unless otherwise indicated. Type X where required for fire-resistance-rated assemblies and where indicated. “Gyroc Moisture-Guard” manufactured by Georgia-Pacific Corp. or equal.

2.2 ACCESSORIES

A. Trim Accessories: Cornerbead, edge trim, and control joints complying with ASTM C 1047, formed from steel sheet zinc coated by hot-dip process or rolled zinc. Use steel sheet zinc coated by hot-dip process or rolled zinc at exterior soffits.

B. Gypsum Board Joint Treatment Materials: Comply with ASTM C 475. Paper reinforcing tape and setting-type taping compound and drying-type, ready-mixed, compounds for topping.

C. Glass-Fiber Sheathing Tape for Glass-Mat Gypsum Sheathing: Self-adhering glass-fiber tape, minimum 2 inches (50 mm) wide, 10 by 10 threads per inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing board and with a history of successful in-service use.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. Perma-Tite Tape--PGM 207A; PermaGlas-Mesh, Inc.
b. Quik-Tape; Quik-Tape, Inc.

D. Silicone Emulsion Sealant for Glass-Mat Gypsum Sheathing: Product complying with ASTM C 834, compatible with sheathing tape and gypsum sheathing, recommended by sheathing and tape manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Product: Subject to compliance with requirements, provide "Elmer's Siliconized Acrylic Latex Caulk" by Borden, Inc.

E. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.

F. Sound-Attenuation Blankets: Unfaced mineral-fiber-blanket insulation complying with ASTM C 665 for Type I.

G. Access Panels: See Spec 08310

H. Miscellaneous Materials: Auxiliary materials for gypsum board construction that comply with referenced standards.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

1. Isolate the perimeter of non-load-bearing gypsum board partitions where they abut structural elements, except floors, by providing a 1/4- to 1/2-inch wide space between gypsum board and the structure. Trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

2. STC-Rated Assemblies: Comply with ASTM C 919 for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies.

3. Fire-Resistance-Rated Assemblies: Comply with requirements of listed assemblies.

4. Light Fixture Protection: Provide gypsum wallboard enclosure over recessed lighting fixtures in ceilings when required in fire-rated construction.

5. Fire Taping: Comply with manufacturers printed instructions for fire resistance where fire rated assemblies are indicated.

6. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.

7. Multilayer Fastening Methods: Fasten base layers with screws and face layers to base layers with adhesive and supplementary fasteners.

B. Finishing Gypsum Board Assemblies:

1. Level 4 smooth finish, at exposed walls and ceilings to receive paint as final surface treatment.

2. Level 3 at walls and ceilings to receive additional covering such as decorative wall paper.

3. Level 1 finish for concealed areas, unless a higher level of finish is required for fire-resistance-rated assemblies.

4. Level 2 finish where panels form substrates for tile or rigid sheet covering such as fiberglass reinforced plastic (FRP) panels.

5. Trim all exposed gypsum board edges.

END OF SECTION

SECTION 09650
RESILIENT FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Vinyl Tile (12”x12”)

B. Resilient base.

C. Vinyl stair treads & risers.

D. Accessories.

E. Preparing of existing floor.

F. Cleaning and protection.

1.2 RELATED SECTIONS

A. Section 00205 – Materials Schedule.

B. Section 03300 - Concrete: Curing of floor slab.

C. Other Division 9 sections.

1.3 REFERENCES

A. Provide flooring material to meet the following fire test performance criteria as tested by a recognized independent testing laboratory.
   1. ASTM E 648 Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I.
   2. ASTM E 662 (Smoke Generation) Maximum Specific Optical Density of 450 or less.

B. ASTM C1028 - Test Method for Determining the Static Coefficient of Ceramic Tile and Other like Surfaces by Horizontal Dynamometer Pull-Meter Method.

C. ASTM D2047 - Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces Measured by the James Machine.

D. ASTM E303 - Method of Measuring Surface Frictional Properties Using the British Pendulum Tester.

E. ASTM F1066, Class 2, Composition 1.

F. ASTM D2047 - Static Coefficient of Friction of Polish-Coated Floor Surfaces

G. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities

1.4 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300.
   1. Closeout Submittals: Submit the following under provisions of Section 01700:

1.5 ENVIRONMENTAL REQUIREMENTS

A. Do not commence with VT installation until painting and finishing work is complete and ceilings and overhead work, tested, approved and completed.

B. Maintain minimum 70 deg. F air temperature at flooring installation area for three days prior to, during, and 24 hours after installation. Maintain minimum 55 deg. F thereafter. Store materials in area of application. Allow 48 hours for material to reach temperature equal to area.

PART 2 – PRODUCTS

2.1 GENERAL

A. It is the intention of the designers that the system meet the recommendations of ADAAG for slip resistance using ASTM D2047 as follows:

1. Accessible Routes (as defined by ADAAG) & Rooms: 0.6 static coefficient of friction

2.01 **RESILIENT SHEET** FLOORING MATERIALS, Acceptable Manufacturers:

A. Armstrong World Industries, Inc.: REJUVENATIONS StoneRun Heterogeneous Vinyl Sheet Flooring, Color per Finish Schedule on drawings, 6 ft. (1.83 m) wide, having a nominal total thickness of 0.080 in. (2.0 mm), consisting of a nominal 0.022 in. (0.55 mm) thick, polyurethane-coated, clear wear layer composed of polyvinyl chloride resin, plasticizers and stabilizers on printed fiberglass and filled vinyl inner layers on a vinyl-saturated polyester scrim backing. The surface has an overall embossed texture. Heat welded seams. Vinyl sheet flooring shall meet ASTM F 1303, Type I, Grade 1, with Class A backing. ASTM E 648 Critical Radiant Flux Class I; ASTM E 662 Smoke Developed 450 or less. Color and style per finish schedule on drawings.

B. Mannington Commercial, Assurance II Vinyl Sheet Flooring, Color per Finish Schedule on drawings, 6 ft. (1.83 m) wide, having a nominal total thickness of 0.080 in. (2.0 mm), a clear wear layer composed of urethane aluminum oxide. The surface has an overall embossed texture. Heat welded seams. Vinyl sheet flooring shall meet ASTM F 1303, Type I, Grade 1, with Class A backing. ASTM E 648 Critical Radiant Flux Class I; ASTM E 662 Smoke Developed 450 or less. Color and style per finish schedule on drawings.

C. Provide solid color vinyl weld rod supplied by manufacturer and intended for heat welding of seams. Color shall be compatible with field color of flooring or as selected by Architect per finish schedule on drawings to contrast with field color of flooring.

2.02 WALL BASE MATERIALS

A. For integral flash cove base: Provide integral flash cove wall base by extending sheet flooring 4 in. (10.16 cm) up the wall using adhesive and accessories recommended and approved by the flooring manufacturer.

B. For standard vinyl base: Provide 4” high x 1/8” thick base complying with ASTM-1861 Type TV (Thermoplastic Vinyl). Type: Coved, standard toe. Use factory formed inside and outside corners. Use roll stock, not short sticks. Color: match Roppe Dolphin #129.

2.03 VINYL STAIR TREADS AND RISERS

A. Provide vinyl finish stair treads in 12 3/8” x 48” x 1/4” thick standard sticks, complying with ASTM F-2169 Type TV Class 2 (raised round pattern). Type: Style 18 Heavy Duty HD Square Nose Ribbed Treads. Provide vinyl risers in 7” high x 50 foot rolls. Color: match Roppe Dolphin #129.

2.04 ADHESIVES

A. Provide commercial sheet flooring adhesive Armstrong S-599 Premium Vinyl-Back Sheet Flooring Adhesive][S-240 High-Performance Epoxy Flooring Adhesive] for field areas and Armstrong [S-580 Flash Cove Adhesive at flash coving][S-725 Wall Base Adhesive at the wall base] OR Equal as recommended by the flooring manufacturer.

B. For High-Moisture Installation Warranty, Full Spread: Provide Armstrong S-543 Premium Plus Commercial Sheet Flooring Adhesive for field areas and Armstrong [S-580 Flash Cove Adhesive at flash coving][S-725 Wall Base Adhesive at the wall base] OR Equal as recommended by the flooring manufacturer].

C. [Provide Armstrong S-761 Seam Adhesive at seams OR Equal as recommended by the resilient flooring manufacturer].

2.05 ACCESSORIES

A. For patching, smoothing, and leveling monolithic subfloors (concrete, terrazzo, quarry tile, ceramic tile, and certain metals), provide Armstrong [S-183 Fast-Setting Cement-Based Underlayment] [S-184 Fast-Setting Cement-Based Patch and Skim Coat] [S-194 Fast-Setting Cement-Based Patch and Underlayment] as required to patch slab, or equal product.

B. For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.

C. Provide top edge trim caps of anodized aluminum for integral flash cove as approved by the Architect.

D. Provide a fillet support strip for integral cove base with a minimum radius of 1 in. (2.54 cm) of wood or plastic.

E. Provide transition/reducing strips tapered to meet abutting materials.

F. Provide threshold of thickness and width as shown on the drawings.

G. Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with color to match or contrast with the flooring, or as selected by the Architect from standard colors available.

H. Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine subfloors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

B. Inspect subfloors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.

C. Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.

D. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the subfloor. Installation indicates acceptance of substrates with regard to

conditions existing at the time of installation.

3.02 PREPARATION

A. Smooth concrete surfaces, removing rough areas, projections, ridges, and bumps, and filling low spots, control or construction joints, and other defects with Armstrong [S-183 Fast-Setting Cement-Based Underlayment][S-184 Fast-Setting Cement-Based Patch and Skim Coat][S-194 Fast-Setting Cement-Based Patch and Underlayment] as recommended by the flooring manufacturer.

B. Remove paint, varnish, oils, release agents, sealers, and waxes. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents.

C. Perform subfloor moisture testing in accordance with [ASTM F 2170, “Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes”][ASTM F 1869,“Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride”] and Bond Tests as described in publication F-5061, "Armstrong Guaranteed Installation System," to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. [Relative humidity shall not exceed 80%.][MVER shall not exceed 5 lbs./1000 sq. ft./24 hrs.] On installations where both the Percent Relative Humidity and the Moisture Vapor Emission Rate tests are conducted, results for both tests shall comply with the allowable limits listed above. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained.

D. [For High-Moisture Installation Warranty, perform subfloor moisture testing in accordance with ASTM F 2170, “Standard Test Method for Determining Relative Humidity in Concrete Slabs Using *in-situ* Probes” and Bond Tests as described in publication F-5061, "Armstrong Guaranteed Installation System," to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring. Relative humidity of the slab shall not exceed 90%. Do not proceed with flooring installation until results of moisture tests are acceptable. All test results shall be documented and retained].

E. Perform pH tests on concrete floors regardless of their age or grade level. All test results shall be documented and retained.

F. Vacuum or broom-clean surfaces to be covered immediately before the application of flooring. Make subfloor free from dust, dirt, grease, and all foreign materials.

3.03 INSTALLATION OF SHEET FLOORING

A. Install flooring in strict accordance with the latest edition of "Armstrong Guaranteed Installation System", F-5061.

B. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.

C. If required, install flooring on pan-type floor access covers. Maintain continuity of color and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.

D. Scribe, cut, and fit or flash cove to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.

E. Adhere flooring to the subfloor without cracks, voids, raising and puckering at the seams. Roll with a 100-pound (45.36 kilogram) roller in the field areas. Hand-roll flooring at the

perimeter and the seams to assure adhesion. Refer to specific rolling instructions of the flooring manufacturer.

F. Lay flooring to provide a minimum number of seams. Avoid cross seams, filler pieces, and strips. Match edges for color shading and pattern at the seams in compliance with the manufacturer's recommendations.

G. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

H. [Prepare heat-welded seams with special routing tool supplied for this purpose and heat weld with vinyl welding rod in seams.] [Prepare adhered seams with special seam n adhesive supplied for this purpose.] Use methods and sequence of work in conformance with written instructions of the flooring manufacturer. Finish all seams flush and free from voids, recesses, and raised areas.

I. [Provide integral flash cove wall base where shown on the drawings, including cove fillet support strip and top edge cap trim. Construct flash cove base in accordance with the flooring manufacturer's instructions. Heat-weld seams as specified for those on the floor.

3.04 INSTALLATION OF ACCESSORIES

A. Apply top set wall base to walls, columns, casework, and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

B. Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.

C. Place resilient edge strips tightly butted to flooring, and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.

D. Apply overlap metal edge strips where shown on the drawings, before flooring installation. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

3.05 CLEANING AND PROTECTION

A. Perform initial maintenance according to the latest edition of "Armstrong Guaranteed Installation System," F-5061.

B. Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades, or the placement of fixtures and furnishings.

END OF SECTION

SECTION 09770

DECORATIVE FIBERGLASS REINFORCED WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished gypsum wallboard.
   1. PVC trim.
   2. PVC Wall base.

B. Products Not Furnished or Installed under This Section:
   1. Gypsum substrate board.
   2. Resilient Base.

1.2 RELATED SECTIONS

A. Section 09260 – Gypsum substrate board.

1.3 REFERENCES

A. American Society for Testing and Materials: Standard Specifications (ASTM)
   1. ASTM D 256 - Izod Impact Strengths (ft #/in)
   2. ASTM D 570 - Water Absorption (%)
   3. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi)
   4. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi)
   5. ASTM D 2583- Barcol Hardness
   6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
   7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.

C. Selection Samples: Submit manufacturer’s standard color pattern selection samples representing manufacturer's full range of available colors and patterns.

D. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.
   1. Submit complete with specified applied finish.
   2. For selected patterns show complete pattern repeat.
   3. Exposed Molding and Trim: Provide samples of each type, finish, and color.

E. Manufacturers Material Safety Data Sheets (MSDS) for adhesives and sealants prior to their delivery to the site.

1.5 QUALITY ASSURANCE

A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
   1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)
      a. Wall Required Rating – Class C.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory packaged on strong pallets.

B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (70°) for 48 hours prior to installation.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work

B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
   1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

1.8 WARRANTY

A. Furnish one year guarantee against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Marlite, Symmetrix style; or approved equal.

B. Product:
   1. Symmetrix with sani-coat.

2.2 PANELS

A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
   1. Coating: Multi layer print, primer and finish coats.
   2. Dimensions:
      a. Thickness – 0.090 inch (2.29mm) nominal
      b. Width - 4'-0" (1.22m) nominal
      c. Length – 10'-0" nominal
   3. Tolerance:
      a. Length and Width: +/-1/8 inch (3.175mm)
      b. Square - Not to exceed 1/8 inch for 8 foot (2.4m) panels or 5/32 inch (3.96mm) for 10 foot (2.4m) panels

B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
   1. Flexural Strength - 1.0×10^4 psi per ASTM D 790. (7.0 kilogram-force/square millimeter)
   2. Flexural Modulus - 3.1×10^5 psi per ASTM D 790. (217.9 kilogram-force/square millimeter)
   3. Tensile Strength - 7.0×10^3 psi per ASTM D 638. (4.9 kilogram-force/square millimeter)
   4. Tensile Modulus - 1.6×10^5 psi per ASTM D 638. (112.5 kilogram-force/square millimeter)
   5. Water Absorption - 0.72% per ASTM D 570.
   6. Barcol Hardness (scratch resistance) of 35 55 as per ASTM D 2583.
   7. Izod Impact Strength of 72 ft. lbs./in ASTM D 256

C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.

D. Front Surface: Symmetrix FRP Tile pattern.

E. Front Finish: C145-G44 Silver.
   a. Color C145-G44 Silver.
   b. Surface: Tile Pattern.
   c. Fire Rating: Class C (III) Fire Rating.
   d. Size: 4' x 9' [1.2m x 2.7m] x .120"

2.3 BASE

A. Marlite Base Molding for 0.090 inch (2.29mm) thick FRP Panels
   1. Color: [Black] [Quarry Red].
   2. Profiles:
      a. M 612 FRP Base Molding
      b. M 651 Inside Corner
      c. M 660 Outside Corner
      d. M 620 LH End Cap
      e. M 625 RH End Cap

2.4 MOLDINGS

PVC: Extruded PVC Trim Profiles for .090 inch thick panels.
   1. M 350 Inside Corner
   2. M 360 Outside Corner

3. M 365 Division
4. M 370 Edge
    a. Color: __145 Silver

B. Outside Corner Guard:
1. M 961 PVC
    a. 145 Silver

2.5 ACCESSORIES

A. Fasteners: None- Panels adhesive applied

B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.
1. Marlite C-551 FRP Adhesive - Water- resistant, non-flammable adhesive
2. Marlite C-375 Construction adhesive flexible, water-resistant, solvent based adhesive formulated for fast, easy application.

C. Sealant:
1. Marlite Brand MS-250 Clear Silicone Sealant
2. Marlite Brand MS-251 White Silicone Sealant
3. Marlite Brand - Color Match Sealant,

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
1. Verify that stud spacing does not exceed 24 inch (61cm) on-center.

B. Repair defects prior to installation.
1. Level wall surfaces to panel manufacturer’s requirements. Remove protrusions and fill indentations.

3.2 INSTALLATION

A. Comply with manufacturer's recommended procedures and installation sequence.

B. Cut sheets to meet supports allowing 1/8” inch (3 mm) clearance for every 8 foot (2.43m) of panel.
1. Cut with carbide tipped saw blades, or cut with shears.

C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
1. Install panels with manufacturer's recommended gap for panel field and corner joints.
    a. Adhesive trowel and application method to conform to adhesive manufacturer’s recommendations.

D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.

1. All moldings must provide for a minimum 1/8 inch (3.18mm) of panel expansion at joints and edges, to insure proper installation.
2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

3.3 CLEANING

A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.

B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.

END OF SECTION

SECTION 09900
PAINTING

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Installation of finish as scheduled.

1.2 REFERENCES

A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

1.3 DEFINITIONS

A. Conform to ASTM D16 for interpretation of term used in this Section.

1.4 QUALITY ASSURANCE

A. Applicator: Company specializing in commercial painting and finishing with 3 years experience.

1.5 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame, fuel, smoke rating requirements for finishes.

1.6 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:
   1. Product data.
   2. Samples: Submit two 6" x 6" samples illustrating range of colors and textures available for each surface finishing product scheduled for selection and approval.
   3. Manufacturer's application instructions.

B. Closeout Submittals: Submit the following under provisions of Section 01300
   1. Extra Materials: Provide 1 gallon of each product used on the project. Paint to be in clean 1 gallon cans neatly marked, showing manufacture, application instructions, color name, number and/or formula and product type.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and protect products to site under provisions of Section 01600.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45° F and a maximum of 90° F, in well ventilated area, unless required otherwise by manufacturer's instructions.

E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 ° F for 24 hours before and during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 50 °F unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish Finishes: 65 ° F for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 – PRODUCTS

2.1 APPROVED MANUFACTURER AND MATERIAL SUPPLIER

Acceptable Manufacturers:
1. Benjamin Moore & Co.
2. ICI Paint Stores, Inc.
3. Sherwin-Williams Company, Stores Division
4. Or approved equal with same performance and warranty.

B. Painting contractor shall perform all required material take off and purchase specified paint products.

C. Painting contractor may select manufacturer of paint from one of the above listed or proposed substitution for review.

D. All materials specified in this section must be from one and only one of the selected manufacturers.

2.2 PRIMERS

A. Inhibitive Metal and Galvanized Metal Primer:
1. Sherwin-Williams, Pro Industrial Series Pro-Cryl Universal Acrylic Primer B66-310 series.
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

B. Interior Primer/Sealer:
1. Sherwin-Williams, manufacturer’s recommended primer for paint P-1.
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

C. Interior Wood/MDO Primer:
1. Benjamin Moore.
2. ICI Ultra Hide Interior Wood Undercoater.
3. Sherwin-Williams Prep Rite Classic Primer B28W101
4. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

2.3 FINISH PAINTS

A. Interior Acrylic Latex, satin finish (P-1):
Paint locations: General paint for interior walls and ceilings where P-3 is not used.
1. Sherwin-Williams, Pro Classic Interior Acrylic Latex.
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

B. Industrial Enamel, gloss finish (P-2):
Paint locations: General paint for interior and exterior, non-factory finished miscellaneous steel, such as railings, stair stringers, etc.
1. Sherwin-Williams Pro Industrial series Industrial Enamel 100.
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

C. Interior High Performance Epoxy, gloss finish (P-3):
Paint locations @ Room 200-201 fire retardant treated wood walls: Tipping floor side of mezzanine walls & soffit, 8' high plywood wainscot and as noted on drawings.
1. Benjamin Moore, Super Spec HP Epoxy (Polyamide).
2. Sherwin-Williams Pro Industrial High-Performance Epoxy.
3. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

D. Exterior & Interior Traffic Marking Paint:
Paint locations: Floor slab & site paving traffic markings.
1. Sherwin-Williams Hotline Traffic Marking Paint TM215/TM2153.
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product performance.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry: 12 percent
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016

C. Beginning of installation means acceptance of substrate

3.2 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.

B. Correct minor defects and clean surfaces that affect the work of this section.

C. Shellac and seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach or commercial mildew removers. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing.

F. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

G. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

H. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution. ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

I. Shop primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions or more stringent requirements specified herein.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior wood work scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop primed equipment.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Prime and paint equipment visible in exposed finished areas, including insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are pre-finished.

D. Replace identification markings on mechanical or electrical equipment when painted accidentally.

E. Paint exposed conduit and electrical equipment occurring in finished areas.

F. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

G. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING

A. As work proceeds, promptly remove paint where spilled, splashed, or spattered.
B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

PART 4 – SCHEDULES

4.1 INTERIOR PAINT SYSTEM SCHEDULE

A. Interior walls:
   1. 1 coat Interior Primer/Sealer
   2, 2 coats Interior Acrylic Latex, satin finish (P-1)

B. Interior gypsum board ceilings:
   1. 1 coat Interior Primer/Sealer
   2. 2 coats Interior Acrylic Latex, satin finish (P-1)

C. Hollow Metal Doors, Hollow metal door and window frames and other Interior un-galvanized Ferrous Metal.
   1. 1 coat Rust Inhibiting Primer (if unprimed)
   2. 2 coats Industrial Enamel, gloss finish (P-2)

D. Interior Galvanized Ferrous Metal:
   1. 1 coat Galvanized Metal Primer.
   2. 2 coats Waterborn Acrylic Semi-Glass

E. PT-8: Interior Floor Striping:
   1. 1 coat Traffic Paint

4.2 EXTERIOR PAINT SYSTEM SCHEDULE

A. Exterior Ungalvanized Ferrous Metal:
   1. 1 coat Inhibitive Metal and Galvanized Metal Primer (if unprimed).
   2. 2 coats Exterior Gloss Enamel

B. Exterior Galvanized Ferrous Metal:
   1. 1 coat Inhibitive Metal and Galvanized Metal Primer (if unprimed).
   2. 2 coats Exterior Gloss Enamel

C. Roof and Wall Panels
   1. Factory Finish per Section 13122

D. Striping:
   1. 1 coat Traffic Paint.

4.3 COLOR SCHEDULE

A. C1 Warning stripes
   1. Benjamin Moore OSHA Yellow
   2. ICI
   3. Sherwin Williams Safety Yellow 4084

B. C2 Traffic Paint
   1. 1 coat
   2. Site: White
   3. Tipping Floor: Safety Yellow 4084

C. C3 Interior walls
   1. Benjamin Moore match.
   2. ICI by color match.
   3. Sherwin Williams color to match: per schedule on drawings.

END OF SECTION

SECTION 10430
EXTERIOR SIGNAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building address numerals.

B. Accessible parking signs.

C. Traffic control signs.

D. Parking signs.

1.2 RELATED SECTIONS

A. Section 03300 – Cast-In-Place Concrete: Setting for post-mounted signs.

B. Section 05500 - Metal Fabrications: posts for post-mounted signs.

C. Section 10440 - Interior Signage.

1.3 REFERENCES

A. Manual on Uniform Traffic Control Devices for Streets and Highways of the State where project is located.

B. Accessible Parking Requirements, Local and State Building Code.

C. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

1.4 SUBMITTALS

A. Material and Equipment Submittals: Provide the following under provisions of Section 01300:

PART 2 - PRODUCTS

2.1 TRAFFIC CONTROL & WARNING SIGNAGE

A. Traffic Control Signs: (Accessible Parking, Stop, Fire Lane, Site signs, etc.) Metal reflective sign materials, design, and graphics complying with State Department of Transportation, ADAAG, City, and State and Local Fire Marshal. Locate signs in parking lot per local traffic ordinances. Sign materials, design, and graphics complying with State Department of Transportation, ADAAG, and City.

B. Building wall mounted instruction signs. (Site and building interior warning signs, etc.) Metal reflective sign materials, design, and graphics complying with OSHA, State Department of Transportation, ADAAG, City, State and Local Fire Marshal. Wall mounted signs for public safety and instruction at building exterior and interior.

2.2 BUILDING ADDRESS NUMERALS

A. Building Address Letters (wall mounted):
   1. G.C. to provide and install building access numerals as required by City or Fire Marshall. Twelve-inch (12”). high metal letters in color to contrast exterior mounting wall. Contractor to verify and provide as required by local officials. Mounting elevation per drawings @ closest horizontal metal building girt substrate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify locations are ready to receive work.

3.2 INSTALLATION

A. Install in accordance with State Department of Transportation and accessible parking requirement instructions.

B. Install true, plumb and square.

C. Install building mounted letters:
   1. Mount vinyl numerals on inside surface of exterior main entry door centered above door opening. Unless required otherwise by local requirements.

D. See Drawings for location of all signage or verify questions with architect or KPB Project Manager.

END OF SECTION

SECTION 10440
INTERIOR SIGNAGE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Room name sign.

B. Accessibility signage

C. Public Instructional signs.

1.2 RELATED SECTIONS

A. Section 10430 - Exterior Signage.

1.3 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:

1.4 REFERENCE STANDARDS

A. ADA - Americans with Disabilities Act 2010

B. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

1.5 REGULATORY REQUIREMENTS

A. All signage to comply with ADAAG provisions for signage, at appropriate locations, with respect to the following:
   1. Character proportion.
   2. Character height.
   3. Raised and Braille characters.
   4. Pictorial symbols.
   5. Finish and contrast.
   6. Mounting locations and heights.

PART 2 - PRODUCTS

2.1 GENERAL

A. It is the intention of the designers that the system meet the requirements of ADAAG.

2.2 LAMINATED PLASTIC TYPE

A. Acceptable Manufacturers:
   1. ASI Sign Systems: "390R Series" black colored frame; Ability Plastics Inc., Justice, IL, Phone 708.458.4480, Model #8-374 Ash gray textured face, black core.
   2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

B. Frame: Molded plastic with 1/2" radius corners, 3/8" outside thickness providing for recessed insert plaque.

C. Insert Plaque: Laminated colored plastic; core color contrasting to exterior face color; 9" x 9" size, total thickness 0.125 inch. "Helvetica Medium" style lettering engraved through face material to expose core.

D. Attachment:
   1. Frame to Wall: Blind mount, toggle or expansion bolts through 1" diameter metal tube spacers holding sign approximately 1" from wall. Countersink fastener head to allow insert plaque to adhere to frame concealing fasteners.
   2. Insert Plaque to Frame: Adhesive.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install signs after surfaces are painted and finished, in locations indicated.

B. Install centered and level, in line, and in accordance with manufacturer's instructions.

C. Clean and polish. Remove excess adhesive.

PART 4 - SCHEDULES

4.1 SIGNAGE SCHEDULE—General Contractor to confirm number, location and verbiage with owners representative. Provide Braille, contrast and related sign design elements per Americans with Disabilities Act Accessibility Guidelines requirements.

A. Sign Text	Location/ Room
1. **"UNISEX RESTROOM "**	Restroom-Door 107
2. **"OFFICE"**.....	Office-Door 106.
3. **"MECH/ELEC"**.....	Mechanical Room-Door 105.
4. **"EMPLOYEES ONLY"**.....	Locations Per Owners Rep.
5. **"MAXIMUM STORAGE LOAD 125 PSF"**.....	Mezzanine facia.
6. **"FIRE EXIT "**.....	Exit Doors 103 and 104.

END OF SECTION

SECTION 10520
FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Fire extinguishers.

B. Accessories.

1.2 RELATED SECTIONS

A. Section 09900 - Painting: Field paint finish.

1.3 REFERENCES

A. NFPA 10 - Portable Fire Extinguishers.

B. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

1.4 QUALITY ASSURANCE

A. Conform to NFPA 10 requirements for extinguishers.

B. Provide fire extinguishers, cabinets and accessories by a single manufacturer.

1.5 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:

B. Closeout Submittals: Submit the following under provisions of Section 01700:
1. Maintenance Data: Include test, refill or recharge schedules, procedures, and re-certification requirements.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install extinguishers when ambient temperatures may cause freezing.

PART 2 - PRODUCTS

2.1 GENERAL

A. It is the intention of the designers that the system meets the requirements of ADAAG.

2.2 EXTINGUISHERS

A. (**FE-1**) Multipurpose Mono-Ammonium Phosphate Type ABC extinguishers: UL-rated 6A-120B:C, 20 lb., nominal capacity, enameled steel tank with pressure gauge.

1. Basis of Design: J.L. Industries, Extinguisher Type: Cosmic 20E (tipping floor and vehicle tunnel).
   J.L. Industries, Inc., 4450 West 78th Street Circle, Bloomington, MN 55435, (952) 835-6850, Fax: (952) 835-2218
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

B. (**FE-2**) Halotron 1 Type: UL-rated 10B:C, 11 lb. nominal capacity, aluminum tank with pressure gauge.
1. Basis of Design: J.L. Industries, Extinguisher Type: Mercury Halotron11 (office area)
   J.L. Industries, Inc., 4450 West 78th Street Circle, Bloomington, MN 55435, (952) 835-6850, Fax: (952) 835-2218
2. Or equivalent with same performance and warranty. Sub-contractor takes responsibility for product.

2.3 FIRE EXTINGUISHER CABINETS

A. Basis of Design: J.L. Industries, Ambassador Series, model to fit approved extinguisher type at Vehicle Tunnel and Tipping Floor. Cold rolled steel with red painted finish. Surface mounted, rolled edge, full glazed cabinets.
B. Basis of Design: J.L. Industries, Academy Series, model to fit approved extinguisher type at office suite. Cold rolled steel with red painted finish. Semi-recessed wall mounted, full glazed cabinets.

2.4 ACCESSORIES

A. Manufacturers recommended fasteners.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install extinguisher mounting brackets plumb and level, 48” maximum inches from finished floor to handle of extinguisher.

B. Secure fire extinguishers rigidly in place at mounting heights indicated, in accordance with manufacturer's instructions.

C. Mount the equipment in accordance with the requirements of ADAAG for reach range and protruding objects.

D. Verify all quantities, extinguisher types and locations with the Fire Marshal prior to installation.

END OF SECTION

SECTION 10800
TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Toilet and bath accessories listed herein.

B. Attachment hardware.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood anchor reinforcement in walls.

1.3 REFERENCES

A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

B. ADAAG - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities

C. Applicable State and Local Accessibility Codes regarding toilet accessory mounting heights and mounting locations.

1.4 SUBMITTALS

A. Material and Equipment Submittals: Submit the following under provisions of Section 01300:

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.

B. Pack accessories individually in a manner to protect accessory and its finish.

1.6 PROTECTION

A. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this Section.

1.7 GUARANTEE

A. Provide manufacturer's 15 year guarantee against silver spoilage for mirrors.

PART 2 - PRODUCTS

2.1 GENERAL

A. It is the intention of the designers that the system meets the requirements of ADAAG and match satin finish and style where possible.

2.2 TOILET AND BATH ACCESSORIES

A. Toilet Tissue Dispenser: Bobrick #B-2892, Stainless steel. Double Jumbo Roll

B. Paper Towel Dispenser: Automatic motion sensor dispenser. Georgia Pacific, enMotion wall mounted automated touchless towel dispenser, hard-wired AC with battery backup.

C. Air Freshener Dispenser: Rubbermaid #5114.

D. Hand Soap Dispenser: Kutol Wall mounted soft and silky bag in box model # 9950ZPL, off white.

E. Sanitary Napkin/Tampon Dispenser: Bobrick #B-3706 25

F. Toilet Seat Cover Dispenser: Bobrick #B-221

G. Channel framed Mirror: Bobrick #B-165-2436, surface mounted, once piece mirror frame and No.1 quality electrolytically copper-plated glass mirror; or approved equal.

H. Grab Bars: Concealed mounting, 1-1/4" diameter, 18 gage, Type 304 stainless steel satin finish. Bobrick B-5806 series, bar lenghts per plans;

2.3 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form exposed surfaces from one sheet of stock, free of joints.

C. Provide steel anchor plates and anchor components for installation on building finishes.

D. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

E. Back paint components where contact is made with building finishes to prevent electrolysis.

F. Hot dip galvanize ferrous metal anchors and fastening devices.

G. Key all accessories alike.

H. Shop assemble components and package complete with anchors and fittings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work and dimensions are as instructed by manufacturer.

B. Beginning installation means acceptance of existing conditions.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to jobsite at appropriate time for building-in.

B. Provide templates and rough-in measurements as required.

C. Before starting work notify Architect in writing of any conflicts detrimental to installation or operation of units.

3.3 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturer's instructions and all applicable Building and Accessibility Codes. Verify and obtain direction from Local Building Code Official in regards to any and all discrepancies between mounting heights indicated on the drawings, and applicable Building Codes.

B. Install true, plumb, and level, securely and rigidly anchored to substrate.

C. Use tamper-proof fasteners.

END OF SECTION

SECTION 13121

METAL BUILDING SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Structural steel frame.

B. Complete roof covering system consisting of the secondary structural roof and soffit framing, exterior roof panels, panel attachments, sealants, mastics, trim and flashings as required for a weather tight assembly.

C. Complete wall covering system consisting of secondary structural wall framing, exterior wall panels, panel attachments, sealants, mastics, trim and flashings as required for a weather-tight assembly.

D. Wall accessories, including:
   1. Framed opening and trim for service doors.
   2. Framed opening and trim for windows.
   3. Framed opening and trim for overhead sectional doors.
   4. Framed openings and trim for louvers.

E. Roof accessories, Including:
   1. Façade and soffit systems.
   2. Snow stops.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete: Foundations and anchor bolts.

B. Section 08362 – Overhead Sectional Doors.

C. Section 08110- Steel Doors and Frames.

D. Section 08560- Poly Vinyl Chloride Windows

E. Section 09900 - Paints and Coatings: Finish painting of structural members, doors, etc.

F. Section 13122 –Roof and Wall Panels

1.3 REFERENCES

A. AAMA 101 - Voluntary Specification for Aluminum and Poly (Vinyl Chloride) (PVC) Prime Windows and Glass Doors; American Architectural Manufacturers Association.

B. ASTM A 36/ASTM A36M - Standard Specification for Carbon Structural Steel.

C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

D. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

E. ASTM A 475 – Specification for Zinc-Coated Steel Wire Strand.

F. ASTM A 500 – Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

G. ASTMA529/A 529M – Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.

H. ASTM A 536 – Specification for Ductile Iron Castings.

I. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steel.

J. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

K. ASTM A 792/A 792M - Standard Specification for Steel Sheets, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

L. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low Alloy with Improved Formability.

M. ASTM D 635 – Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.

N. ASTM D 1929 – Standard Test Method for Ignition Properties of Plastics.

O. ASTM D 2843 – Standard Test Method for Smoke from the Burning or Decomposition of Plastics.

P. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

Q. ASTM E 774 – Standard Specification for Sealed Insulating Glass Units.

R. ASTM E 1592 – Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure difference.

S. SDI 100 – Recommended Specifications for Standard Steel Doors and Frames; Steel Door Institute.

T. UL 580 – Tests for Wind Uplift Resistance of Roof Assemblies; Underwriters Laboratories, Inc.

1.4 DEFINITIONS

A. Building Width: Measured from outside to outside of sidewall girts.

B. Building Length: Measured from outside to outside of endwall girts.

C. Building Line: Outside face of horizontal steel girt.

D. Building Eave Height: Measured from the intersection of the top of the roof framing and the outside of the wall framing to the bottom of the sidewall column base plate.

E. Bay Spacing: Measured from centerline to centerline of primary frames for interior bays and from centerline of the first interior frame to outside of endwall girts for endbays.

F. Roof Pitch: The ratio of the vertical rise to the horizontal run.

1.5 DESIGN REQUIREMENTS

A. Design structural systems according to professionally recognized methods and standards, and legally adopted building codes.

B. Design under supervision of professional engineer licensed in Alaska.

C. Manufacturer must be certified by AISC in the Metal Building category.

D. Supplier must be a primary manufacturer of frames, secondary steel and trim.

E. Design Loads:
   1. Applicable Building Code: ICC International Building Code 2003 Edition.
   2. Roof Snow Load: 85psf.
   3. Wind Load: Calculate in accordance with applicable code based on following project specific values as applicable.
      a. Basic Wind Speed: 120 MPH

b. Exposure Category: C,
c. Wind Importance Factor: 1.15.

4. Seismic Loads: Calculate and apply seismic loads in accordance with the requirements of applicable building code based on the following project specific values as applicable:
   a. Seismic Importance Factor: 1.5
   b. Soil Profile Coefficient (Fa): 1.0
   c. Soil Profile Coefficient (Fv): 1.3
   d. Mapped Spectral Acceleration for Short Period (Ss): 1.454
   e. Mapped Spectral Acceleration for 1 Second Period (S1): 0.554
   g. Max earthquake spectral response acceleration for short periods (Sms): 1.454
   h. Max earthquake spectral response acceleration for 1 second periods (Sm1): 0.720
   i. Design spectral response acceleration at short periods (Sds): 0.969
   j. Design spectral response acceleration at 1 second periods (Sd1): 0.480
   k. Include 25% of the roof snow load in seismic load calculations.
5. Floor Load:
   a. Mezzanine Floor Live Load: 100psf
   b. Floor Dead Load: 50 psf
   c. Floor Partition Load: 20psf
6. Dead loads, including the weight of all indicated permanent construction.

F. Serviceability Criteria: Exterior wall and roof system to withstand imposed loads with maximum allowable deflections as follows:

1. Maximum deflection, where L is span from center to center of supports, and where H is from top of foundation to eaves:
   a. Primary framing, mid span: L/300
   b. Primary framing, eave line: L/150
   c. Secondary framing: L/250
   d. Roof and Wall panels, Live Load: L/200
   e. Roof and Wall panels, Wind Load L/200
   f. Roof and Wall panels, Thermal L/200

2. Assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 120 degrees F.

G. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

H. Configuration and clearances. Configure structural framing member sizes as required to provide overall dimensions and minimum clearances indicated on the drawings.

I. Foundations and Anchor Bolts: Furnish building to fit foundation column layout and pilaster configuration as indicated. Provide building compatible to foundation design. Provide column reactions, anchor requirements, anchor bolt diameters and length to resist the column reactions induced by the design loads on the structure.

1.6 SUBMITTALS

A. Design Data: Provide design criteria and structural calculations.

B. Certification: Manufacturer certification that the building conforms to the contract documents and manufacturer's standard design procedures.

C. Shop Drawings: Show building layout, primary and secondary framing member sizes and locations, cross-sections, and product and connection details.

D. Product Data: Information on manufactured products to be incorporated into the project.

E. Color Charts: For selection of colors of panels, trim and accessories.

F. Anchor Bolt Drawings: Layouts with bolt diameters.

G. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

H. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

I. Specimen Warranties.

1.7 WARRANTY

A. The building manufacturer shall provide a written warranty for:

1. Materials and workmanship: 3 years.
2. Weathertightness: 20 years

PART 2 PRODUCTS

2.1 METAL MATERIALS

A. Select materials and material yield strengths based on building design requirements; use the following unless required otherwise.

B. Structural Steel Plate, Bar, Sheet, and Strip for Use in Bolted and Welded Constructions: ASTM A 572, A 1011, A 529, ASTM A 1008 with minimum yield strength of 50,000 psi (345 MPa).

C. Structural Steel Material for Use in Roll Formed or Press Broken Secondary Structural Members: ASTM A 1011,or A 1008 with minimum yield strength of 55,000 psi (380 MPa).

D. Galvanized Steel Sheet for Roll Formed or Press Broken Roof and Wall Coverings, Trim and Flashing: ASTM A 653, with minimum yield strength of 50,000 psi (345 MPa). Coating Designation G-90.

E. Galvalume Steel Sheet Used in Roll Formed or Press Broken Roof Covering: Aluminum-zinc alloy-coated steel sheet, ASTM A 792, with minimum yield strength of 50,000 psi (345 MPa); Coating designation AZ50 for painted panels and AZ55 for unpainted panels.

F. Hot Rolled Steel Shapes: W, M and S shapes, angles, rods, channels and other shapes; ASTM A 572/A 529/A 500 or ASTM A 36 as applicable; with minimum yield strengths required for the design.

G. Structural Bolts and Nuts Used with Primary Framing: High strength, ASTM A 325.

H. Bolts and Nuts Used with Secondary Framing Members: ASTM A 325.

I. Shop Coat: Manufacturer's standard rust inhibitive primer paint; manufacturer's standard color.

2.2 FRAMING COMPONENTS

A. Primary Framing: Rigid Frame solid web framing consisting of tapered or uniform depth rafters rigidly connected to tapered or uniform depth columns. Provide a clear span that supports the loads at bay spacings indicated.

B. Deck Frame: Standard pre-engineered, primary framing used in conjunction with metal decking.

C. Hybrid: Standard pre-engineered framing used in conjunction with structural steel.

D. Endwall Framing: Corner posts, endposts and rake beams.

E. Purlins: Zee-shaped; 8 ½" depth; with minimum yield strength of 55,000 psi; G60 galvanized sheet, cold formed, simple span or continuous span as required for design.

F. Girts: Zee- or Cee-shaped; 8 ½" depth, with minimum yield strength of 55,000 psi; G60 galvanized sheet, cold formed, simple span or continuous span as required for design.

G. Transbay Members: Open web, parallel chord, secondary joists or three plate built up girders; simple span, utilizing materials, sizes and yield strength as required.

H. Wind Bracing: Portal, torsional, diaphragm or diagonal bracing in accordance with manufacturer's standard design practices; utilizing rods, angles, and other rigid members, with minimum yield strengths as required for design. Cable bracing will not be allowed.

I. Primary Frame Flange Bracing: Attached from purlins or girts to the primary framing, minimum yield strength as required for design.

J. Base Angles: 2" x 3" x 0.059" steel angles, with minimum yield strength of 55,000 psi , anchored to the floor slab or grade beam with power driven fasteners or equivalent at a maximum spacing of 2' on center and not more than 6"from the end of any angle member.

K. Framed Opening Headers and Jambs: Zee- or Cee-shaped; depth as required; with minimum yield strength of 55,000 psi.

L. Sag Angles and Bridging: Steel angles, with minimum yield strength of 36,000 psi.

M. Fabrication: Fabricate according to manufacturer's standard practice.
   1. Fabricate structural members made of welded plate sections by joining the flanges and webs by continuous automatic submerged arc welding process.
   2. All welding operators and processes shall be qualified in accordance with the American Welding Society "Structural Welding Code", AWS D1.1.
   3. Field connections. Prepare members for bolted field connections by making punched, drilled, or reamed holes in the shop.

N. Component Identification: Mark all fabricated parts, either individually or by lot or group, using an identification marking corresponding to the marking shown on the shop drawings, using a method that remains visible after shop coating.

O. Shop Coating: Finish all structural steel members using one coat of manufacturer's standard shop coat, after cleaning of oil, dirt, loose scale and foreign matter.

P. Package building components for shipping by common carrier.

Q. Flashing and Trim: Match material and color of adjacent components. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weathertightness and a finished appearance.

R. Plastic Parts: Glass fiber reinforced resin or thermoformed ABS (Acrylonitrile-Butidene-Styrene).
   1. ABS: Minimum 1/8" (3 mm) thick.
   2. Color: Manufacturer's standard color.

S. Sealants, Mastics and Closures: Manufacturer's standard type.
   1. Provide at roof panel endlaps, sidelaps, rake, eave, transitions and accessories as required to provide a weather tight roof system; use tape mastic or gunnable sealant at sidelaps and endlaps.
   2. Provide at wall panel rakes, eaves, transitions and accessories.
   3. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.
   4. Tape Mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.
   5. Gunnable Sealant: Non-skinning synthetic elastomer based material; gray or bronze.

T. Thermal Blocks: High density, 3/4" (19 mm) thick expanded polystyrene, for installation over the purlin.

U. Superblock: 1" x 3-1/2" (25 x 89 mm) extruded polystyrene thermal spacer strips capped by 22 ga. (0.76 mm) galvanized channels, with swaged end for interconnection along the purlin run, metal tabs at 2' (610 mm) on center at SSR clip locations, and pre-punched fastener holes.

2.4 WALL ACCESSORIES

C. Framed Openings: Cold-formed sheet metal framing concealed with manufacturer's standard trim, color to match wall panels.

2.5 ROOF ACCESSORIES

A. Eave Gutters: Roll-formed 26 ga. steel sheet, with gutter straps, fasteners and joint sealant; match wall panel color.
   1. Downspouts: 4" x 5" in 10'lengths, with downspout elbows and downspout straps; same color as wall panels.

B. Multi-Gutters and Valley Gutters: 0.059“ thick cold-formed steel sheet.
   1. Finish: G90/Z275 galvanized coated.
   2. Joints: Field welded or mechanically fastened.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that foundations are installed correctly.

B. Verify that anchor bolts are installed as indicated on anchor bolt shop drawings.

3.2 ERECTION-FRAMING

A. Erect building system in accordance with AISC Specification, manufacturer’s instructions, erection drawings, OSHA regulations and all other applicable erection documents.

B. Provide temporary bracing, shoring, blocking, bridging and securing of components as required during the erection process.

C. Do not field cut or alter structural members without approval of Engineer.

D. After erection, prime field welds, abrasions and surfaces not shop primed.

3.3 ERECTION-WALL AND ROOFING SYSTEMS

A. Erect PANELS in accordance with Panel manufacturer’s instructions.

B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.

C. Fasten cladding system to structural supports, aligned level and plumb.

D. Use full length sheets from sill to eave for wall panels and from eave to peak for roof panels.

E. Provide expansion joints where indicated.

F. Fasten as indicated on approved shop drawings.

G. Install sealant and gaskets to prevent weather penetration.

H. System: Free of rattles, noise due to thermal movement and wind whistles.

3.4 INSTALLATION - ACCESSORIES

A. Install service doors, windows, louvers and overhead sectional door in accordance with manufacturer's instructions.

B. Seal wall and roof accessories watertight and weather tight with sealant.

3.5 TOLERANCES

A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.

B. Wall and Roof Panels: 1/8 inch from true position.

END OF SECTION

SECTION 13122
PREFORMED INSULATED WALL AND ROOF PANELS

PART 1 GENERAL

1.1 Work Included

A. Complete roof, wall, facia and soffit covering system consisting of steel-faced factory insulated panels exterior panels, panel attachments, sealants, mastics, trim and flashings as required to provide weather tight assembly that is air and water tight.

B. All supplemental framing members required for a complete installation.

1.2 Related Sections

A. Section 03300 - Cast-in-Place Concrete: Foundations and anchor bolts.
B. Section 08362 – Overhead Sectional Doors
C. Section 08110- Steel Doors and Frames.
D. Section 08560- Vinyl Windows
E. Section 09900 - Paint: Finish painting of structural members, doors, etc.
F. Section 13121 – Metal Building Systems

1.3 QUALITY ASSURANCE

A. Referenced Standards:

1. American Architectural Manufacturer's Association (AAMA):

   a. 1503, Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Door, and Glazed Wall Sections.

   b. 2605, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

2. American Society of Civil Engineers (ASCE)7: Minimum Design Loads for Buildings and Other Structures.

3. ASTM International (ASTM):

   a. A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

   b. A924, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

   c. C1363, Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.

d. D3841, Standard Specification for Glass-Fiber-Reinforced Polyester Plastic Panels.

e. E72, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.

f. E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

g. E283, Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

h. E331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

4. FM Global (FM):

a. FM Approval Guide, Building Insulations, Walls, Insulated Cores.

5. Underwriters Laboratories, Inc. (UL):

a. Building Materials Directory.

b. Fire Resistance Directory.

6. Building code:

a. International Code Council (ICC):

1) International Building Code and associated standards, 209 Edition including all amendments, referred to herein as Building Code.

B. Qualifications:

1. Installer shall be licensed or approved in writing by manufacturer.

2. Installer shall have minimum of 10 years experience in the installation of metal wall panel systems similar to system specified.

3. Installer shall have successfully completed two (2) projects of similar size, scope and complexity within past three (3) years.

1.4 DEFINITIONS

A. Installer or Applicator:

1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.

2. Installer and applicator are synonymous.

1.5 SYSTEM DESCRIPTION

A. Factory-insulated metal wall panel system consisting of insulated metal panels with an exterior textured metal skin, foamed-in-place insulation, and an interior striated metal skin.

1.6 DESIGN

A. Panels and their attachments shall be designed to resist the stated components and cladding design loads in ASCE-7-05.

B. The width, thickness, gauges and core strength of **wall panels** shall be as required to contribute to the combined action of the wall in resisting the **design wind load** of 50 psf inward and outward < 8' from a corner, and 44psf inward and outward > 8' from a corner, with a deflection not to exceed L/180."

C. The width, thickness, gauges and core strength of **roof panels** shall be as required to contribute to the combined action of the wall in resisting the **design wind load** of 67 psf inward and outward < 8' from an edge, and 42 psf inward and outward > 8' from an edge, with a deflection not to exceed L/240."

D. The width, thickness, gauges and core strength of **wall panel attachments** shall be as required to contribute to the combined action of the wall in resisting the **design wind load** of 59 psf inward and outward < 8' from a corner, and 48psf inward and outward > 8' from a corner, with a deflection not to exceed L/180."

E. The width, thickness, gauges and core strength of **roof panel attachments** shall be as required to contribute to the combined action of the wall in resisting the **design wind load** of 111.2 psf inward and outward < 8' from an edge, and 44 psf inward and outward > 8' from an edge, with a deflection not to exceed L/240."

F. The width, thickness, gauges and core strength of **roof panels** and panel attachment to structure shall be as required to contribute to the combined action of the panel in resisting the design **snow load** of 85 psf inward with a deflection not to exceed L/240."

1.7 SHOP DRAWINGS

A. Furnish detailed drawings showing profile, gauge of metal facing and thickness of panels, location and type of fasteners, location, gauges, shapes and method of attachment of all trim, location type of sealants and any other details as may be required for a weather-tight installation.

B. Shop Drawings:

1. See Section 01340 for requirements for the mechanics and administration of the submittal process.

2. Fabrication and/or layout drawings: Furnish detailed drawings showing profile, gauge of metal facings and thickness of panels, location and type of fasteners, location, gauges, shapes and method of attachment of all trim, location type of sealants and any other details as may be required for a weather-tight installation.

3. Product technical data including:

   a. Acknowledgement that products submitted meet requirements of standards referenced.

   b. Manufacturer's complete installation and erection instructions and details showing all accessories required.

C. Miscellaneous Submittals:

1. See Section 01340 for requirements for the mechanics and administration of the submittal process.

2. Installer qualifications and listing of projects completed in past three (3) years.

3. Letter of acceptance of Installer from manufacturer.
4. Instructions on proper cleaning methods and materials for Owner reference.

5. Warranty.

6. Product data on insulation used.

7. Certification of UL listing, flame and smoke spread.

D. Samples:
1. For initial color selection, provide 2 x 3 IN metal samples for each color offered by manufacturer for Engineer's color selection.

1.8 WARRANTY

A. This contractor shall warrant for one year from the date of substantial completion of the work related to this section, that the work is not defective in workmanship or material.

B. Provide written 30 year warranty for the panel coating system and backer that the coating system will not under normal atmospheric conditions:

1. Chip, crack, check or peel for a period of thirty years from date of installation.

2. Chalk in excess of a numerical rating of (8) for a period of 30 years from date of installation when measured in accordance with the standard procedures outlined in ASTM D-659.

3. Fade or change color in excess of (5) E units for a period of thirty years from date of installation when calculated in accordance with ASTM D-2244. The color change is to be measured on exposed painted surface cleaned of surface soils and oxidation.

C. Provide manufacturer's watertight warranty, signed by manufacturer.

1. Installer's watertight warranty in lieu of manufacturer's warranty is not acceptable.

2. Warranty walls to remain water and airtight for minimum of 10 years.

D. Provide manufacturer's standard two year warranty against delamination, separation and degradation of the polyurethane foam from the steel skin of the panel within 2 years from date of Substantial Completion.

1.9 PERFORMANCE TESTING

A. Structural Tests: The panels ability to withstand positive and negative wind loads shall be verified by testing in accordance with the ASTM E72 Vacuum Chamber Method with the standard deflection criteria to be L/180.

B. Thermal Properties (of insulated metal panels): Panels shall provide an "U" value of 0.04 Btu/(hr*sq. ft*degrees F), R=21, for 3 inches nominal panel thickness and 0.0238 Btu/(hr*sq. ft*degrees F), R=42, for 5 inches nominal panel thickness Panel thermal properties shall be verified by actual tested values in accordance with ASTM C518 steady state thermal transmission method.

C. Air Infiltration: When tested per ASTM E-283 at a static pressure of 1.56 psf, air infiltration shall not exceed .06 cfm per sq. ft. of wall area.

D. Water Penetration: When tested per ASTM E-331 at a static pressure of 20 psf there shall be no water penetration through the panel joints.

E. Fire Tests: Panels shall be acceptable to building code and insurance authorities for use when non-load bearing wall construction is permitted. Panels shall meet the following requirements:

1. Full Scale: The panel shall have Factory Mutual Class 1 approval for wall and ceiling construction with unlimited height application in accordance with the full scale FM 4880/4881 test program.

2. Surface Burning Characteristics: The panel core shall be tested in accordance with the ASTM E84 Tunnel Test. The core shall meet the following requirements:

a. Flame spread: 25

b. Smoke density: 450

F. Bond Strength: When tested per ASTM D 1781-76 for metal face to foam core bond strength panels shall not show adhesive failure.

G. Foam Core:

1. Water Absorption. ASTM C 209 Maximum absorption rate not greater than 1%.

2. Humidity Test. No evidence of metal primer corrosion when subjected to 100% relative humidity at 140 degrees F for 1000 hours.

3. Autoclave Test. No evidence of delamination when pressurized to 2 psi at 212 degrees F for 2.5 hours.

4. Water Vapor Transmission. Panel core shall conform to ASTM E96 .

1.10 SUBSTITUTIONS

A. This specification is written with the All Weather Insulated Panels HE40 Wall Panel and the All Weather Insulated Panels HR-5 Roof Panel as the basis of acceptable design, quality and performance for the wall and roof panels respectively. Requests for substitutions must be submitted in writing no less than 14 days prior to bid.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Products meeting these specifications which establish a standard of quality required shall be as manufactured by All Weather Insulated Panels-Vicwest, Vacavill California, or approved equal.

B. Submit request for substitution in accordance with Specification Section 01600.

2.2 MATERIALS

A. General

1. Steel: ASTM A653A, A653M, Grade A with minimum yield of 50,000 psi, galvanized per ASTM A924 with G90 coating, per specs.
2. Insulation: Foamed-in-place rigid expanded polyisocyanurate foam or urethane modified isocyanurate foam for nominal, minimum 95 percent closed cell structure.

B. Wall Panels

1. The insulated metal wall panel shall be3" thick, 40" wide as detailed on the design drawings. The side joint shall be a double tongue and groove off set design, permitting exterior side installation and fasteners completely concealed within the side joint. The interior female joints shall be factory caulked. The concealed fasteners shall positively lock the face sheet of the panel to the structural supports and provide positive resistance to negative wind loads.
2. The panel exterior shall be HE40, heavy embossed pattern. The metal substrate shall be G90 Galvanized Steel coated with 70% PVDF fluorocarbon finish with a total dry film thickness of 1.0 mil including primer. The panel exterior metal substrate shall be 22 gage steel.
3. The panel interior shall have shallow vee groove striations on 2.48" centers. The metal substrate shall be 26ga G90 Galvanized Steel coated with a siliconized polyester coating with a dry film thickness of 1.0 mil including primer. Color shall be Imperial White.
4. The panel core shall be polyurethane/polyisocyanurate foam with a flame spread maximum of 25 and smoke developed maximum of 450 as tested in accordance with the E84 test method.
5. The installing contractor shall furnish formed 26 gage metal flashings of the same color as the panel exterior.

C. Roof Panels

1. The insulated metal roof panel shall be 5" thick, 40" wide as detailed on the design drawings. The side joint shall be an overlapping design, permitting exterior side installation. The interior female joints shall be factory caulked unless otherwise noted. The exposed fasteners with saddle clips shall positively lock the face sheet of the panel to the structural supports and provide positive resistance to negative wind loads.
2. The panel exterior shall be a 5 high rib and lightly planked pattern. The metal substrate shall be 26ga G90 Galvanized Steel coated with 70% PVDF fluorocarbon finish with a total dry film thickness of 1.0 mil including primer.
3. The panel interior shall have shallow V groove striations on 2.22" centers. The metal substrate shall be 26ga G90 Galvanized Steel coated with a siliconized polyester coating with a dry film thickness of 1.0 mil including primer. Color shall be Imperial White.
4. The panel core shall be polyurethane/polyisocyanurate foam with a flame spread maximum of 25 and smoke developed maximum of 450 as tested in accordance with the E84 test method.
5. The installing contractor shall furnish formed metal flashings of the same gauge and color as the panel exterior.

D. Perimeter Trim Pieces, Flashing and Fasteners.

1. Extended aluminum or stainless steel.

E. Subgirts and Miscellaneous Supports:

1. Steel.

2. Galvanized per ASTM A924 with G90 coating.

F. Panel Fasteners:

1. For Galvalume and KXL finished roof panels: Stainless steel-capped carbon steel fasteners with integral sealing washer.

2. For wall panels: Coated carbon steel.

3. Color of exposed fastener heads to match the wall panel finish.

4. Concealed Fasteners: Self-drilling type, of size as required.

5. Provide fasteners in quantities and location as required by the manufacturer.

G. Flashing and Trim:

1. Match material, finish, and color of adjacent components.

2. Provide trim at rakes, including peak and corner assemblies, high and low eaves, corners, bases, framed openings and as required or specified to provide weather-tightness and a finished appearance.

H. Plastic Parts

1. Glass fiber reinforced resin or thermoformed ABS (Acrylonitrile- Butadiene-Styrene). Minimum 1/8 inch (3 mm) thick.

2. Color: Manufacturer's standard color.

I. Sealants, Mastics and Closures: Manufacturer's standard type.

1. Provide at roof panel end laps, side laps, rake, eave, transitions and accessories as required to provide a weather resistant roof system; use tape mastic or gun grade sealant at side laps and end laps.

2. Provide at wall panel rakes, eaves, transitions and accessories.

J. Closures: Formed to match panel profiles; closed cell elastic material, manufacturer's standard color.

K. Tape mastic: Pre-formed butyl rubber-based, non-hardening, non-corrosive to metal; white or light gray.

L. Gun grade sealant: Non-skinning synthetic Elastomeric based material; gray or bronze.

M. Extra Materials:

1. Provide Owner with two (2) pints of touch-up paint for each color and each different finish specified.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine alignment of the structural steel and /or panel support system prior to installation and do not proceed until any and all defects are corrected by the responsible contractor. The erector shall not proceed with installation of the structural steel is not within the following tolerances: -0 inward; +1/2” outward.

B. Provide subgirt system as required to meet for loading conditions specified.

3.2 INSTALLATION

A. The metal roof panels shall be erected by a experienced metal roofing panel contractor in accordance with the approved drawings, specifications, and installation instructions.

B. Provide all closures, trim, angles, plates, caulking, gaskets, fasteners, washers, etc., as required for a complete water and air tight installation.

C. Install products in accordance with manufacturer's instructions.

D. Remove all strippable coating and provide a dry wipe-down cleaning of the panels as they are erected.

E. Provide prefinished fasteners to match finish of panels where fasteners must be exposed.

F. Touch up all damaged surfaces with paint supplied by panel manufacturer.

G. Seal all joints using sealant recommended by panel manufacturer for water- and air-tight installation.

H. Wall panel manufacturers shall be responsible for designing and installing necessary expansion joints in wall panel system.

3.3 DAMAGED MATERIAL

A. Replace damaged panels and trim to the satisfaction of the Owner's Representative.

END OF SECTION

IX. Appendices

Local Bidder Preference

A local bidder preference shall be incorporated into the award of this contract based on the following criteria:

- A Bidder who maintains and operates a business within the boundaries of the City of Homer shall be considered the lower Bidder where its offer is:

    1. Not more than five percent (5%) higher than the lowest non-local bid up to five hundred thousand dollars ($0 - $500,000) or;
    2. Not more than five percent (5%) higher than the lowest non-local bid on the first five hundred thousand dollars ($500,000) and two and ½ percent (2.5%) higher than the lowest non-local bid on an amount greater than five hundred thousand dollars ($500,000) to one million dollars ($1,000,000). There will be no additional local bidder preference percentage for bid amounts exceeding one million dollars ($1,000,000).

- A Bidder shall be deemed a Local Bidder who:

    1. Holds a current Alaska Business License to provide the services requested by this contract; and
    2. Submits a bid under the name appearing on the firm's current Alaska Business License; and
    3. Has maintained a place of business within the boundaries of the City of Homer for a period of at least six (6) months immediately preceding the date of the Bid and intends to permanently maintain such place of business in the future; and
    4. Is not delinquent in the payment of any taxes, charges, or assessments owed to the City of Homer on account of that business.

    The City Manager may require such documentation or verification by the person or firm claim.

X. Submittals

(Due within two (2) days after bid)

CONTRACTOR'S QUESTIONNAIRE
NOTICE TO CONTRACTORS

Prior to Award, this questionnaire shall be completely filled out for the project upon which a bid is submitted.

A. FINANCIAL

1. Have you ever failed to complete a contract on account of insufficient resources? _____

2. Have you made sufficient arrangements to finance the work? _____

   If so, with whom and for what amount? _____

   _____

   If so, with what company? _____

B. EQUIPMENT

1. Set forth below the equipment which you have available for the work which you propose to do. This equipment should be listed in detail (General statements will not be accepted).

NO.	ITEMS	TYPE	SIZE/CAPACITY	PRESENT VALUE

2. Do you thoroughly understand that in case the contract is awarded to you, you may be required to use any or all of the equipment listed on the work covered by this contract?
   _____

3. Do you propose to purchase any equipment for use on this project should contract be awarded to you? If so, state type, quantity and approximate cost.
   _____

4. Do you propose to rent any equipment for this work? _____
   If so, state type, quantity, and reason for renting. _____
   _____
   _____

5. Have you made contracts or received firm offers for all necessary materials with the prices used in preparing your proposal? _____

6. Do you intend to plan to subcontract any of the work? _____
If so, what types or portions of the work. _____
_____
Approximate value $_____ Percent of total bid _____

C. EXPERIENCE

1. How many years has your organization been in business as a general contractor under your present business name? _____

2. How many years experience in construction work has your organization had:

a) as a General Contractor _____.
b) as a Subcontractor _____.

3. List previous contracts you have completed of a similar nature to this proposed contract:

a) _____
b) _____
c) _____
d) _____
e) _____

4. List projects which you currently have under contract or expect to have under contract during the life of this contract:

a) _____
b) _____
c) _____

Use additional sheets as necessary.

5. List your staff you plan to use on this project and the position they will fill for this project (include managerial and clerical personnel that will provide support services).

STAFF MEMBER POSITION

_____

_____

_____

_____

_____

Signature: _____ Title: _____

JOINT VENTURE

1. Joint Venture Agreement

2. A statement signed by authorized person of each party to the joint venture.

3. Each party to the joint venture shall comply with the requirements for corporations, partnerships or individuals, as applicable.

PARTNERSHIP

1. Partnership Agreement

2. Statement signed by all partners granting authority to the partner signing the Bid.

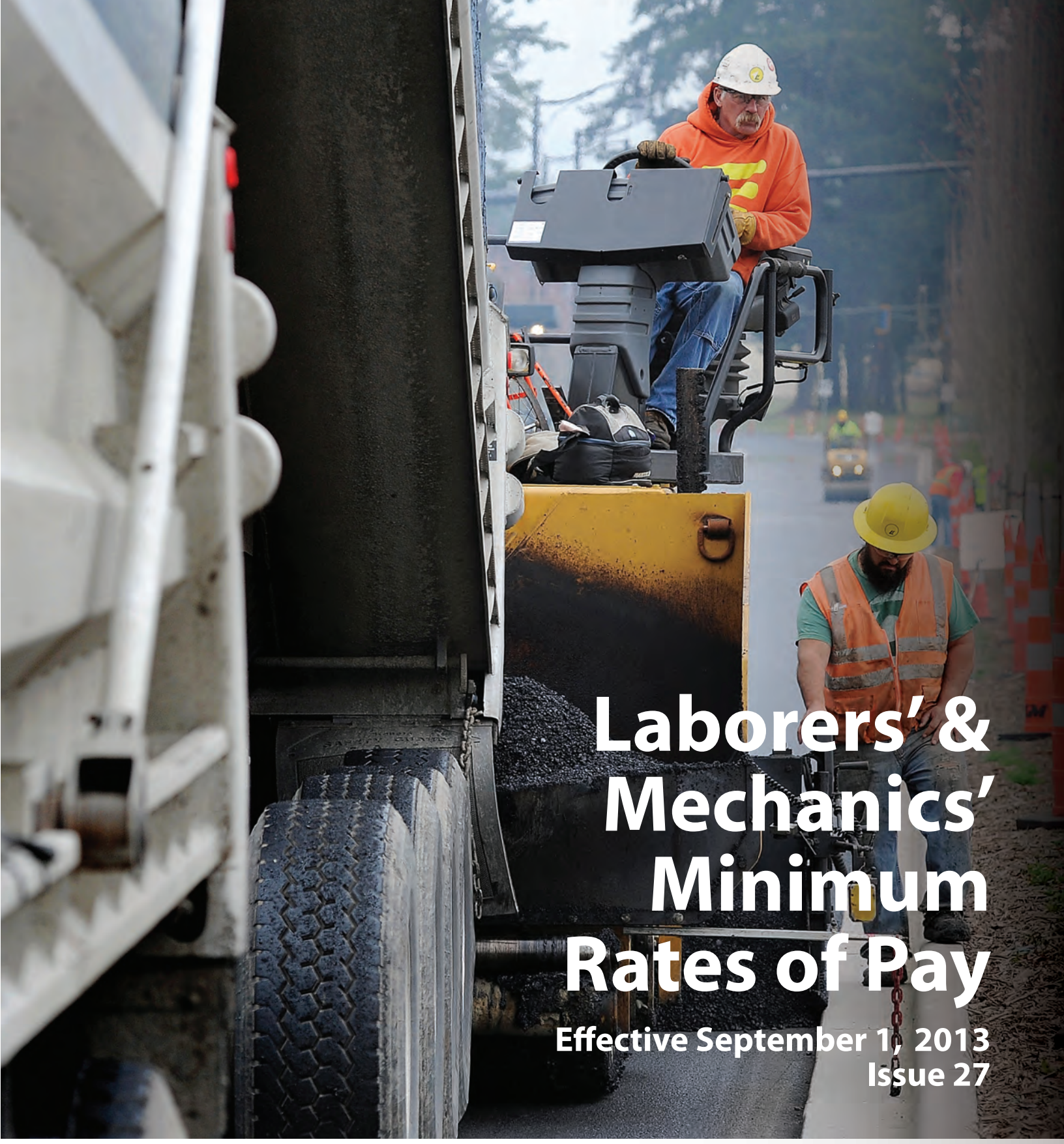
CORPORATIONS

1. Articles of Incorporation – most recent.

2. By-Laws – most recent.

3. Resolution of the Board of Directors granting the authority to the officer signing on behalf of the corporation.

XI. State of Alaska Labor Rates



Laborers' & Mechanics' Minimum Rates of Pay

Effective September 1, 2013
Issue 27

Title 36. Public Contracts
AS 36.05 & AS 36.10
Wage & Hour Administration
Pamphlet No. 600

ALASKA DEPARTMENT OF LABOR
& WORKFORCE DEVELOPMENT

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Labor and Workforce Development

Office of the Commissioner

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

September 1, 2013

TO ALL CONTRACTING AGENCIES:

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

This pamphlet identifies current prevailing wage rates and resident hire classifications for public construction contracts (any construction projects awarded by the State of Alaska or its political subdivisions, such as local governments and certain non-profit organizations).

Because these rates may change, this publication is printed in the spring and fall of every year, so please be sure you are using the appropriate rates. The rates published in this edition become effective September 1, 2013.

All projects with a final bid date of September 11, 2013, or later, must pay the prevailing wage rates contained in this pamphlet. As the law now provides, these rates will remain stable during the life of a contract or for 24 calendar months, whichever is shorter. **The date the prime contract is awarded is the date from which the 24 months will be counted.** Upon expiration of the initial 24-month period, the latest wage rates issued by the department shall become effective for a subsequent 24-month period or until the original contract is completed, whichever occurs first. This process shall be repeated until the original contract is completed.

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

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

For additional copies of this pamphlet, contact the nearest office of the Division of Labor Standards and Safety, Wage and Hour office or visit the Internet site at:

http://labor.state.ak.us/lss/pamp600.htm

For questions regarding prevailing wage or resident hire requirements, please contact the nearest Wage and Hour office. These offices are listed on Page xi.

Sincerely,

Dianne Blumer

Dianne Blumer
Commissioner

Table of Contents

Excerpts from Alaska Law

Additional Information

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

EXCERPTS FROM ALASKA LAW

(The following statute (36.05.005) applies to projects bid on or after October 20, 2011)

Sec. 36.05.005. Applicability.

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

Sec. 36.05.010. Wage rates on public construction.

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

Sec. 36.05.040. Filing schedule of employees, wages paid, and other information.

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

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

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

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

(c) A contracting agency

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

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

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

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

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

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

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

Sec. 36.05.060. Penalty for violation of this chapter.

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

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

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

(b) Repealed by §17 ch 142 SLA 1972.

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

Sec. 36.05.080. Failure to pay agreed wages.

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

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

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

(b) The state disbursing officer or the local fiscal officer shall distribute to all departments of the state government and to all political subdivisions of the state a list giving the names of persons who have disregarded their obligations to employees. A person appearing on this list and a firm, corporation,

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

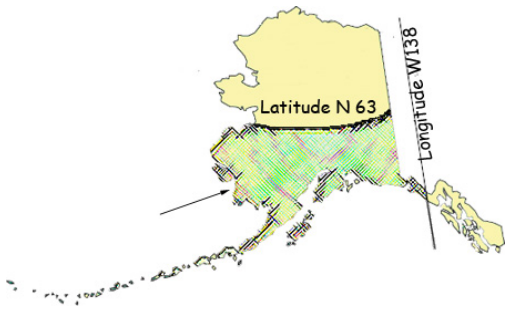
Sec. 36.05.900. Definition.
In this chapter, "contracting agency" means the state or a political subdivision of the state that has entered into a public construction contract with a contractor.

ADDITIONAL INFORMATION

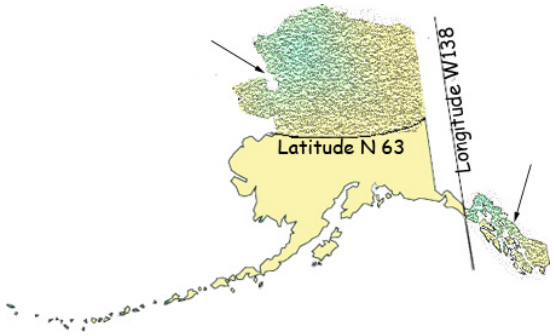
LABORER CLASSIFICATION CLARIFICATION

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

S1201-S1206



N1201-N1206



ACCOMMODATIONS AND PER DIEM

The Alaska Department of Labor and Workforce Development has adopted a per diem requirement for blocklayers, bricklayers, carpenters, dredgemen, heat & frost insulators/asbestos workers, ironworkers, laborers, operative plasterers & cement masons, painters, piledrivers, power equipment operators, roofers, surveyors, truck

drivers/surveyors, and tunnel workers. This per diem rate creates an allowable alternative to providing board and lodging under the following conditions:

Employer-Provided Camp or Suitable Accommodations

Unless otherwise approved by the Commissioner, the employer shall ensure that a worker who is employed on a project that is 65 road miles or more from the international airport in either Fairbanks, Juneau or Anchorage or is inaccessible by road in a 2-wheel drive vehicle and who is not a domiciled resident of the locality of the project shall receive meals and lodging. Lodging shall be in accordance with all applicable state and federal laws. In cases where the project site is not road accessible, but the employee can reasonably get to the project worksite from their permanent residence within one hour, the Commissioner may waive these requirements for that employee upon a written request from the employer.

The term "domiciled resident" means a person living within 65 road miles of the project, or in the case of a highway project, the mid-point of the project, for at least 12 consecutive months prior to the award of the project. However, if the employer or person provides sufficient evidence to convince the department that a person has established a permanent residence and an intent to remain indefinitely within the distance to be considered a "domiciled resident," the employer shall not be required to provide meals and lodging or pay per diem.

Where the employer provides or furnishes board, lodging or any other facility, the cost or amount thereof shall not be considered or included as part of the required prevailing wage basic hourly rate and cannot be applied to meet other fringe benefit requirements. The taxability of employer provided board and lodging shall be determined by the appropriate taxation enforcement authority.

Per Diem

Employers are encouraged to use commercial facilities and lodges; however, when such facilities are not available, per diem in lieu of meals and lodging must be paid at the basic rate of $75.00 per day, or part thereof, the worker is employed on the project. Per diem shall not be allowed on highway projects west of Livengood on the Elliott Highway, at Mile 0 of the Dalton Highway to the North Slope of Alaska, north of Mile 20 on the Taylor Highway, east of Chicken, Alaska, on the Top of the World Highway and south of Tetlin Junction to the Alaska-Canada border.

The above-listed standards for room and board and per diem only apply to the crafts as identified in Pamphlet 600, *Laborers' and Mechanics' Minimum Rates of Pay*. Other crafts working on public construction projects shall be provided room and board at remote sites based on the department's existing policy guidelines. In the event that a contractor provides lodging facilities, but no meals, the department will accept payment of $36 per day for meals to meet the per diem requirements.

APPRENTICE HIRING REQUIREMENTS

On July 24, 2005, Administrative Order No. 226 established a 15 percent goal for hiring apprentices in certain job categories on highway, airport, harbor, dam, tunnel, utility or dredging projects awarded by the Alaska Department of Transportation and Public Facilities that exceed $2.5 million. This Order will apply to all projects in the referenced categories that are advertised after September 1, 2005. On these projects, the hours worked by apprentices will be compared to the hours worked by journeyman level workers to determine if the 15 percent goal has been met. This on-the-job training goal is critical to ensure that the Alaska work force is prepared for the future. For additional details, contact the nearest Wage and Hour office at the address listed on Page xi of this publication. Administrative Order No. 226 may be viewed in its entirety on the Internet at http://www.gov.state.ak.us/admin-orders/226.html or call any Wage and Hour office to receive a copy.

APPRENTICE RATES

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

FRINGE BENEFIT PLANS

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

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

SPECIAL PREVAILING WAGE RATE DETERMINATION

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

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

Requests made pursuant to the above should be addressed to:

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

LABOR STANDARDS REGULATIONS
NOTICE REQUEST

If you would like to receive ***notices of proposed changes to regulations*** for Wage and Hour or Mechanical Inspection, please indicate below the programs for which you are interested in receiving such notices, print your name and email or mailing address in the space provided, and send this page to:

Alaska Department of Labor and Workforce Development
Labor Standards & Safety Division
Wage and Hour Administration
1251 Muldoon Road, Suite 113
Anchorage, AK 99504-2098
Email: anchorage.lss-wh@alaska.gov

For *REGULATIONS* information relating to any of the following:

❒ Wage and Hour Title 23 Employment Practices
❒ Wage and Hour Title 36 Public Works
❒ Employment Agencies
❒ Child Labor
❒ Employment Preference (Local Hire)
❒ Plumbing Code
❒ Electrical Code
❒ Boiler/Pressure Vessel Construction Code
❒ Elevator Code
❒ Certificates of Fitness
❒ Recreational Devices

Request any of the following *PUBLICATIONS* by checking below:

❒ Wage and Hour Title 23 Employment Practices
❒ Minimum Wage & Overtime Poster
❒ Child Labor Poster
❒ Public Construction Pamphlet
❒ Public Construction Wage Rates
❒ Child Labor Pamphlet

PLEASE NOTE: DUE TO INCREASED MAILING AND PRINTING COSTS, ONLY ONE OF EACH PUBLICATION REQUESTED WILL BE MAILED TO YOU. IF YOU WISH TO RECEIVE ADDITIONAL COPIES OR SUBSEQUENT PUBLICATIONS, PLEASE CONTACT OUR OFFICE AT (907) 269-4900.

Name: _____

Mailing Address: _____

_____

_____

_____

Email Address: _____

EMPLOYMENT PREFERENCE INFORMATION
(EFFECTIVE August 16, 2013)

By authority of AS 36.10.150 and 8 AAC 30.064, the Commissioner of Labor and Workforce Development has determined the 15 boroughs and census areas listed below to be Zones of Underemployment. A Zone of Underemployment requires that Alaska residents who are eligible under AS 36.10.140 be given a minimum of 90 percent employment preference on public works contracts throughout the state in certain job classifications. This hiring preference applies on a project-by-project, craft-by-craft or occupational basis and must be met each workweek by each contractor/subcontractor.

For additional information about the Alaska resident hire requirements, contact the nearest Wage and Hour Office in Anchorage at (907) 269-4900, in Fairbanks at (907) 451-2886 or in Juneau at (907) 465-4248.

The following classifications qualify for a minimum of 90 percent Alaska resident hire preference:

Aleutians East Borough: Plumbers and Pipefitters
Aleutians West Borough: Painters
Bethel Census Area: Culinary Workers, Foremen and Supervisors, Mechanics, Painters, Surveyors, Tug Boat Workers
Denali Borough: Carpenters
Dillingham Census Area: Carpenters, Culinary Workers, Electricians, Equipment Operators, Foremen and Supervisors, Laborers, Mechanics, Truck Drivers, Tug Boat Workers
Hoonah-Angoon Census Area: Carpenters, Culinary Workers, Electricians, Equipment Operators, Foremen and Supervisors, Laborers, Mechanics, Painters, Truck Drivers
Nome Census Area: Carpenters, Culinary Workers, Electricians, Equipment Operators, Foremen and Supervisors, Laborers, Mechanics, Surveyors, Truck Drivers, Tug Boat Workers, Welders
Northwest Arctic Borough: Carpenters, Culinary Workers, Electricians, Equipment Operators, Foremen and Supervisors, Plumbers and Pipefitters, Surveyors, Truck Drivers, Tug Boat Workers, Welders
Petersburg Borough: Culinary Workers, Engineers and Architects, Foremen and Supervisors, Laborers
Prince of Wales-Hyder Census Area: Carpenters, Culinary Workers, Electricians, Equipment Operators, Foremen and Supervisors, Laborers, Mechanics, Surveyors, Truck Drivers, Welders
Skagway: None
Southeast Fairbanks Census Area: Carpenters, Culinary Workers, Equipment Operators, Laborers, Painters, Truck Drivers
Wade Hampton Census Area: Carpenters, Electricians, Engineers and Architects, Mechanics, Roofers
Yakutat: None
Yukon-Koyukuk Census Area: Culinary Workers, Electricians, Foremen and Supervisors, Painters, Plumbers and Pipefitters, Surveyors, Truck Drivers, Tug Boat Workers, Welders

This determination is effective August 16, 2013, and remains in effect until June 30, 2015.

The first person on a certified payroll in any classification is called the "first worker" and is not required to be an Alaskan resident. However, once the contractor adds any more workers in the classification, then all workers in the classification are counted, and the 90 percent is applied to compute the number of required Alaskans to be in compliance. To compute the number of Alaskan residents required in a workweek in a particular classification, multiply the number of workers in the classification by 90 percent. The result is then rounded down to the nearest whole number to determine the number of Alaskans that must be employed.

If a worker works in more than one classification during a week, the classification in which they spent the most time would be counted for employment preference purposes. If the time is split evenly between two classifications, the worker is counted in both classifications.

If you have difficulty meeting the 90 percent requirement, an approved waiver must be obtained before a non-Alaskan resident is hired who would put the contractor/subcontractor out of compliance (8 AAC 30.081 (e) (f)). The waiver process requires proof of an intensive search for qualified Alaskan workers. To apply for a waiver, contact the nearest Wage and Hour Office for instructions.

Here is an example to apply the 90 percent requirement to four carpenter workers. Multiply four workers by 90% and drop the fraction (.90 X 4 = 3.6 - .6 = 3). The remaining number is the number of Alaskan resident carpenters required to be in compliance in that particular classification for that week.

The penalties for being out of compliance are serious. AS 36.10.100 (a) states "A contractor who violates a provision of this chapter shall have deducted from amounts due to the contractor under the contract the prevailing wages which should have been paid to a displaced resident, and these amounts shall be retained by the contracting agency." If a contractor/subcontractor is found to be out of compliance, penalties accumulate until they come into compliance.

If you have difficulty determining whether a worker is an Alaska resident, you should contact the nearest Wage and Hour Office. Contact Wage and Hour in Anchorage at (907) 269-4900, in Fairbanks at (907) 451-2886, or in Juneau at (907) 465-4842.

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

Anchorage	Juneau	Fairbanks
1251 Muldoon Road, Suite 113 Anchorage, Alaska 99504-2098 Phone: (907) 269-4900 Email: anchorage.lss-wh@alaska.gov	1111 W. 8th Street, Suite 302 Juneau, Alaska 99801 Phone: (907) 465-4842 Email: juneau.lss-wh@alaska.gov	Regional State Office Building 675 7th Ave., Station J-1 Fairbanks, Alaska 99701-4593 Phone: (907) 451-2886 Email: fairbanks.lss@alaska.gov

DEBARMENT LIST

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

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

Company Name	Date of Debarment	Debarment Expires

No companies are currently debarred.

Laborers' & Mechanics' Minimum Rates of Pay

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Boilermakers								
						VAC	**SAF**	
A0101	Boilermaker (journeyman)	42.97	8.57	14.28	0.75	3.00	0.34	69.91
Bricklayers & Blocklayers								
	**See note on last page if remote site							
						L&M		
A0201	Blocklayer	39.03	9.53	8.50	0.55	0.15	0.28	58.04
	Bricklayer							
	Marble or Stone Mason							
	Refractory Worker (Firebrick, Plastic, Castable, and Gunite Refractory Applications)							
	Terrazzo Worker							
	Tile Setter							
						L&M		
A0202	Tuck Pointer Caulker	39.03	9.53	8.50	0.55	0.15	0.28	58.04
	Cleaner (PCC)							
						L&M		
A0203	Marble & Tile Finisher	33.27	9.53	8.50	0.55	0.15	0.28	52.28
	Terrazzo Finisher							
						L&M		
A0204	Torginal Applicator	37.14	9.53	8.50	0.55	0.15	0.28	56.15
Carpenters, Statewide								
	**See note on last page if remote site							
						L&M	**SAF**	
A0301	Carpenter (journeyman)	36.59	9.78	12.11	0.70	0.10	0.15	59.43
	Lather/Drywall/Acoustical							
Cement Masons, Region I (North of N63 latitude)								
	**See note on last page if remote site							
						L&M		
N0401	Group I, including:	34.69	6.91	11.80	0.85	0.10		54.35
	Application of Sealing Compound							
	Application of Underlayment							
	Building, General							
	Cement Mason (journeyman)							
	Concrete							
	Concrete Paving							
	Curb & Gutter, Sidewalk							
	Curing of All Concrete							
	Grouting & Caulking of Tilt-Up Panels							

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons, Region I (North of N63 latitude)							
	**See note on last page if remote site						
						L&M	
N0401	Group I, including:	34.69	6.91	11.80	0.85	0.10	54.35
	Grouting of All Plates						
	Patching Concrete						
	Screed Pin Setter						
	Spackling/Skim Coating						
						L&M	
N0402	Group II, including:	34.69	6.91	11.80	0.85	0.10	54.35
	Form Setter						
						L&M	
N0403	Group III, including:	34.69	6.91	11.80	0.85	0.10	54.35
	Concrete Saw (self-powered)						
	Curb & Gutter Machine						
	Floor Grinder						
	Pneumatic Power Tools						
	Power Chipping & Bushing						
	Sand Blasting Architectural Finish						
	Screed & Rodding Machine Operator						
	Troweling Machine Operator						
						L&M	
N0404	Group IV, including:	34.69	6.91	11.80	0.85	0.10	54.35
	Application of All Composition Mastic						
	Application of All Epoxy Material						
	Application of All Plastic Material						
	Finish Colored Concrete						
	Gunite Nozzleman						
	Hand Powered Grinder						
	Tunnel Worker						
						L&M	
N0405	Group V, including:	34.94	6.91	11.80	0.85	0.10	54.60
	Plasterer						
Cement Masons, Region II (South of N63 latitude)							
	**See note on last page if remote site						
						L&M	
S0401	Group I, including:	34.44	6.91	11.80	0.85	0.10	54.10
	Application of Sealing Compound						
	Application of Underlayment						
	Building, General						
	Cement Mason (journeyman)						
	Concrete						
	Concrete Paving						
	Curb & Gutter, Sidewalk						
	Curing of All Concrete						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Cement Masons, Region II (South of N63 latitude)							
	**See note on last page if remote site						
						L&M	
S0401	Group I, including:	34.44	6.91	11.80	0.85	0.10	54.10
	Grouting & Caulking of Tilt-Up Panels						
	Grouting of All Plates						
	Patching Concrete						
	Screed Pin Setter						
	Spackling/Skim Coating						
						L&M	
S0402	Group II, including:	34.44	6.91	11.80	0.85	0.10	54.10
	Form Setter						
						L&M	
S0403	Group III, including:	34.44	6.91	11.80	0.85	0.10	54.10
	Concrete Saw (self-powered)						
	Curb & Gutter Machine						
	Floor Grinder						
	Pneumatic Power Tools						
	Power Chipping & Bushing						
	Sand Blasting Architectural Finish						
	Screed & Rodding Machine Operator						
	Troweling Machine Operator						
						L&M	
S0404	Group IV, including:	34.44	6.91	11.80	0.85	0.10	54.10
	Application of All Composition Mastic						
	Application of All Epoxy Material						
	Application of All Plastic Material						
	Finish Colored Concrete						
	Gunite Nozzleman						
	Hand Powered Grinder						
	Tunnel Worker						
						L&M	
S0405	Group V, including:	34.69	6.91	11.80	0.85	0.10	54.35
	Plasterer						
Culinary Workers * See note on last page							
						LEG	
A0501	Baker/Cook	24.67	5.37	5.73		0.05	35.82
						LEG	
A0503	General Helper	21.62	5.37	5.73		0.05	32.77
	Housekeeper						
	Janitor						
	Kitchen Helper						
						LEG	
A0504	Head Cook	25.22	5.37	5.73		0.05	36.37

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Culinary Workers * See note on last page							
						LEG	
A0505	Head Housekeeper	21.54	5.37	5.38		0.05	32.34
	Head Kitchen Help						
Dredgemen							
	**See note on last page if remote site						
						L&M	
A0601	Assistant Engineer, including:	37.51	9.10	9.75	1.00	0.10	57.46
	Craneman						
	Electrical Generator Operator (primary pump/power barge/dredge)						
	Engineer						
	Welder						
						L&M	
A0602	Assistant Mate (deckhand)	36.35	9.10	9.75	1.00	0.10	56.30
						L&M	
A0603	Fireman	36.79	9.10	9.75	1.00	0.10	56.74
						L&M	
A0605	Leverman Clamshell	40.04	9.10	9.75	1.00	0.10	59.99
						L&M	
A0606	Leverman Hydraulic	38.28	9.10	9.75	1.00	0.10	58.23
						L&M	
A0607	Mate & Boatman	37.51	9.10	9.75	1.00	0.10	57.46
						L&M	
A0608	Oiler (dredge)	36.79	9.10	9.75	1.00	0.10	56.74
Electricians							
						L&M	LEG
A0701	Inside Cable Splicer	39.87	10.53	12.60	0.85	0.20	0.15 64.20
						L&M	LEG
A0702	Inside Journeyman Wireman, including:	38.12	10.53	12.54	0.85	0.20	0.15 62.39
	Communications and Technicians						
						L&M	LEG
A0703	Power Cable Splicer	50.52	10.53	15.67	0.85	0.20	0.15 77.92
						L&M	LEG
A0704	Tele Com Cable Splicer	47.03	10.53	14.56	0.85	0.20	0.15 73.32
						L&M	LEG
A0705	Power Journeyman Lineman, including:	48.77	10.53	15.61	0.85	0.20	0.15 76.11
	Power Equipment Operator						
	Technician						
						L&M	LEG
A0706	Tele Com Journeyman Lineman, including:	45.28	10.53	14.51	0.85	0.20	0.15 71.52
	Technician						
	Tele Com Equipment Operator						

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Electricians								
						L&M	**LEG**	
A0707	Straight Line Installer - Repairman	45.28	10.53	14.51	0.85	0.20	0.15	71.52
						L&M	**LEG**	
A0708	Powderman	46.77	10.53	15.55	0.85	0.20	0.15	74.05
						L&M	**LEG**	
A0710	Material Handler	25.90	9.89	4.53	0.15	0.15	0.15	40.77
						L&M	**LEG**	
A0712	Tree Trimmer Groundman	25.45	10.53	9.41	0.15	0.15	0.15	45.84
						L&M	**LEG**	
A0713	Journeyman Tree Trimmer	34.12	10.53	9.67	0.15	0.15	0.15	54.77
						L&M	**LEG**	
A0714	Vegetation Control Sprayer	37.57	10.53	9.78	0.15	0.15	0.15	58.33
Elevator Workers								
						L&M	**VAC**	
A0802	Elevator Constructor	34.70	11.88	12.71	0.60	0.30	3.16	63.35
						L&M	**VAC**	
A0803	Elevator Constructor Mechanic	49.58	11.88	12.71	0.60	0.30	5.51	80.58
Heat & Frost Insulators/Asbestos Workers								
	**See note on last page if remote site							
						SAF		
A0902	Asbestos Abatement-Mechanical Systems	34.88	8.44	9.51	0.60	0.12		53.55
						SAF		
A0903	Asbestos Abatement/General Demolition All Systems	34.88	8.44	9.51	0.60	0.12		53.55
						SAF		
A0904	Insulator, Group II	34.88	8.44	9.51	0.60	0.12		53.55
						SAF		
A0905	Fire Stop	34.88	8.44	9.51	0.60	0.12		53.55
IronWorkers								
	**See note on last page if remote site							
						L&M	**IAF**	
A1101	Ironworkers, including:	33.55	7.58	17.00	0.95	0.43	0.10	59.61
	Bender Operators							
	Bridge & Structural							
	Machinery Mover							
	Ornamental							
	Reinforcing							
	Rigger							
	Sheeter							
	Signalman							
	Stage Rigger							
	Toxic Haz-Mat Work							

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
IronWorkers								
	**See note on last page if remote site							
						L&M	**IAF**	
A1101	Ironworkers, including:	33.55	7.58	17.00	0.95	0.43	0.10	59.61
	Welder							
						L&M	**IAF**	
A1102	Helicopter	34.55	7.58	17.00	0.95	0.43	0.10	60.61
	Tower (energy producing windmill type towers to include nacelle and blades)							
						L&M	**IAF**	
A1103	Fence/Barrier Installer	30.05	7.58	16.75	0.95	0.43	0.10	55.86
	Guard Rail Installer							
						L&M	**IAF**	
A1104	Guard Rail Layout Man	30.79	7.58	16.75	0.95	0.43	0.10	56.60
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	**See note on last page if remote site							
						L&M	**LEG**	
N1201	Group I, including:	29.25	7.24	13.73	1.20	0.20	0.15	51.77
	Asphalt Worker (shovelman, plant crew)							
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, grouting, curing, screeding)							
	Crusher Plant Laborer							
	Demolition Laborer							
	Ditch Digger							
	Dumpman							
	Environmental Laborer (hazard/toxic waste, oil spill)							
	Fence Installer							
	Fire Watch Laborer							
	Flagman							
	Form Stripper							
	General Laborer							
	Guardrail Laborer, Bridge Rail Installer							
	Hydro-seeder Nozzleman							
	Laborer, Building							
	Landscaper or Planter							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)							
	Material Handler							
	Pneumatic or Power Tools							
	Portable or Chemical Toilet Serviceman							
	Pump Man or Mixer Man							
	Railroad Track Laborer							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
N1201	Group I, including:	29.25	7.24	13.73	1.20	0.20	0.15	51.77
	Sandblast, Pot Tender							
	Saw Tender							
	Slurry Work							
	Stake Hopper							
	Steam Cleaner Operator							
	Steam Point or Water Jet Operator							
	Tank Cleaning							
	Utiliwalk & Utilidor Laborer							
	Watchman (construction projects)							
	Window Cleaner							
						L&M	LEG	
N1202	Group II, including:	30.25	7.24	13.73	1.20	0.20	0.15	52.77
	Burning & Cutting Torch							
	Cement or Lime Dumper or Handler (sack or bulk)							
	Choker Splicer							
	Chucktender (wagon, air-track & hydraulic drills)							
	Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)							
	Culvert Pipe Laborer							
	Cured Inplace Pipelayer							
	Environmental Laborer (asbestos, marine work)							
	Foam Gun or Foam Machine Operator							
	Green Cutter (dam work)							
	Gunite Operator							
	Hod Carrier							
	Jackhammer or Pavement Breaker (more than 45 pounds)							
	Laser Instrument Operator							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)							
	Mason Tender & Mud Mixer (sewer work)							
	Pilot Car							
	Pipelayer Helper							
	Plasterer, Bricklayer & Cement Finisher Tender							
	Powderman Helper							
	Power Saw Operator							
	Railroad Switch Layout Laborer							
	Sandblaster							
	Scaffold Building & Erecting							
	Sewer Caulker							
	Sewer Plant Maintenance Man							
	Thermal Plastic Applicator							
	Timber Faller, Chainsaw Operator, Filer							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
N1202	Group II, including:	30.25	7.24	13.73	1.20	0.20	0.15	52.77
	Timberman							
						L&M	LEG	
N1203	Group III, including:	31.15	7.24	13.73	1.20	0.20	0.15	53.67
	Bit Grinder							
	Camera/Tool/Video Operator							
	Guardrail Machine Operator							
	High Rigger & Tree Topper							
	High Scaler							
	Multiplate							
	Plastic Welding							
	Slurry Seal Squeegee Man							
	Traffic Control Supervisor							
	Welding Certified (in connection with laborer's work)							
						L&M	LEG	
N1204	Group IIIA	34.43	7.24	13.73	1.20	0.20	0.15	56.95
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills)							
	Licensed Powderman							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayers							
						L&M	LEG	
N1205	Group IV	18.82	7.24	13.73	1.20	0.20	0.15	41.34
	Final Building Cleanup							
	Permanent Yard Worker							
						L&M	LEG	
N1206	Group IIIB	35.26	7.24	13.73	1.20	0.20	0.15	57.78
	Federally Licensed Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade)							
Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
S1201	Group I, including:	29.25	7.24	13.73	1.20	0.20	0.15	51.77
	Asphalt Worker (shovelman, plant crew)							
	Brush Cutter							
	Camp Maintenance Laborer							
	Carpenter Tender or Helper							
	Choke Setter, Hook Tender, Rigger, Signalman							
	Concrete Labor (curb & gutter, chute handler, grouting, curing, screeding)							
	Crusher Plant Laborer							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	
Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
S1201	Group I, including:	29.25	7.24	13.73	1.20	0.20	0.15	51.77
	Demolition Laborer							
	Ditch Digger							
	Dumpman							
	Environmental Laborer (hazard/toxic waste, oil spill)							
	Fence Installer							
	Fire Watch Laborer							
	Flagman							
	Form Stripper							
	General Laborer							
	Guardrail Laborer, Bridge Rail Installer							
	Hydro-seeder Nozzleman							
	Laborer, Building							
	Landscaper or Planter							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block 4 feet or less - highway or landscape work)							
	Material Handler							
	Pneumatic or Power Tools							
	Portable or Chemical Toilet Serviceman							
	Pump Man or Mixer Man							
	Railroad Track Laborer							
	Sandblast, Pot Tender							
	Saw Tender							
	Slurry Work							
	Stake Hopper							
	Steam Cleaner Operator							
	Steam Point or Water Jet Operator							
	Tank Cleaning							
	Utiliwalk & Utilidor Laborer							
	Watchman (construction projects)							
	Window Cleaner							
						L&M	LEG	
S1202	Group II, including:	30.25	7.24	13.73	1.20	0.20	0.15	52.77
	Burning & Cutting Torch							
	Cement or Lime Dumper or Handler (sack or bulk)							
	Choker Splicer							
	Chucktender (wagon, air-track & hydraulic drills)							
	Concrete Laborer (power buggy, concrete saws, pumpcrete nozzleman, vibratorman)							
	Culvert Pipe Laborer							
	Cured Inplace Pipelayer							
	Environmental Laborer (asbestos, marine work)							
	Foam Gun or Foam Machine Operator							

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
S1202	Group II, including:	30.25	7.24	13.73	1.20	0.20	0.15	52.77
	Green Cutter (dam work)							
	Gunite Operator							
	Hod Carrier							
	Jackhammer or Pavement Breaker (more than 45 pounds)							
	Laser Instrument Operator							
	Laying of Mortarless Decorative Block (retaining walls, flowered decorative block over 4 feet - highway or landscape work)							
	Mason Tender & Mud Mixer (sewer work)							
	Pilot Car							
	Pipelayer Helper							
	Plasterer, Bricklayer & Cement Finisher Tender							
	Powderman Helper							
	Power Saw Operator							
	Railroad Switch Layout Laborer							
	Sandblaster							
	Scaffold Building & Erecting							
	Sewer Caulker							
	Sewer Plant Maintenance Man							
	Thermal Plastic Applicator							
	Timber Faller, Chainsaw Operator, Filer							
	Timberman							
						L&M	LEG	
S1203	Group III, including:	31.15	7.24	13.73	1.20	0.20	0.15	53.67
	Bit Grinder							
	Camera/Tool/Video Operator							
	Guardrail Machine Operator							
	High Rigger & Tree Topper							
	High Scaler							
	Multiplate							
	Plastic Welding							
	Slurry Seal Squeegee Man							
	Traffic Control Supervisor							
	Welding Certified (in connection with laborer's work)							
						L&M	LEG	
S1204	Group IIIA	34.43	7.24	13.73	1.20	0.20	0.15	56.95
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to, wagon drills, air-track drills, hydraulic drills)							
	Licensed Powderman							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayers							

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
						L&M	**LEG**	
S1205	Group IV	18.82	7.24	13.73	1.20	0.20	0.15	41.34
	Final Building Cleanup							
	Permanent Yard Worker							
						L&M	**LEG**	
S1206	Group IIIB	35.26	7.24	13.73	1.20	0.20	0.15	57.78
	Federally Licensed Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade)							
Millwrights								
						L&M		
A1251	Millwright (journeyman)	34.99	9.78	9.76	1.00	0.25	0.15	55.93
						L&M		
A1252	Millwright Welder	35.58	9.78	9.76	1.00	0.25	0.15	56.52
Painters, Region I (North of N63 latitude)								
	**See note on last page if remote site							
						L&M		
N1301	Group I, including:	29.85	7.55	11.10	0.83	0.07		49.40
	Brush							
	General Painter							
	Hand Taping							
	Hazardous Material Handler							
	Lead-Based Paint Abatement							
	Roll							
						L&M		
N1302	Group II, including:	30.37	7.55	11.10	0.83	0.07		49.92
	Bridge Painter							
	Epoxy Applicator							
	General Drywall Finisher							
	Hand/Spray Texturing							
	Industrial Coatings Specialist							
	Machine/Automatic Taping							
	Pot Tender							
	Sandblasting							
	Specialty Painter							
	Spray							
	Structural Steel Painter							
	Wallpaper/Vinyl Hanger							
N1304	Group IV, including:	36.16	7.55	10.61	0.80	0.05		55.17
	Glazier							
	Storefront/Automatic Door Mechanic							

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Painters, Region I (North of N63 latitude)							
	**See note on last page if remote site						
N1305	Group V, including:	29.79	7.55	5.02	0.83	0.07	43.26
	Carpet Installer						
	Floor Coverer						
	Heat Weld/Cove Base						
	Linoleum/Soft Tile Installer						
Painters, Region II (South of N63 latitude)							
	**See note on last page if remote site						
						L&M	
S1301	Group I, including :	28.09	7.55	10.85	0.83	0.07	47.39
	Brush						
	General Painter						
	Hand Taping						
	Hazardous Material Handler						
	Lead-Based Paint Abatement						
	Roll						
	Spray						
						L&M	
S1302	Group II, including :	29.34	7.55	10.85	0.83	0.07	48.64
	General Drywall Finisher						
	Hand/Spray Texturing						
	Machine/Automatic Taping						
	Wallpaper/Vinyl Hanger						
						L&M	
S1303	Group III, including :	29.44	7.55	10.85	0.83	0.07	48.74
	Bridge Painter						
	Epoxy Applicator						
	Industrial Coatings Specialist						
	Pot Tender						
	Sandblasting						
	Specialty Painter						
	Structural Steel Painter						
						L&M	
S1304	Group IV, including:	36.16	7.55	9.86	0.83	0.07	54.47
	Glazier						
	Storefront/Automatic Door Mechanic						
						L&M	
S1305	Group V, including:	29.79	7.55	5.02	0.83	0.07	43.26
	Carpet Installer						
	Floor Coverer						
	Heat Weld/Cove Base						
	Linoleum/Soft Tile Installer						

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Piledrivers								
	**See note on last page if remote site							
						L&M	IAF	
A1401	Piledriver	36.59	9.78	12.11	0.70	0.10	0.15	59.43
	Assistant Dive Tender							
	Carpenter/Piledriver							
	Rigger							
	Sheet Stabber							
	Skiff Operator							
						L&M	IAF	
A1402	Piledriver-Welder/Toxic Worker	37.59	9.78	12.11	0.70	0.10	0.15	60.43
						L&M	IAF	
A1403	Remotely Operated Vehicle Pilot/Technician	40.90	9.78	12.11	0.70	0.10	0.15	63.74
	Single Atmosphere Suit, Bell or Submersible Pilot							
						L&M	IAF	
A1404	Diver (working) ***See note on last page	80.70	9.78	12.11	0.70	0.10	0.15	103.54
						L&M	IAF	
A1405	Diver (standby) ***See note on last page	40.90	9.78	12.11	0.70	0.10	0.15	63.74
						L&M	IAF	
A1406	Dive Tender ***See note on last page	39.90	9.78	12.11	0.70	0.10	0.15	62.74
						L&M	IAF	
A1407	Welder (American Welding Society, Certified Welding Inspector)	42.15	9.78	12.11	0.70	0.10	0.15	64.99
Plumbers, Region I (North of N63 latitude)								
						L&M	S&L	
N1501	Journeyman Pipefitter	39.96	7.05	12.70	0.95	1.10		61.76
	Plumber							
	Welder							
Plumbers, Region II (South of N63 latitude)								
						L&M		
S1501	Journeyman Pipefitter	38.46	8.42	10.82	1.50	0.20		59.40
	Plumber							
	Welder							
Plumbers, Region IIA (1st Judicial District)								
						L&M		
X1501	Journeyman Pipefitter	36.02	12.22	11.00	2.40	0.24		61.88
	Plumber							
	Welder							
Power Equipment Operators								
	**See note on last page if remote site							

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Power Equipment Operators							
	**See note on last page if remote site						
						L&M	
A1601	Group I, including:	38.28	9.10	9.75	1.00	0.10	58.23
	Asphalt Roller: Breakdown, Intermediate, and Finish						
	Back Filler						
	Barrier Machine (Zipper)						
	Beltcrete with Power Pack & similar conveyors						
	Bending Machine						
	Boat Coxswain						
	Bulldozer						
	Cableways, Highlines & Cablecars						
	Cleaning Machine						
	Coating Machine						
	Concrete Hydro Blaster						
	Cranes (45 tons & under or 150 feet of boom & under (including jib & attachments))						
	(a) Hydralifts or Transporters, (all track or truck type)						
	(b) Derricks						
	Crushers						
	Deck Winches, Double Drum						
	Ditching or Trenching Machine (16 inch or over)						
	Drag Scraper, Yarder, and similar types						
	Drilling Machines, Core, Cable, Rotary and Exploration						
	Finishing Machine Operator, Concrete Paving, Laser Screed, Sidewalk, Curb & Gutter Machine						
	Helicopters						
	Hover Craft, Flex Craft, Loadmaster, Air Cushion, All-Terrain Vehicle, Rollagon, Bargecable, Nodwell, & Snow Cat						
	Hydro Ax, Feller Buncher & similar						
	Licensed Line & Grade						
	Loaders (2 1/2 yards through 5 yards, including all attachments):						
	(a) Forklifts (with telescopic boom & swing attachment)						
	(b) Front End & Overhead, (2-1/2 yards through 5 yards)						
	(c) Loaders, (with forks or pipe clamp)						
	(d) Loaders, (elevating belt type, Euclid & similar types)						
	Mechanic, Welder, Bodyman, Electrical, Camp & Maintenance Engineer						
	Micro Tunneling Machine						
	Mixers: Mobile type with hoist combination						
	Motor Patrol Grader						
	Mucking Machine: Mole, Tunnel Drill, Horizontal/Directional Drill Operator and/or Shield						
	Operator on Dredges						
	Piledriver Engineer, L.B. Foster, Puller or similar paving breaker						
	Plant Operator (Asphalt & Concrete)						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Power Equipment Operators							
	**See note on last page if remote site						
						L&M	
A1601	Group I, including:	38.28	9.10	9.75	1.00	0.10	58.23
	Power Plant, Turbine Operator 200 k.w & over (power plants or combination of power units over 300 k.w.)						
	Remote Controlled Equipment						
	Scraper (through 40 yards)						
	Service Oiler/Service Engineer						
	Shot Blast Machine						
	Shovels, Backhoes, Excavators with all attachments, and Gradealls (3 yards & under)						
	Sideboom (under 45 tons)						
	Spreaders, Blaw Knox, Cedarapids, Barber Greene, Slurry Machine						
	Sub Grader (Gurries, Reclaimer & similar types)						
	Tack Tractor						
	Truck Mounted Concrete Pump, Conveyor & Creter						
	Unlicensed Off-Road Hauler						
	Wate Kote Machine						
						L&M	
A1602	Group IA, including:	40.04	9.10	9.75	1.00	0.10	59.99
	Camera/Tool/Video Operator (Slipline)						
	Certified Welder, Electrical Mechanic, Camp Maintenance Engineer, Mechanic (over 10,000 hours)						
	Cranes (over 45 tons or 150 feet including jib & attachments)						
	(a) Clamshells & Draglines (over 3 yards)						
	(b) Tower Cranes						
	Licensed Water/Waste Water Treatment Operator						
	Loaders (over 5 yards)						
	Motor Patrol Grader, Dozer, Grade Tractor, Roto-Mill/Profiler (finish: when finishing to final grade and/or to hubs, or for asphalt)						
	Power Plants (1000 k.w. & over)						
	Quad						
	Scrapers (over 40 yards)						
	Screed						
	Shovels, Backhoes, Excavators with all attachments (over 3 yards)						
	Sidebooms (over 45 tons)						
	Slip Form Paver, C.M.I. & similar types						
						L&M	
A1603	Group II, including:	37.51	9.10	9.75	1.00	0.10	57.46
	Boiler - Fireman						
	Cement Hogs & Concrete Pump Operator						
	Conveyors (except those listed in Group I)						
	Hoists on Steel Erection, Towermobiles & Air Tuggers						
	Horizontal/Directional Drill Locator						
	Licensed Grade Technician						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Power Equipment Operators							
	**See note on last page if remote site						
						L&M	
A1603	Group II, including:	37.51	9.10	9.75	1.00	0.10	57.46
	Loaders (i.e., Elevating Grader & Material Transfer Vehicle)						
	Locomotives, Rod & Geared Engines						
	Mixers						
	Screening, Washing Plant						
	Sideboom (cradling rock drill, regardless of size)						
	Skidder						
	Trenching Machines (under 16 inches)						
	Water/Waste Water Treatment Operator						
						L&M	
A1604	Group III, including:	36.79	9.10	9.75	1.00	0.10	56.74
	"A" Frame Trucks, Deck Winches						
	Bombardier (tack or tow rig)						
	Boring Machine						
	Brooms, Power						
	Bump Cutter						
	Compressor						
	Farm Tractor						
	Forklift, Industrial Type						
	Gin Truck or Winch Truck (with poles when used for hoisting)						
	Grade Checker & Stake Hopper						
	Hoists, Air Tuggers, Elevators						
	Loaders:						
	(a) Elevating-Athey, Barber Greene & similar types						
	(b) Forklifts or Lumber Carrier (on construction job sites)						
	(c) Forklifts, (with tower)						
	(d) Overhead & Front End, (under 2-l/2 yards)						
	Locomotives: Dinkey (air, steam, gas & electric) Speeders						
	Mechanics, Light Duty						
	Oil, Blower Distribution						
	Posthole Digger, Mechanical						
	Pot Fireman (power agitated)						
	Power Plant, Turbine Operator, (under 200 k.w.)						
	Pumps, Water						
	Roller (other than Asphalt)						
	Saws, Concrete						
	Skid Hustler						
	Skid Steer (with all attachments)						
	Straightening Machine						
	Tow Tractor						
						L&M	
A1605	Group IV, including:	30.58	9.10	9.75	1.00	0.10	50.53
	Crane Assistant Engineer/Rig Oiler						

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Power Equipment Operators								
	**See note on last page if remote site							
						L&M		
A1605	Group IV, including:	30.58	9.10	9.75	1.00	0.10		50.53
	Drill Helper							
	Parts & Equipment Coordinator							
	Spotter							
	Steam Cleaner							
	Swamper (on trenching machines or shovel type equipment)							
Roofers								
	**See note on last page if remote site							
						L&M		
A1701	Roofer & Waterproofer	41.45	7.43	2.91	0.81	0.10	0.02	52.72
						L&M		
A1702	Roofer Material Handler	29.02	7.43	2.91	0.81	0.10	0.02	40.29
Sheet Metal Workers, Region I (North of N63 latitude)								
						L&M		
N1801	Sheet Metal Journeyman	44.93	8.30	10.34	1.32	0.25		65.14
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							
	Demolition of sheet metal HVAC systems							
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work							
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment							
	Fabrication and installation of louvers and hoods							
	Fabrication and installation of sheet metal lagging							
	Fabrication and installation of stainless steel commercial or industrial food service equipment							
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work							
	Metal lavatory partitions							
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work							
	Sheet Metal shelving							
	Sheet Metal venting, chimneys and breaching							
	Skylight installation							
Sheet Metal Workers, Region II (South of N63 latitude)								
						L&M		
S1801	Sheet Metal Journeyman	39.99	8.30	11.20	1.10	0.33		60.92
	Air Balancing and duct cleaning of HVAC systems							
	Brazing, soldering or welding of metals							

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Sheet Metal Workers, Region II (South of N63 latitude)							
						L&M	
S1801	Sheet Metal Journeyman	39.99	8.30	11.20	1.10	0.33	60.92
	Demolition of sheet metal HVAC systems						
	Fabrication and installation of exterior wall sheathing, siding, metal roofing, flashing, decking and architectural sheet metal work						
	Fabrication and installation of heating, ventilation and air conditioning ducts and equipment						
	Fabrication and installation of louvers and hoods						
	Fabrication and installation of sheet metal lagging						
	Fabrication and installation of stainless steel commercial or industrial food service equipment						
	Manufacture, fabrication assembly, installation and alteration of all ferrous and nonferrous metal work						
	Metal lavatory partitions						
	Preparation of drawings taken from architectural and engineering plans required for fabrication and erection of sheet metal work						
	Sheet Metal shelving						
	Sheet Metal venting, chimneys and breaching						
	Skylight installation						
Sprinkler Fitters							
						L&M	
A1901	Sprinkler Fitter	42.05	8.42	12.80	0.45	0.25	63.97
Surveyors							
	**See note on last page if remote site						
						L&M	
A2001	Chief of Parties	42.11	7.38	9.99	1.20	0.10	60.78
						L&M	
A2002	Party Chief	40.52	7.38	9.99	1.20	0.10	59.19
						L&M	
A2003	Line & Grade Technician/Office Technician	39.92	7.38	9.99	1.20	0.10	58.59
						L&M	
A2004	Associate Party Chief (including Instrument Person & Head Chain Person)	37.80	7.38	9.99	1.20	0.10	56.47
						L&M	
A2005	Stake Hop/Grademan	34.87	7.38	9.99	1.20	0.10	53.54
						L&M	
A2006	Chain Person (for crews with more than 2 people)	33.46	7.38	9.99	1.20	0.10	52.13
Truck Drivers							
	**See note on last page if remote site						
						L&M	
A2101	Group I, including:	38.89	7.38	9.99	1.20	0.10	57.56
	Air/Sea Traffic Controllers						

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	**See note on last page if remote site						
						L&M	
A2101	Group I, including:	38.89	7.38	9.99	1.20	0.10	57.56
	Ambulance/Fire Truck Driver (EMT certified)						
	Boat Coxswain						
	Captains & Pilots (air & water)						
	Deltas, Commanders, Rollagons, & similar equipment (when pulling sleds, trailers or similar equipment)						
	Dump Trucks (including rockbuggy & trucks with pups) over 40 yards up to & including 60 yards						
	Helicopter Transporter						
	Lowboys, including attached trailers & jeeps, up to & including 12 axles (over 12 axles or 150 tons to be negotiated)						
	Material Coordinator and Purchasing Agent						
	Ready-mix (over 12 yards up to & including 15 yards) (over 15 yards to be negotiated)						
	Semi with Double Box Mixer						
	Tireman, Heavy Duty/Fueler						
	Water Wagon (250 Bbls and above)						
						L&M	
A2102	Group 1A including:	40.16	7.38	9.99	1.20	0.10	58.83
	Dump Trucks (including rockbuggy & trucks with pups) over 60 yards up to & including 100 yards (over 100 yards to be negotiated)						
	Jeeps (driver under load)						
						L&M	
A2103	Group II, including:	37.63	7.38	9.99	1.20	0.10	56.30
	All Deltas, Commanders, Rollagons, & similar equipment						
	Construction and Material Safety Technician						
	Dump Trucks (including rockbuggy & trucks with pups) over 20 yards up to & including 40 yards						
	Lowboys (including attached trailers & jeeps up to & including 8 axles)						
	Mechanics						
	Partsman						
	Ready-mix (over 7 yards up to & including 12 yards)						
	Stringing Truck						
	Super Vac Truck/Cacasco Truck/Heat Stress Truck						
	Turn-O-Wagon or DW-10 (not self loading)						
						L&M	
A2104	Group III, including:	36.81	7.38	9.99	1.20	0.10	55.48
	Batch Trucks (8 yards & up)						
	Dump Trucks (including rockbuggy & trucks with pups) over 10 yards up to & including 20 yards						
	Expeditor (electrical & pipefitting materials)						
	Greaser - Shop						
	Oil Distributor Driver						
	Thermal Plastic Layout Technician						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	**See note on last page if remote site						
						L&M	
A2104	Group III, including:	36.81	7.38	9.99	1.20	0.10	55.48
	Traffic Control Technician						
	Trucks/Jeeps (push or pull)						
						L&M	
A2105	Group IV, including:	36.23	7.38	9.99	1.20	0.10	54.90
	Air Cushion or similar type vehicle						
	All Terrain Vehicle						
	Boom Truck/Knuckle Truck (over 5 tons)						
	Buggymobile						
	Bull Lift & Fork Lift, Fork Lift with Power Boom & Swing Attachment (over 5 tons)						
	Bus Operator (over 30 passengers)						
	Combination Truck-Fuel & Grease						
	Compactor (when pulled by rubber tired equipment)						
	Dump Trucks (including Rockbuggy & trucks with pups up to & including 10 yards)						
	Dumpster						
	Expeditor (general)						
	Fire Truck/Ambulance Driver						
	Flat Beds, Dual Rear Axle						
	Foam Distributor Truck Dual Axle						
	Front End Loader with Fork						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating over 5 tons)						
	Grease Truck						
	Hydro Seeder, Dual Axle						
	Hyster Operators (handling bulk aggregate)						
	Loadmaster (air & water operations)						
	Lumber Carrier						
	Ready-mix, (up to & including 7 yards)						
	Rigger (air/water/oilfield)						
	Semi or Truck & Trailer						
	Tireman, Light Duty						
	Track Truck Equipment						
	Vacuum Truck, Truck Vacuum Sweeper						
	Warehouseperson						
	Water Truck, Dual Axle						
	Water Wagon, Semi						
						L&M	
A2106	Group V, including:	35.47	7.38	9.99	1.20	0.10	54.14
	Batch Truck (up to & including 7 yards)						
	Boom Truck/Knuckle Truck (up to & including 5 tons)						
	Buffer Truck						

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits	THR
Truck Drivers							
	**See note on last page if remote site						
						L&M	
A2106	Group V, including:	35.47	7.38	9.99	1.20	0.10	54.14
	Bull Lifts & Fork Lifts, Fork Lifts with Power Boom & Swing Attachments (up to & including 5 tons)						
	Bus Operator (up to 30 passengers)						
	Farm Type Rubber Tired Tractor (when material handling or pulling wagons on a construction project)						
	Flat Beds, Single Rear Axle						
	Foam Distributor Truck Single Axle						
	Fuel Handler (station/bulk attendant)						
	Gear/Supply Truck						
	Gin Pole Truck, Winch Truck, Wrecker (truck mounted "A" frame manufactured rating 5 tons & under)						
	Gravel Spreader Box Operator on Truck						
	Hydro Seeders, Single axle						
	Pickups (pilot cars & all light-duty vehicles)						
	Rigger/Swamper						
	Tack Truck						
	Team Drivers (horses, mules, & similar equipment)						
	Water Truck (Below 250 Bbls)						
Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)							
	**See note on last page if remote site						
						L&M	LEG	
N2201	Group I, including:	32.18	7.24	13.73	1.20	0.20	0.15	54.70
	Brakeman							
	Mucker							
	Nipper							
	Topman & Bull Gang							
	Tunnel Track Laborer							
						L&M	LEG	
N2202	Group II, including:	33.28	7.24	13.73	1.20	0.20	0.15	55.80
	Burning & Cutting Torch							
	Concrete Laborer							
	Jackhammer							
	Laser Instrument Operator							
	Nozzlemen, Pumpcrete or Shotcrete							
	Pipelayer Helper							
						L&M	LEG	
N2203	Group III, including:	34.27	7.24	13.73	1.20	0.20	0.15	56.79
	Miner							
	Retimberman							
						L&M	LEG	
N2204	Group IIIA, including:	37.87	7.24	13.73	1.20	0.20	0.15	60.39

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Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
Tunnel Workers, Laborers (The Alaska areas north of N63 latitude and east of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
N2204	Group IIIA, including:	37.87	7.24	13.73	1.20	0.20	0.15	60.39
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)							
	Licensed Powderman							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayer							
						L&M	LEG	
N2206	Group IIIB, including:	38.79	7.24	13.73	1.20	0.20	0.15	61.31
	Federally Licensed Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade)							
Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
						L&M	LEG	
S2201	Group I, including:	32.18	7.24	13.73	1.20	0.20	0.15	54.70
	Brakeman							
	Mucker							
	Nipper							
	Topman & Bull Gang							
	Tunnel Track Laborer							
						L&M	LEG	
S2202	Group II, including:	33.28	7.24	13.73	1.20	0.20	0.15	55.80
	Burning & Cutting Torch							
	Concrete Laborer							
	Jackhammer							
	Laser Instrument Operator							
	Nozzlemen, Pumpcrete or Shotcrete							
	Pipelayer Helper							
						L&M	LEG	
S2203	Group III, including:	34.27	7.24	13.73	1.20	0.20	0.15	56.79
	Miner							
	Retimberman							
						L&M	LEG	
S2204	Group IIIA, including:	37.87	7.24	13.73	1.20	0.20	0.15	60.39
	Asphalt Raker, Asphalt Belly Dump Lay Down							
	Drill Doctor (in the field)							
	Driller (including, but not limited to wagon drills, air-track drills, hydraulic drills)							
	Licensed Powderman							
	Pioneer Drilling & Drilling Off Tugger (all type drills)							
	Pipelayer							

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

Class Code	Classification of Laborers & Mechanics	BHR	H&W	PEN	TRN	Other Benefits		THR
						L&M	LEG	
Tunnel Workers, Laborers (The area that is south of N63 latitude and west of W138 longitude)								
	**See note on last page if remote site							
S2206	Group IIIB, including:	38.79	7.24	13.73	1.20	0.20	0.15	61.31
	Federally Licensed Powderman (Responsible Person in Charge)							
	Grade Checking (setting or transferring of grade marks, line and grade)							
Tunnel Workers, Power Equipment Operators								
	**See note on last page if remote site							
						L&M		
A2207	Group I	42.11	9.10	9.75	1.00	0.10		62.06
						L&M		
A2208	Group IA	44.04	9.10	9.75	1.00	0.10		63.99
						L&M		
A2209	Group II	41.26	9.10	9.75	1.00	0.10		61.21
						L&M		
A2210	Group III	40.47	9.10	9.75	1.00	0.10		60.42
						L&M		
A2211	Group IV	33.64	9.10	9.75	1.00	0.10		53.59

*** A remote site is isolated and relatively distant from the amenities of civilization, and usually far from the employee's home. As a condition of employment, the workers must eat, sleep, and socialize at the worksite and remain there for extended periods.**

**** This classification must receive board and lodging under certain conditions. A per diem option of $75 is an alternative to providing meals and lodging. See Page v for an explanation.**

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