

HAINES BOROUGH

PORTAGE COVE
HARBOR EXPANSION



PROJECT MANUAL
95% DESIGN REVIEW SUBMITTAL
Contract Documents and Specifications
Volume 1 of 2



Prepared by:



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END OF SECTION

SECTION 00030 - NOTICE INVITING BIDS

**HAINES BOROUGH
PORTAGE COVE HARBOR EXPANSION
WAVE BARRIER, DREDGING, GRAVEL PARKING AREA & SEWER LINE RELOCATION
INVITATION TO BID**

Notice is hereby given that the Haines Borough, Alaska will receive sealed bids for the construction of Portage Cove Harbor Expansion – Wave Barrier, Dredging, Gravel Parking Area & Sewer Line Relocation. The project generally consists of the following Work:

The Base Bid WORK generally consists of various quantities of mobilization, demolition, salvage, disposal, clearing, shot rock borrow, base course, armor rock, HDPE wastewater pipe, storm drain pipe, storm drain manholes, construction surveying, geotextile fabric, dredging and disposal, steel wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.

Additive Alternate A WORK consists of various quantities of mobilization, demolition, salvage and disposal, armor rock, dredging and disposal, steel pipe piles and other miscellaneous improvements and appurtenances.

Additive Alternate B WORK consists of various quantities of mobilization, dredging and disposal, and other miscellaneous improvements and appurtenances.

Additive Alternate C WORK consists of various quantities of mobilization, wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.

Additive Alternate D WORK consists of various quantities of mobilization, supply and installation of pile anodes, field photos, continuity and potential readings report, and miscellaneous associated appurtenances.

The Engineer's Estimate for all work is approximately \$16.7 million.

Sealed bids will be received by the Haines Borough, P.O. Box 1209, Haines, Alaska 99827, located at the Office of the Clerk, 103 Third Avenue S., Haines, Alaska 99827 until 2:00 PM, prevailing time on **Tuesday, November 3, 2015** at which time the bids will be publicly opened and read aloud in the Borough Administration Office Conference Room. Clearly mark on the outside of the envelope **"Request for Bids, Portage Cove Harbor Expansion, Opening Date November 03, 2015"**. Proposals may not be withdrawn for thirty days following date of opening.

A printed set of Contract Documents, including one set of reduced scale drawings, may be obtained at the Haines Borough office, P.O. Box 1209, Haines, AK 99827 (Ph. 907-766-2257). A non-refundable fee of \$75.00 made payable to the Haines Borough is required for each set of contract documents. Additional charges will be required for special handling or delivery of the documents by means other than first class mail.

The Contract Documents will also be available in electronic format as a downloadable pdf file on the following web site: www.hainesalaska.gov/

Each bid shall be accompanied by a bid bond, cashier's check or certified check made payable to the Haines Borough in the amount of five percent of the total bid price.

Prospective bidders are encouraged to attend a Pre-Bid Conference that will be held in Haines on Tuesday, October 4, 2015 beginning at 2:00 PM at the Borough Assembly Chambers. Attendance by teleconference will be available by calling (1-800-315-6338). Callers will need to enter the following access code: 2885#. Questions regarding this project shall be directed to Brian Lemcke, Director of Public Facilities (907-766-2257).

The Haines Borough reserves the right to reject any or all bids, to waive any informality in a bid, and to make

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award to the lowest responsive, responsible bidder as it may best serve the interest of the Borough.

Authorized by: David Sosa, Borough Manager

END OF SECTION

SECTION 00100 - INSTRUCTIONS TO BIDDERS

1.0 DEFINED TERMS. Terms used in these “Instructions to Bidders” and the “Notice Inviting Bids” which are defined in the General Conditions have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to the OWNER, as distinct from a sub-bidder, who submits a Bid to a Bidder.

2.0 INTERPRETATIONS AND ADDENDA.

A. **INTERPRETATIONS.** All questions about the meaning or intent of the Contract Documents are to be directed to the ENGINEER. Interpretations or clarifications considered necessary by the ENGINEER in response to such questions will be issued by Addendum, mailed, faxed, or delivered to all parties recorded by the OWNER, as having received the Contract Documents. Questions received less than 7 Days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect.

B. **ADDENDA.** Addenda may be issued to modify the Contract Documents as deemed advisable by the OWNER. The OWNER may issue addenda by fax, with a follow-up addendum copy issued by regular mail. Addenda may be faxed and mailed less than seven Days prior to the anticipated Bid opening. The OWNER will make all reasonable attempts to ensure that all plan holders receive faxed addenda, however, it is strongly recommended by the OWNER that Bidders independently confirm the contents, number, and dates of each Addenda prior to submitting a Bid.

3.0 FAIR COMPETITION. More than one Bid from an individual, firm, partnership, corporation, or association under the same or different names will not be considered. If the OWNER believes that any Bidder is interested in more than one Bid for the WORK contemplated, all Bids in which such Bidder is interested will be rejected. If the OWNER believes that collusion exists among the Bidders, all Bids will be rejected.

4.0 RESPONSIBLE BIDDER. Only responsive Bids from responsible Bidders will be considered. A Bid submitted by a Bidder determined to be not responsible may be rejected. A responsible Bidder is one who is considered to be capable of performing the WORK.

A. The general standards for responsibility are to determine the CONTRACTOR’s ability to perform WORK adequately, considering the CONTRACTOR’s

1. Financial Resources
2. Ability to Meet Delivery Standards
3. Past Performance Record
 - a. References from others on CONTRACTOR’s performance
 - b. Record of performance on prior OWNER contracts
4. Record of Integrity
5. Obligations to OWNER
 - a. Bidders must be registered as required by law and in good standing for all amounts owed to the OWNER within five Days of OWNER’s Notice of Intent to Award.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- B. Special standards for responsibility, if applicable, will be specified. These special standards establish minimum standards or experience required for a responsible Bidder on a specific contract.
- C. Before a Bid is considered for award, a Bidder may be requested to submit information documenting its ability and competency to perform the WORK, according to general standards of responsibility and any special standards which may apply. It is Bidder's responsibility to submit sufficient, relevant, and adequate information. OWNER will make its determination of responsibility and has no obligation to request clarification or supplementary information.

5.0 RESPONSIVE BIDS. Only responsive Bids will be considered. Bids may be considered non-responsive and may be rejected. Some of the reasons a Bid may be rejected for being non-responsive are:

- A. If the Bid is on a form other than that furnished by the OWNER, or legible copies thereof; or if the form is altered or any part thereof is detached; or if the Bid is improperly signed.
- B. If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
- C. If the Bidder adds any unauthorized conditions, limitations, or provisions reserving the right to accept or reject any award, or to enter into a contract pursuant to an award. This does not exclude a Bid limiting the maximum gross amount of awards acceptable to any one Bidder at any one bid opening, provided that any selection of awards will be made by the OWNER.
- D. If the Bid does not contain a unit price for each pay item listed, except in the case of authorized alternate pay items.
- E. If the Bidder has not acknowledged receipt of each Addendum.
- F. If the Bidder fails to furnish an acceptable Bid guaranty with the Bid.
- G. If any of the unit prices Bid are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the OWNER.
- H. If a bid modification does not conform to Article 15.0 of this Section.

6.0 BIDDER'S EXAMINATION OF CONTRACT DOCUMENTS AND SITE. It is the responsibility of each Bidder before submitting a Bid:

- A. To examine thoroughly the Contract Documents, and other related data identified in the bidding documents (including "technical data" referred to below):
 - 1. To visit the site to become familiar with and to satisfy the Bidder as to the general and local conditions that may affect cost, progress, or performance, of the WORK,

SECTION 00100 - INSTRUCTIONS TO BIDDERS

2. to consider federal, state and local laws and regulations that may affect cost, progress, or performance of the WORK,
3. to study and carefully correlate the Bidder's observations with the Contract documents, and other related data; and
4. to notify the ENGINEER of all conflicts, errors, or discrepancies in or between the Contract Documents and such other related data.

7.0 REFERENCE IS MADE TO THE SUPPLEMENTARY GENERAL CONDITIONS FOR IDENTIFICATION OF:

- A. Those reports of explorations and tests of subsurface conditions at the site which have been utilized by the Engineer of Record in the preparation of the Contract Documents. The Bidder may rely upon the accuracy of the technical data contained in such reports, however, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with non-technical data, interpretations, and opinions contained therein or the completeness thereof is the responsibility of the Bidder.
- B. Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except underground utilities) which are at or contiguous to the site have been utilized by the Engineer of Record in the preparation of the Contract Documents. The Bidder may rely upon the accuracy of the technical data contained in such drawings, however, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with non-technical data, interpretations, and opinions contained in such drawings or the completeness thereof is the responsibility of the Bidder.
- C. Copies of such reports and drawings will be made available by the OWNER to any Bidder on request if said reports and drawings are not bound herein. Those reports and drawings are not part of the Contract Documents, but the technical data contained therein upon which the Bidder is entitled to rely, as provided in Paragraph SGC-4.2 of the Supplementary General Conditions, are incorporated herein by reference.
- D. Information and data reflected in the Contract Documents with respect to underground utilities at or contiguous to the site is based upon information and data furnished to the OWNER and the Engineer of Record by the owners of such underground utilities or others, and the OWNER does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary General Conditions, or in Section 01530 - Protection and Restoration of Existing Facilities.
- E. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, underground utilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.2, 4.3, and 4.4 of the General Conditions.
- F. Before submitting a Bid, each Bidder will, at its own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface, and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress, or performance of the WORK and which the Bidder deems

SECTION 00100 - INSTRUCTIONS TO BIDDERS

necessary to determine its Bid for performing the WORK in accordance with the time, price, and other terms and conditions of the Contract Documents.

- G. On request in advance, the OWNER will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and shall clean up and restore the site to its former condition upon completion of such explorations.
- H. The lands upon which the WORK is to be performed, rights-of-way and easements for access thereto and the lands designated for use by the CONTRACTOR in performing the WORK are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the OWNER unless otherwise provided in the Contract Documents.
- I. The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of Article 6, "Bidder's Examination of Contract Documents and Site" herein, that without exception the Bid is premised upon performing the WORK required by the Contract Documents and such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the WORK.

8.0 BID FORM.

- A. The Bid shall be made on the Bid Schedule(s) bound herein, or on the yellow bid packet provided, or on legible and complete copies thereof, and shall contain the following: Sections 00300, 00310, and the required Bid Security. In the event there is more than one Bid Schedule, the Bidder may bid on any individual schedule or on any combination of schedules. The envelope enclosing the sealed Bids shall be plainly marked in the upper left-hand corner with the name and address of the Bidder and shall bear the words "BID FOR," followed by the title of the Contract Documents for the WORK, the name of the OWNER, the address where Bids are to be delivered or mailed to, and the date and hour of opening of Bids. The Bid Security shall be enclosed in the same envelope with the Bid.
- B. All blanks on the Bid Form and Bid Schedule must be completed in ink or typed.
- C. Bids by corporations must be executed in the corporate name by the president, a vice-president (or other corporate officer). The corporate address and state of incorporation must appear below the signature.
- D. Bids by partnerships must be executed in the partnership name and be signed by a managing partner, and the official address of the partnership must appear below the signature.
- E. The Bidder's Bid must be signed with ink. All names must be printed or typed below the signature.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- F. The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form. Failure to acknowledge Addenda shall render Bid non-responsive and shall cause its rejection.
- G. The address to which communications regarding the Bid are to be directed must be shown.
- H. All Bidders must provide evidence of authority to conduct business in Alaska to the extent required by law.
- I. On Projects including Federal funding any contractor otherwise qualified to perform the WORK, is not required to be licensed nor to submit application for license in advance of submitting a Bid or having such Bid considered; provided, however, that such exemption does not constitute a waiver of the OWNER's right under existing license laws to require a contractor, determined to be a successful Bidder, to be licensed to do business as a contractor in the State of Alaska in connection with the award of a contract to the successful Bidder.
- J. On Projects not including Federal funding, a Bid for the WORK will not be accepted from a contractor who does not hold a valid Alaska Business License and a valid Contractor's License in Alaska (applicable to the type of work bid upon) at the time of opening Bids.
- 9.0 QUANTITIES OF WORK.** The quantities of WORK, or material, stated in unit price items of the Bid are supplied only to give an indication of the general scope of the WORK; the OWNER does not expressly or by implication agree that the actual amount of WORK, or material, will correspond therewith, and reserves the right after award to increase or decrease the amount of any unit price item of the WORK by an amount up to and including 25 percent of any Bid item, without a change in the unit price, and shall include the right to delete any Bid item in its entirety, or to add additional Bid items up to and including an aggregate total amount not to exceed 25 percent of the Contract Price (see General Conditions, Article 10 Changes In the Work).
- 10.0 SUBSTITUTE OR "OR-EQUAL" ITEMS.** The procedure for the submittal of substitute or "or-equal" products is specified in Section 01300 - CONTRACTOR SUBMITTALS.
- 11.0 SUBMISSION OF BIDS.** The Bid shall be delivered by the time and to the place stipulated in the Notice Inviting Bids. It is the Bidder's sole responsibility to see that its Bid is received in proper time. Oral, telegraphic, telephonic or faxed Bids will not be considered.
- 12.0 BID SECURITY, BONDS, AND INSURANCE.** Each Bid shall be accompanied by a certified, or cashier's check, or approved Bid Bond in an amount of at least 5 percent of the total Bid price. The "total Bid price" is the amount of the base bid, plus the amount of alternate bids, if any, which total to the maximum amount for which the contract could be awarded. Said check or Bond shall be made payable to the OWNER and shall be given as a guarantee that the Bidder, if offered the WORK, will enter into an Agreement with the OWNER, and will furnish the necessary insurance certificates, Payment Bond, and Performance Bond; each of said Bonds, if required, and insurance amounts shall be as stated in the Supplementary General Conditions. In case of refusal or failure to enter into said Agreement, the check or Bid Bond, as the case may be, shall be forfeited to the OWNER. If the Bidder elects to furnish a Bid Bond as its Bid security, the

SECTION 00100 - INSTRUCTIONS TO BIDDERS

Bidder shall use the Bid Bond form bound herein, or one conforming substantially to it in form. Bid Bonds must be accompanied by a legible power of attorney.

13.0 RETURN OF BID SECURITY. Within 14 Days after award of the contract, the OWNER will return the Bid securities accompanying such of the Bids as are not considered in making the award. All other Bid securities will be held until the Agreement has been executed. They will then be returned to the respective Bidders whose Bids they accompanied.

14.0 DISCREPANCIES IN BIDS. In the event there is more than one pay item in a Bid Schedule, the Bidder shall furnish a price for all pay items in the schedule, and failure to do so may render the Bid non-responsive and cause its rejection. In the event there are unit price pay items in a Bid Schedule, and the "amount" indicated for a unit price pay item does not equal the product of the unit price and quantity, the unit price shall govern and the amount will be corrected accordingly, and the Bidder shall be bound by said correction. In the event there is more than one pay item in the Bid Schedule and the total indicated for the schedule does not agree with the sum of the prices bid on the individual items, the prices bid on the individual items shall govern and the total for the schedule will be corrected accordingly, and the Bidder shall be bound by said correction.

15.0 BID MODIFICATIONS AND UNAUTHORIZED ALTERNATIVE BIDS.

A. Any Bidder may modify a Bid by mail, telegram, or fax (**Fax: 907-766-2716**) up to the scheduled closing time for receipt of Bids, provided that such modification is received by the Haines Borough prior to the time set for opening of Bids. Bidders are strongly advised to telephone the Haines Borough (**Telephone: 907-766-2231**) to confirm the successful and timely transmission of all fax Bid modifications.

A telegram or fax modification should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices will not be known by the Borough until the sealed Bid is opened. Modifications shall include both the modification of the unit bid price and the total modification of each item modified. The Borough shall not be responsible for its failure to receive fax modifications whether such failure is caused by transmission line problems, fax device problems, operator error or otherwise.

B. Unauthorized conditions, limitations, or provisos attached to the Bid will render it informal and cause its rejection as being non-responsive. The completed bid forms shall be without interlineation, alterations, or erasures in the printed text. All changes shall be initialed by the person signing the Bid. Alternative bids will not be considered unless called for.

16.0 WITHDRAWAL OF BID. The Bid may be withdrawn by the Bidder by means of a written request, signed by the Bidder or its properly authorized representative. Such written request must be delivered to the place stipulated in the Notice Inviting Bids for receipt of Bids prior to the scheduled closing time for receipt of Bids.

17.0 AWARD OF CONTRACT.

A. Award of a contract, if it is awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Technical Specifications and will be made to the lowest responsive, responsible Bidder whose Bid complies with all the

SECTION 00100 - INSTRUCTIONS TO BIDDERS

requirements prescribed. Unless otherwise specified, any such award will be made within the period stated in the Notice Inviting Bids that the Bids are to remain open. Unless otherwise indicated, a single award will be made for all the bid items in an individual Bid Schedule.

- B. In the event the WORK is contained in more than one Bid Schedule, the OWNER may award schedules individually or in combination. In the case of two Bid Schedules which are alternative to each other, only one of such alternative schedules will be awarded.
- C. If the OWNER has elected to advertise this Project with a base bid and additive or deductive alternates, the OWNER may elect to award the contract for the base bid, or the base bid plus one or more alternates selected by the OWNER. In either case, award shall be made to the responsive, responsible Bidder offering the lowest total bid for the WORK to be awarded.

18.0 EXECUTION OF AGREEMENT.

- A. All Bids must be approved by the Haines Borough Assembly. After the Assembly has approved the award, the OWNER will issue a Notice of Intent to Award to the approved Bidder. The Bidder to whom award is made shall execute a written Agreement with the OWNER on the Agreement form, Section 00500, and shall secure all insurance and furnish all certificates and bonds required by the Contract Documents within 10 Days from the date stated in the Notice of Intent to Award letter.
- B. Failure or refusal to enter into the Agreement as herein provided or to conform to any of the stipulated requirements in connection therewith shall be just cause for annulment of the award and forfeiture of the Bid security. If the lowest responsive, responsible Bidder refuses or fails to execute the Agreement, the OWNER may award the contract to the second lowest responsive, responsible Bidder. If the second lowest responsive, responsible Bidder refuses or fails to execute the Agreement, the OWNER may award the contract to the third lowest responsive, responsible Bidder. On the failure or refusal of such second or third lowest Bidder to execute the Agreement, each such Bidder's Bid securities shall be likewise forfeited to the OWNER.

19.0 LIQUIDATED DAMAGES. Provisions for liquidated damages if any are set forth in Section 00500 - Agreement.

20.0 PERMITS. The CONTRACTOR is responsible for all WORK associated with meeting any local, state, and/or federal permit requirements.

END OF SECTION

SECTION 00300 - BID

BID TO: HAINES BOROUGH

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the OWNER on the form included in the Contract Documents (as defined in Article 7 of Section 00500 - AGREEMENT) to perform the WORK as specified or indicated in said Contract Documents entitled

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2. Bidder accepts all of the terms and conditions of the Contract Documents, including without limitation those in the "Notice Inviting Bids" and "Instructions to Bidders," dealing with the disposition of the Bid Security.
3. This Bid will remain open for the period stated in the "Notice Inviting Bids" unless otherwise required by law. Bidder will enter into an Agreement within the time and in the manner required in the "Notice Inviting Bids" and the "Instructions to Bidders," and will furnish insurance certificates, Payment Bond, Performance Bond, and any other documents as may be required by the Contract Documents.
4. Bidder has familiarized itself with the nature and extent of the Contract Documents, WORK, site, locality where the WORK is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the WORK and has made such independent investigations as Bidder deems necessary.
5. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.
6. To all the foregoing, and including all Bid Schedule and information required of Bidder contained in this Bid Form, said Bidder further agrees to complete the WORK required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment therefor the Contract Price based on the total bid price(s) named in the aforementioned Bid Schedule.
7. Bidder has examined copies of all the Contract Documents including the following Addenda (receipt of all of which is hereby acknowledged by the Undersigned):

Addenda No.	Date Issued	Addenda No.	Date Issued

Give number and date of each Addenda above. Failure to acknowledge receipt of all Addenda will cause the Bid to be non-responsive and shall cause its rejection.

SECTION 00300 - BID

8. The Bidder has read this Bid and agrees to the conditions as stated herein by signing in the space provided below.

Dated: _____	Bidder: _____ (Company Name)
	By: _____ (Signature in Ink)
	Printed Name: _____
Contractor's License No.: _____	Title: _____
Telephone No.: _____	Address: _____ (Street or P.O. Box)
Fax No.: _____	_____ (City, State, Zip)

9. TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING AT THE TIME OF THE BID OPENING:

- Signed Bid, Section 00300 (includes Addenda receipt statement)
- Completed Bid Schedule, Section 00310
- Bid Security (Bid Bond, Section 00320, or by a certified or cashier's check as stipulated in the Notice Inviting Bids, Section 00030)

10. Unless otherwise notified by the City Administrator, the apparent low Bidder is required to complete and submit the following documents:

- Subcontractor Report, Section 00360

The apparent low Bidder who fails to submit a completed Subcontractor Report within the time specified in Section 00360 – Subcontractor Report will be found to be not a responsible Bidder and may be required to forfeit the Bid security. The OWNER will then consider the next lowest Bidder for award of the contract.

11. The successful Bidder will be required to submit, within ten Days after the date stated in the “Notice of Intent to Award” letter, the following executed documents:

- Agreement Forms, Section 00500
- Performance Bond, Section 00610
- Payment Bond, Section 00620
- Certificates of Insurance, (CONTRACTOR and Subcontractors) Section 00700 and Section 00800
- One executed copy of each subcontract for WORK that exceeds one half of one percent of the intended contract award amount.

END OF SECTION

SECTION 00310 – BID SCHEDULE

BASE BID – PORTAGE COVE HARBOR EXPANSION

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1	Mobilization	LS	All Req'd	LUMP	SUM	\$	
1570.1	Erosion and Sediment Control - Upland Measures and Monitoring	LS	All Req'd	LUMP	SUM	\$	
1570.2	Silt Containment Boom with Navigation Lights	LF	1500			\$	
2060.1	Demolition, Salvage and Disposal	LS	All Req'd	LUMP	SUM	\$	
2060.2	Assist Owner with Seaplane Float Removal and Reinstallation	LS	All Req'd	LUMP	SUM	\$	
2201.1	Clearing & Grubbing	AC	1.5			\$	
2202.1	Class A Shot Rock Borrow	CY	8000			\$	
2202.2	Class B Shot Rock Borrow	CY	9200			\$	
2204.1	Base Course Grading C-1	CY	400			\$	
2205.1	Class II Armor Rock	CY	3400			\$	
2205.2	Class III Armor Rock	CY	3100			\$	
2401.1	Furnish 16" Dia. HDPE Wastewater Outfall Pipe	LF	2540			\$	
2401.2	Install 16" Dia. HDPE Wastewater Outfall Pipe Sta. 1+50 - 6+50	LF	505			\$	
2401.3	Install 16" Dia. HDPE Wastewater Outfall Pipe Sta. 6+50 - 8+25	LF	180			\$	
2401.4	Install 16" Dia. HDPE Wastewater Outfall Pipe Sta. 8+25 - 26+50	LF	1840			\$	
2401.5	Furnish and Install Wastewater Outfall Diffuser	LS	All Req'd	LUMP	SUM	\$	
2401.6	Connect to Existing 16" Dia. HDPE Outfall Pipe	LS	All Req'd	LUMP	SUM	\$	

SECTION 00310 – BID SCHEDULE

BASE BID – PORTAGE COVE HARBOR EXPANSION

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
2402.1	Furnish and Install Wastewater Outfall Concrete Anchor, Type I	EA	170			\$	
2402.2	Furnish and Install Wastewater Outfall Concrete Anchor, Type II	EA	15			\$	
2501.1	12" CPEP Storm Drain Pipe	LF	160			\$	
2501.2	24" CPEP Storm Drain Pipe	LF	110			\$	
2501.3	36" CPEP Storm Drain Pipe	LF	560			\$	
2501.4	Clean Existing Storm Drain Pipe to Upstream Manhole	LS	All Req'd	LUMP	SUM	\$	
2501.5	Connect to Existing Storm Drain Pipe	EA	4			\$	
2502.1	Storm Drain Manhole Type I	EA	3			\$	
2502.2	Storm Drain Manhole Type II	EA	1			\$	
2502.3	Storm Drain Oil-Water Separator	EA	1			\$	
2502.4	Storm Drain Outfall Structure	LS	All Req'd	LUMP	SUM	\$	
2702.1	Construction Surveying	LS	All Req'd	LUMP	SUM	\$	
2714.1	Geotextile Fabric	SY	15000			\$	
2881.1	Dredging and Offshore Disposal	CY	88000			\$	
2881.2	Dredging and Onshore Placement at Parking Area	CY	25000			\$	
2896.1	Furnish & Install Wave Barrier Pile, 24 Inch Dia. X 0.500 Inch Thick w/Sheetpile Wing	EA	113			\$	
2896.2	Furnish Work Float Pile, 24 Inch Dia. X 0.500 Inch Thick	LF	40			\$	
2896.3	Furnish Bearing Pile, 30 Inch Dia. X 0.750 Inch Thick	LF	6840			\$	
2896.4	Install Work Float Pile, 24 Inch Dia. X 0.500 Inch Thick Steel Pile	EA	4			\$	

SECTION 00310 – BID SCHEDULE

BASE BID – PORTAGE COVE HARBOR EXPANSION

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
2896.5	Install Bearing Pile, 30 Inch Dia. X 0.750 Inch Thick	EA	38			\$	
2896.6	SPIN FIN®, 30 Inch Dia. Pile	EA	36			\$	
2896.7	Field Splice Work Float Pile, 24 Inch Dia	EA	10			\$	
2896.8	Field Install Cutting Shoe, 24 Inch Dia. Pile	EA	3			\$	
2901.1	Furnish & Install Barrier Waler	LF	604			\$	
2901.2	Furnish & Install Bearing Caps & Connections	EA	19			\$	
2901.3	Wave Barrier Amenities - Fenders, Light, Armor Excavation, Misc.	LS	All Reqd	LUMP	SUM	\$	

TOTAL BASE BID AMOUNT IN FIGURES: \$ _____

TOTAL BASE BID AMOUNT IN WORDS: _____

BIDDER NAME: _____

SECTION 00310 – BID SCHEDULE

ADDITIVE ALTERNATE A – DREDGING MIDDLE BASIN AND TRANSIENT FLOAT WORK

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1-A	Mobilization	LS	All Req'd	LUMP	SUM	\$	
2060.1-A	Demolition, Salvage and Disposal	LS	All Req'd	LUMP	SUM	\$	
2060.3-A	Remove, Salvage and Reinstall Existing Light Fixtures	LS	All Req'd	LUMP	SUM	\$	
2205.1-A	Class II Armor Rock	CY	200			\$	
2881.1-A	Dredging and Offshore Disposal	CY	14300			\$	
2896.9-A	Furnish Transient Float Pile, 12.75 Inch Dia. X 0.500 Inch Thick	LF	140			\$	
2896.10-A	Install Transient Float Pile, 12.75 Inch Dia. X 0.500 Inch Thick	EA	9			\$	
2896.11-A	Field Splice Transient Float Pile, 12.75 Inch Dia. Pile	EA	7			\$	
2896.12-A	Field Install Cutting Shoe, 12.75 Inch Dia. Pile	EA	7			\$	

TOTAL ADDITIVE ALTERNATE A AMOUNT IN FIGURES: \$ _____

TOTAL ADDITIVE ALTERNATE A AMOUNT IN WORDS: _____

BIDDER NAME: _____

SECTION 00310 – BID SCHEDULE

ADDITIVE ALTERNATE B – DREDGING NORTH BASIN

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1-B	Mobilization	LS	All Reqd	LUMP	SUM	\$	
2881.1-B	Dredging and Offshore Disposal	CY	2000			\$	

TOTAL ADDITIVE ALTERNATE B AMOUNT IN FIGURES: \$ _____

TOTAL ADDITIVE ALTERNATE B AMOUNT IN WORDS: _____

BIDDER NAME: _____

SECTION 00310 – BID SCHEDULE

ADDITIVE ALTERNATE C – SOUTH END OF WAVE BARRIER

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1-C	Mobilization	LS	All Reqd	LUMP	SUM	\$	
2896.1-C	Furnish & Install Wave Barrier Pile, 24 Inch Dia. X 0.500 Inch Thick w/Sheetpile Wing	EA	18			\$	
2896.3-C	Furnish Bearing Pile, 30 Inch Dia. X 0.750 Inch Thick	LF	1080			\$	
2896.5-C	Install Bearing Pile, 30 Inch Dia. X 0.750 Inch Thick	EA	6			\$	
2896.6-C	SPIN FIN®, 30 Inch Dia. Pile	EA	6			\$	
2901.1-C	Furnish & Install Barrier Waler	LF	97				
2901.2-C	Furnish & Install Bearing Caps & Connections	EA	3				

TOTAL ADDITIVE ALTERNATE C AMOUNT IN FIGURES: \$ _____

TOTAL ADDITIVE ALTERNATE C AMOUNT IN WORDS: _____

BIDDER NAME: _____

SECTION 00310 – BID SCHEDULE

ADDITIVE ALTERNATE D – PILE ANODES

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1-D	Mobilization	LS	All Req'd	LUMP	SUM	\$	
2996.1-D	Supply Anode	EA	328			\$	
2996.2-D	Install Anode	EA	328			\$	
2996.3-D	Field Photos, Continuity, Potential Readings & Report	LS	All Req'd	LUMP	SUM	\$	

TOTAL ADDITIVE ALTERNATE D AMOUNT IN FIGURES: \$ _____

TOTAL ADDITIVE ALTERNATE D AMOUNT IN WORDS: _____

BIDDER NAME: _____

SECTION 00320 - BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that _____

_____ as Principal, and _____

as Surety, are held and firmly bound unto the **HAINES BOROUGH** hereinafter called "OWNER," in the sum of _____ dollars, (not less than five percent of the total amount of the Bid) for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the Bid Schedule of the OWNER's Contract Documents entitled

PORTAGE COVE HARBOR EXPANSION

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" and the "Instructions to Bidders" enters into a written Agreement on the form of Agreement bound with said Contract Documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Surety shall pay all costs incurred by said OWNER in such suit, including a reasonable attorney's fee to be fixed by the court.

SIGNED AND SEALED, this _____ day of _____, 20____

(SEAL) _____
(Principal)

(SEAL) _____
(Surety)

By: _____
(Signature)

By: _____
(Signature)

SECTION 00360 - SUBCONTRACTOR REPORT

LIST OF SUBCONTRACTORS

The apparent low Bidder must submit a list of Subcontractors that the Bidder proposes to use in the performance of this contract and all Subcontractor Sales Tax Forms by close of business on the fifth calendar day following the posting notice of Bids. If the fifth calendar day falls on a weekend or holiday, the report is due by close of business on the next business day following the weekend or holiday. The list must include each Subcontractor's name, address, location, evidence of valid Alaska Business License, and valid Alaska Contractor's Registration under AS 08.18. *If no Subcontractors are to be utilized in the performance of the WORK, write in ink or type "NONE" on line (1) below.*

<u>SUBCONTRACTOR</u>	¹ AK Contractor <u>License No.</u>	¹ <u>Contact Name</u>	<u>Type of</u>	<u>Contract</u>	√ if <u>DBE</u>
<u>ADDRESS</u>	² AK Business <u>License No.</u>	² <u>Phone No.</u>	<u>Work</u>	<u>Amount</u>	
1. _____ _____ _____	1 _____ 2 _____	_____ _____	_____ _____	\$ _____	<input type="checkbox"/>
2. _____ _____ _____	1 _____ 2 _____	_____ _____	_____ _____	\$ _____	<input type="checkbox"/>
3. _____ _____ _____	1 _____ 2 _____	_____ _____	_____ _____	\$ _____	<input type="checkbox"/>
4. _____ _____ _____	1 _____ 2 _____	_____ _____	_____ _____	\$ _____	<input type="checkbox"/>

I certify that the above listed Alaska Business License(s) and CONTRACTOR Registration(s), if applicable, were valid at the time Bids were opened for this Project.

CONTRACTOR, Authorized Signature

CONTRACTOR, Printed Name

A. A Bidder may replace a listed Subcontractor if the Subcontractor:

SECTION 00360 - SUBCONTRACTOR REPORT

1. fails to comply with AS 08.18;
 2. files for bankruptcy or becomes insolvent;
 3. fails to execute a contract with the Bidder involving performance of the WORK for which the Subcontractor was listed and the Bidder acted in good faith;
 4. fails to obtain bonding;
 5. fails to obtain insurance acceptable to the OWNER;
 6. fails to perform the contract with the Bidder involving work for which the Subcontractor was listed;
 7. must be substituted in order for the CONTRACTOR to satisfy required state and federal affirmative action requirements;
 8. refuses to agree or abide with the Bidder's labor agreement; or
 9. is determined by the OWNER not to be a responsible Bidder.
- B. If a Bidder fails to list a Subcontractor or lists more than one Subcontractor for the same portion of WORK, the Bidder shall be considered to have agreed to perform that portion of WORK without the use of a Subcontractor and to have represented the Bidder to be qualified to perform that WORK.
- C. A Bidder who attempts to circumvent the requirements of this section by listing as a Subcontractor another contractor who, in turn, sublets the majority of the WORK required under the contract violates this section.
- D. If a contract is awarded to a Bidder who violates this section, the OWNER may:
1. cancel the contract; or
 2. after notice and a hearing, assess a penalty on the Bidder in an amount that does not exceed 10 percent of the value of the subcontract at issue.
- E. For contract award, the apparent low Bidder must submit one copy of each subcontract, to the Borough Manager, for WORK with a value of greater than one half of one percent of the intended award amount.
- F. An apparent low Bidder who fails to submit a completed Subcontractor Report within the time specified in this section will be found to be not a responsible Bidder and may be required to forfeit the Bid security. The OWNER will then consider the next lowest Bidder for award of the contract.

SECTION 00500 - AGREEMENT

THIS AGREEMENT is between HAINES BOROUGH (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR) OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK.

CONTRACTOR shall complete the WORK as specified or as indicated under the Bid Schedule of the OWNER'S Contract Documents entitled.

PORTAGE COVE HARBOR EXPANSION

The Base Bid WORK generally consists of various quantities of mobilization, demolition, salvage, disposal, clearing, shot rock borrow, base course, armor rock, HDPE wastewater pipe, storm drain pipe, storm drain manholes, construction surveying, geotextile fabric, dredging and disposal, steel wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.

Additive Alternate A WORK consists of various quantities of mobilization, demolition, salvage and disposal, armor rock, dredging and disposal, steel pipe piles and other miscellaneous improvements and appurtenances.

Additive Alternate B WORK consists of various quantities of mobilization, dredging and disposal, and other miscellaneous improvements and appurtenances.

Additive Alternate C WORK consists of various quantities of mobilization, wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.

Additive Alternate D WORK consists of various quantities of mobilization, supply and installation of pile anodes, field photos, continuity and potential readings report, and miscellaneous associated appurtenances.

The WORK to be paid under this contract shall include the following: Base Bid as shown in Section 00310 - Bid Schedule.

ARTICLE 2. CONTRACT COMPLETION TIME.

The WORK completion schedule is: The OWNER will open the site to the CONTRACTOR by October 1, 2016. Substantial completion of WORK is required by May 31, 2017 and final completion of all WORK is required by June 30, 2017.

ARTICLE 3. DATE OF AGREEMENT

The date of this Agreement will be the date of the last signature on page three of this section.

ARTICLE 4. LIQUIDATED DAMAGES.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual damages suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of

SECTION 00500 - AGREEMENT

requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER \$2,500.00 for each Day that expires after the Substantial Completion time specified in Article 2 herein. The amount of liquidated damages specified above is agreed to be a reasonable estimate based on all facts known as of the date of this Agreement.

ARTICLE 5. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in the amount set forth in the Bid Schedule. The CONTRACTOR agrees to accept as full and complete payment for all WORK to be done in this contract for: **PORTAGE COVE HARBOR EXPANSION**, those Unit Price amounts as set forth in the Bid Schedule in the Contract Documents for this Project.

The total amount of this contract shall be _____, as adjusted in accordance with the provisions of the Contract Documents.

ARTICLE 6. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by the ENGINEER as provided in the General Conditions.

Progress payments will be paid in full in accordance with Article 14 of the General Conditions until ninety (90) percent of the Contract Price has been paid. The remaining ten (10) percent of the Contract Price may be retained, in accordance with applicable Alaska State Statutes, until final inspection, completion, and acceptance of the Project by the OWNER.

ARTICLE 7. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire Agreement between OWNER and CONTRACTOR concerning the WORK consist of this Agreement (pages 00500-1 to 00500-6, inclusive) and the following sections of the Contract Documents:

- Table of Contents (pages 00005-1 to 00005-2, inclusive)
- Notice Inviting Bids (pages 00030-1, inclusive).
- Instructions to Bidders (pages 00100-1 to 00100-8, inclusive).
- Bid (pages 00300-1 to 00300-2, inclusive).
- Bid Schedule (pages 00310-1 to 00310-7, inclusive).
- Bid Bond (page 00320-1, inclusive) or Bid Security.
- Subcontractor Report (pages 00360-1 to 00360-2, inclusive).
- Performance Bond (pages 00610-1 to 00610-2, inclusive).
- Payment Bond (pages 00620-1 to 00620-2, inclusive).
- Insurance Certificate(s).
- General Conditions (pages 00700-1 to 00700-48, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-4, inclusive).
- Labor Standards, Reporting, and Prevailing Wage Determination (pages 00830-1).
- Permits (page 00852-1 and all inclusive documents).
- Standard Details (page 00853-1, inclusive).
- Technical Specifications as listed in the Table of Contents.
- Drawings consisting of 29 sheets, as listed in the Table of Contents.

SECTION 00500 - AGREEMENT

- Addenda numbers _____ to _____, inclusive.
- Change Orders which may be delivered or issued after the Date of the Agreement and which are not attached hereto.

There are no Contract Documents other than those listed in this Article 7. The Contract Documents may only be amended by Change Order as provided in Paragraph 3.3 of the General Conditions.

ARTICLE 8. MISCELLANEOUS.

Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents. This Agreement shall be governed by the laws of the State of Alaska. Jurisdiction shall be in the State of Alaska, First Judicial District.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have caused this Agreement to be executed on the date listed below by OWNER.

OWNER:

CONTRACTOR:

_____ Haines Borough

(Company Name)

_____ (Signature)

_____ (Signature)

By: David Sosa, Borough Manager
(Printed Name)

By: _____
(Printed Name, Authority or Title)

Date: _____

Date: _____

OWNER's address for giving notices:

CONTRACTOR's address for giving notices:

_____ P.O. Box 1209

_____ Haines, Alaska 99827

SECTION 00500 - AGREEMENT

CERTIFICATE
(if Partnership)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Partners of the
_____ a partnership existing under the laws of the State
of _____, held on _____, 20____, the following resolution was duly
passed and adopted:

"RESOLVED, that _____, as _____ of the Partnership, be and is
hereby authorized to **execute the Agreement** with the HAINES BOROUGH and this partnership
and that the execution thereof, attested by the _____ shall be the official act
and deed of this Partnership."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of _____,
20_____.

Secretary

(SEAL)

SECTION 00500 - AGREEMENT

**CERTIFICATE
(if Joint Venture)**

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Principals of the
_____ a joint venture existing under the laws of the
State of _____, held on _____, 20____, the following resolution was duly passed and
adopted:

"RESOLVED, that _____, as _____ of the
Joint Venture, be and is hereby authorized to **execute the Agreement** with the HAINES
BOROUGH and this joint venture and that the execution thereof, attested by the
_____ shall be the official act and deed of this Joint Venture."

I further certify that said resolution is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand this _____, day of
_____, 20_____.

Secretary

(SEAL)

SECTION 00610 - PERFORMANCE BOND

KNOW ALL PERSONS 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 to the HAINES BOROUGH, HAINES, ALASKA hereinafter called "OWNER,"
(Owner) (City and State)

for 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 CONDITION OF THIS OBLIGATION is such that whereas, the CONTRACTOR has entered into a certain contract with the OWNER, the effective date of which is _____, a copy of which is hereto attached and made a part hereof for the construction of:

PORTAGE COVE HARBOR EXPANSION

NOW, THEREFORE, if the Principal shall 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 good any default, then this obligation 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 to the WORK to be performed thereunder or the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the Specifications.

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.

SECTION 00610 - PERFORMANCE BOND

PORTAGE COVE HARBOR EXPANSION

IN WITNESS WHEREOF, this instrument is issued in two (2) identical counterparts, each one of which shall be deemed an original.

CONTRACTOR:

By: _____
(Signature)

(Printed Name)

(Company Name)

(Street or P.O. Box)

(City, State, Zip Code)

SURETY:

By: _____
(Signature of Attorney-in-Fact)

Date Issued: _____

(Printed Name)

(Company Name)

(Street or P.O. Box)

(City, State, Zip Code)

(Affix SURETY'S SEAL)

NOTE: If CONTRACTOR is Partnership, all Partners must execute bond.

SECTION 00620 - PAYMENT BOND

KNOW ALL PERSONS 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 to the HAINES BOROUGH, HAINES, ALASKA hereinafter called "OWNER,"
(Owner) (City and State)

for 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 CONDITION OF THIS OBLIGATION is such that whereas, the CONTRACTOR has
entered into a certain contract with the OWNER, the effective date of which is
_____, a copy of which is hereto attached and made a part hereof for the
construction of:

PORTAGE COVE HARBOR EXPANSION

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
Subcontractors, and corporations furnishing materials 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 materials, lubricants, oil, gasoline, coal and coke, 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 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 to the work to be
performed thereunder or the specifications accompanying the same shall in any wise affect its obligation
on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition
to the terms of the contract or to the WORK or to the Specifications.

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.

SECTION 00620 - PAYMENT BOND

PORTAGE COVE HARBOR EXPANSION

IN WITNESS WHEREOF, this instrument is issued in two (2) identical counterparts, each one of which shall be deemed an original.

CONTRACTOR:

By: _____
(Signature)

(Printed Name)

(Company Name)

(Street or P.O. Box)

(City, State, Zip Code)

SURETY:

By: _____
(Signature of Attorney-in-Fact)

Date Issued: _____

(Printed Name)

(Company Name)

(Street or P.O. Box)

(City, State, Zip Code)

(Affix SURETY'S SEAL)

NOTE: If CONTRACTOR is Partnership, all Partners must execute bond.

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ARTICLE 1 DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof. Where an entire word is capitalized in the definitions and is found not capitalized in the Contract Documents it has the ordinary dictionary definition.

Addenda - Written or graphic instruments issued prior to the opening of Bids which make additions, deletions, or revisions to the Contract Documents.

Agreement - The written contract between the OWNER and the CONTRACTOR covering the WORK to be performed; other documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form furnished by the ENGINEER which is to be used by the CONTRACTOR to request progress or final payment and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

Asbestos - Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the price or prices for the WORK.

Bonds - Bid, Performance, and Payment Bonds and other instruments which protect against loss due to inability or refusal of the CONTRACTOR to perform its contract.

Project Manager - The authorized representative of the Haines Borough, as OWNER, who is responsible for administration of the contract.

Change Order - A document recommended by the ENGINEER, which is signed by the CONTRACTOR and the OWNER and authorizes an addition, deletion, or revision in the WORK, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - The Table of Contents, Notice Inviting Bids, Instructions to Bidders, Bid Forms (including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, and all required certificates and affidavits), Agreement, Performance Bond, Payment Bond, General Conditions, Supplementary General Conditions, Technical Specifications, Drawings, Permits, and all Addenda, and Change Orders executed pursuant to the provisions of the Contract Documents.

Contract Price - The total monies payable by the OWNER to the CONTRACTOR under the terms and conditions of the Contract Documents.

Contract Time - The number of successive calendar days stated in the Contract Documents for the completion of the WORK.

CONTRACTOR - The individual, partnership, corporation, joint-venture or other legal entity with whom the OWNER has executed the Agreement.

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Day - A calendar day of 24 hours measured from midnight to the next midnight.

Defective WORK - WORK that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; or WORK that has been damaged prior to the ENGINEER's recommendation of final payment.

Drawings - The Drawings, plans, maps, profiles, diagrams, and other graphic representations which indicate the character, location, nature, extent, and scope of the WORK and which have been prepared by the ENGINEER and are referred to in the Contract Documents. Shop Drawings are not within the meaning of this paragraph.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

Engineer of Record - The individual, partnership, corporation, joint-venture or other legal entity named as such in the Contract Documents.

ENGINEER - The ENGINEER is the firm or person(s) selected by the Haines Borough (Borough) to perform the duties of project inspection and management. Haines Borough will inform the CONTRACTOR of the identity of the ENGINEER at or before the Notice to Proceed.

Field Order - A written order issued by the ENGINEER which may or may not involve a change in the WORK.

General Requirements - Division 1 of the Technical Specifications.

Hazardous Waste - The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 9603) as amended from time to time.

Holidays - Legal holidays occur on:

1. New Year's Day - January 1
2. Martin Luther King's Birthday - Third Monday in January
3. President's Day - Third Monday in February
4. Seward's Day - Last Monday in March
5. Memorial Day - Last Monday in May
6. Independence Day - July 4
7. Labor Day - First Monday in September
8. Alaska Day - October 18
9. Veteran's Day - November 11
10. Thanksgiving Day - Fourth Thursday and the following Friday in November
11. Christmas Day - December 25

If any holiday listed above falls on a Saturday, Saturday and the preceding Friday are both legal holidays. If the holiday should fall on a Sunday, Sunday and the following Monday are both legal holidays.

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Inspector - The authorized representative of the ENGINEER assigned to make detailed inspections for conformance to the Contract Documents. Any reference to the Resident Project Representative in this document shall mean the Inspector.

Laws and Regulations; Laws or Regulations - Any and all applicable laws, rules, regulations, ordinances, codes, and/or orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

Mechanic's Lien - A form of security, an interest in real property, which is held to secure the payment of an obligation. When referred to in these Contract Documents, "Mechanic's Lien" or "lien" means "Stop Notice".

Milestone - A principal event specified in the Contract Documents relating to an intermediate completion date of a portion of the WORK, or a period of time within which the portion of the WORK should be performed prior to Substantial Completion of all the WORK.

Notice of Intent to Award - The written notice by the OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the requirements listed therein, within the time specified, the OWNER will enter into an Agreement.

Notice of Award - The written notice by the OWNER to the apparent successful bidder stating that the apparent successful bidder has complied with all conditions for award of the contract.

Notice of Completion - A form signed by the ENGINEER and the CONTRACTOR recommending to the OWNER that the WORK is Substantially Complete and fixing the date of Substantial Completion. After acceptance of the WORK by the OWNER's governing body, the form is signed by the OWNER and filed with the County Recorder. This filing starts the 30 day lien filing period on the WORK.

Notice to Proceed - The written notice issued by the OWNER to the CONTRACTOR authorizing the CONTRACTOR to proceed with the WORK and establishing the date of commencement of the Contract Time.

OWNER - The Haines Borough, acting through its legally designated officials, officers, or employees.

Partial Utilization - Use by the OWNER or a substantially completed part of the WORK for the purpose for which it is intended prior to Substantial Completion of all the WORK.

PCB's - Polychlorinated biphenyls.

PERMITTEE – CONTRACTOR.

Petroleum - Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

Project - The total construction of which the WORK to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

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Radioactive Material - Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

Shop Drawings - All Drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR and submitted by the CONTRACTOR, to the ENGINEER, to illustrate some portion of WORK.

Specifications - (Same definition as for Technical Specifications hereinafter).

Stop Notice - A legal remedy for Subcontractors and suppliers who contribute to public works, but who are not paid for their WORK, which secures payment from construction funds possessed by the OWNER. For public property, the Stop Notice remedy is designed to substitute for mechanic's lien rights.

Sub-Consultant - The individual, partnership, corporation, joint-venture or other legal entity having a direct contract with ENGINEER, or with any of its Consultants to furnish services with respect to the Project.

Subcontractor - An individual, partnership, corporation, joint-venture or other legal entity having a direct contract with the CONTRACTOR, or with any of its Subcontractors, for the performance of a part of the WORK at the site.

Substantial Completion - Refers to when the WORK has progressed to the point where, in the opinion of the ENGINEER as evidenced by Notice of Completion as applicable, it is sufficiently complete, in accordance with the Contract Documents, so that the WORK can be utilized for the purposes for which it is intended; or if no such notice is issued, when final payment is due in accordance with Paragraph 14.8. The terms "substantially complete" and "substantially completed" as applied to any WORK refer to substantial completion thereof.

Supplementary General Conditions (SGC) - The part of the Contract Documents which make additions, deletions, or revisions to these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman, or vendor.

Technical Specifications - Divisions 1 through 16 of the Contract Documents consisting of the General Requirements and written technical descriptions of products and execution of the WORK.

Underground Utilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: water, sewage and drainage removal, electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, traffic, or other control systems.

WORK - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. WORK is the result of performing, or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

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ARTICLE 2 PRELIMINARY MATTERS

- 2.1 **DELIVERY OF BONDS/INSURANCE CERTIFICATES.** When the CONTRACTOR delivers the signed Agreements to the OWNER, the CONTRACTOR shall also deliver to the OWNER such Bonds and Insurance Policies and Certificates as the CONTRACTOR may be required to furnish in accordance with the Contract Documents.
- 2.2 **COPIES OF DOCUMENTS.** The OWNER shall furnish to the CONTRACTOR the required number of copies of the Contract Documents specified in the Supplementary General Conditions.
- 2.3 **COMMENCEMENT OF CONTRACT TIME; NOTICE TO PROCEED.** The Contract Time will start to run on the commencement date stated in the Notice to Proceed.
- 2.4 **STARTING THE WORK**
- A. The CONTRACTOR shall begin to perform the WORK within 10 days after the commencement date stated in the Notice to Proceed, but no WORK shall be done at the site prior to said commencement date.
 - B. Before undertaking each part of the WORK, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. The CONTRACTOR shall promptly report in writing to the ENGINEER any conflict, error, or discrepancy which the CONTRACTOR may discover and shall obtain a written interpretation or clarification from the ENGINEER before proceeding with any WORK affected thereby.
 - C. The CONTRACTOR shall submit to the ENGINEER for review those documents called for under Section 01300 - CONTRACTOR Submittals in the General Requirements.
- 2.5 **PRE-CONSTRUCTION CONFERENCE.** The CONTRACTOR is required to attend a Pre-Construction Conference. This conference will be attended by the ENGINEER and others as appropriate in order to discuss the WORK in accordance with the applicable procedures specified in the General Requirements, Section 01010 - Summary of WORK in the General Requirements.
- 2.6 **FINALIZING CONTRACTOR SUBMITTALS.** At least 7 days before submittal of the first Application for Payment a conference attended by the CONTRACTOR, the ENGINEER and others as appropriate will be held to finalize the initial CONTRACTOR submittals in accordance with the General Requirements. As a minimum the CONTRACTOR's representatives should include the project manager and schedule expert. The CONTRACTOR should plan on this meeting taking no less than 8 hours. If the submittals are not finalized at the end of the meeting, additional meetings will be held so that the submittals can be finalized prior to the submittal of the first application for payment. No application for payment will be processed until CONTRACTOR submittals are finalized.

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ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 INTENT

- A. The Contract Documents comprise the entire Agreement between the OWNER and the CONTRACTOR concerning the WORK. The Contract Documents shall be construed as a whole in accordance with Alaska Law.
- B. It is the intent of the Contract Documents to describe the WORK, functionally complete, to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe work, materials, or equipment such words or phrases shall be interpreted in accordance with that meaning, unless a definition has been provided in Article 1 of the General Conditions. Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, or the ENGINEER or any of their consultants, agents, or employees from those set forth in the Contract Documents.
- C. If, during the performance of the WORK, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the WORK or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, the CONTRACTOR shall report it to the ENGINEER in writing at once, and the CONTRACTOR shall not proceed with the WORK affected thereby (except in an emergency as authorized by the ENGINEER) until a clarification field order, or Change Order to the Contract Documents has been issued.

3.2 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

- A. In resolving conflicts resulting from, errors, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:
 - 1. Permits from other agencies as may be required by law, excepting the definition of "PERMITEE" in these permits.
 - 2. Field Orders
 - 3. Change Orders
 - 4. ENGINEER's written interpretations and clarifications.
 - 5. Agreement
 - 6. Addenda
 - 7. CONTRACTOR's Bid (Bid Form)
 - 8. Supplementary General Conditions

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9. Notice Inviting Bids
10. Instructions to Bidders
11. General Conditions
12. Technical Specifications
13. Drawings

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

1. Figures govern over scaled dimensions
2. Detail Drawings govern over general Drawings
3. Addenda/ Change Order drawings govern over Contract Drawings
4. Contract Drawings govern over standard drawings

3.3 AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS. The Contract Documents may be amended to provide for additions, deletions, and revisions in the WORK or to modify the terms and conditions thereof by a Change Order (pursuant to Article 10 CHANGES IN THE WORK).

3.4 REUSE OF DOCUMENTS. Neither the CONTRACTOR, nor any Subcontractor or Supplier, nor any other person or organization performing any of the WORK under a contract with the OWNER shall have or acquire any title to or ownership rights in any of the Drawings, Technical Specifications, or other documents used on the WORK, and they shall not reuse any of them on the extensions of the Project or any other project without written consent of the OWNER.

ARTICLE 4 AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

4.1 AVAILABILITY OF LANDS. The OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the WORK is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the OWNER, unless otherwise provided in the Contract Documents. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or rights-of-way provided. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment; provided, that the CONTRACTOR shall not enter upon nor use any property not under the control of the OWNER until a written temporary construction easement, lease or other appropriate agreement has been executed by the CONTRACTOR and the property owner, and a copy of said agreement furnished to the ENGINEER prior to said use; and, neither the OWNER nor the ENGINEER shall be liable for any claims or damages resulting from the CONTRACTOR's unauthorized trespass or use of any such properties.

4.2 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

A. Explorations and Reports. Reference is made to SGC 4.2 Physical Conditions of the Supplementary General Conditions for identification of those reports of explorations and tests of sub-surface conditions at the site that have been utilized by the ENGINEER in the preparation of the Contract Documents. The CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, however, reports are not to be considered complete or comprehensive and nontechnical data, interpretations, and opinions

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contained in such reports are not to be relied on by the CONTRACTOR. The CONTRACTOR is responsible for any further explorations or tests that may be necessary and any interpretation, interpolation, or extrapolation that it makes of any information shown in such reports.

- B. Existing Structures. Reference is made to SGC 4.2 Physical Conditions of the Supplementary General Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Utilities referred to in Paragraph 4.4 herein) which are at or contiguous to the site that have been utilized by the ENGINEER in the preparation of the Contract Documents. The CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, however, nontechnical data, interpretations, and opinions contained in such drawings are not to be relied on by the CONTRACTOR. The CONTRACTOR is also responsible for any interpretation, interpolation, or extrapolation that it makes of any information shown in such drawings.

4.3 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall promptly upon discovery (but in no event later than 14 days thereafter) and before the following conditions are disturbed, notify the ENGINEER, in writing of any:
 - 1. Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Article 1 of these General Conditions, or asbestos, PCB's, petroleum or any other substance or material posing a threat to human or to the environment.
 - 2. Subsurface or latent physical conditions at the site differing from those indicated.
 - 3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the contract.
- B. The OWNER shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the WORK shall issue a Change Order under the procedures described in the contract.
- C. In the event that a dispute arises between the OWNER and the CONTRACTOR whether the conditions materially differ, or involved hazardous waste or other materials listed above, or cause a decrease or increase in the CONTRACTOR's cost of, or time required for, performance of any part of the WORK, the CONTRACTOR shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all WORK to be performed under the contract. The CONTRACTOR shall retain any and all rights provided either by contract or by Law which pertain to the resolution of disputes and protests between the contracting parties.

4.4 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

- A. Indicated. The information and data indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site are based on information and data furnished to the OWNER or the ENGINEER by the owners of such Underground

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Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions and/or Section 01530 - Protection and Restoration of Existing Facilities of the General Requirements, the OWNER and the ENGINEER shall not be responsible for the accuracy or completeness of any such information or data, and the CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Utilities indicated in the Contract Documents, for coordination of the WORK with the owners of such Underground Utilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the WORK, the cost of which will be considered as having been included in the Contract Price.

- B. Not Indicated. If an Underground Utility is uncovered or revealed at or contiguous to the site which was not indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall identify the owner of such Underground Utility and give written notice thereof to that owner and shall notify the ENGINEER in accordance with the requirements of the Supplementary General Conditions and Section 01530 - Protection and Restoration of Existing Facilities of the General Requirements.

4.5 REFERENCE POINTS

- A. The ENGINEER will provide one bench mark, near or on the site of the WORK, and will provide two points near or on the site to establish a base line for use by the CONTRACTOR for alignment control. Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.
- B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks, and in case of their removal or destruction by its own employees or by its Subcontractor's employees, the CONTRACTOR shall be responsible for the accurate replacement of such reference points by personnel qualified under the Alaska Statute governing the licensing of Architects, Engineers, and Land Surveyors.

ARTICLE 5 BONDS AND INSURANCE

5.1 PERFORMANCE, PAYMENT, AND OTHER BONDS

- A. The CONTRACTOR shall furnish, when required, Performance and Payment Bonds on forms provided by the CBJ for the penal sums of 100% of the amount of the Bid award. The surety on each bond may be any corporation or partnership authorized to do business in the State of Alaska as an insurer under AS 21.09. These bonds shall remain in effect for 12 months after the date of final payment and until all obligations and liens under this contract have been satisfied. The CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary General Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All

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Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

- B. If the surety on any Bond furnished by the CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days thereafter substitute another Bond and Surety, which must be acceptable to the OWNER.
- C. All Bonds required by the Contract Documents to be purchased and maintained by CONTRACTOR shall be obtained from surety companies that are duly licensed or authorized in the State of Alaska to issue Bonds for the limits so required. Such surety companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions. The City Engineer may, on behalf of the OWNER, notify the surety of any potential default or liability.

5.2 INSURANCE

- A. The CONTRACTOR shall purchase and maintain the insurance required under this paragraph. Such insurance shall include the specific coverages set out herein and be written for not less than the limits of liability and coverages provided in the Supplementary General Conditions, or required by law, whichever are greater. All insurance shall be maintained continuously during the life of the Agreement up to the date of Final Completion and at all times thereafter when the CONTRACTOR may be correcting, removing, or replacing Defective WORK in accordance with Paragraph 13.6, but the CONTRACTOR's liabilities under this Agreement shall not be deemed limited in any way to the insurance coverage required.
- B. All insurance required by the Contract Documents to be purchased and maintained by the CONTRACTOR shall be obtained from insurance companies that are duly licensed or authorized in the State of Alaska to issue insurance policies for the limits and coverages so required. Such insurance companies shall have a current Best's Rating of at least an "A" (Excellent) general policy holder's rating and a Class VII financial size category and shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.
- C. The CONTRACTOR shall furnish the OWNER with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, reduced in coverage, or renewal refused until at least 30 days' prior written notice has been given to the OWNER by certified mail. All such insurance required herein (except for Workers' Compensation and Employer's Liability) shall name the OWNER, its Consultants and subconsultants and their officers, directors, agents, and employees as "additional insureds" under the policies. The CONTRACTOR shall purchase and maintain the following insurance:
 - 1. Workers' Compensation and Employer's Liability. This insurance shall protect the CONTRACTOR against all claims under applicable state workers' compensation laws. The CONTRACTOR shall also be protected against claims for injury,

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disease, or death of employees which, for any reason, may not fall within the provisions of a Workers' Compensation law. This policy shall include an "all states" endorsement. The CONTRACTOR shall require each Subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees to be engaged in such WORK unless such employees are covered by the protection afforded by the CONTRACTOR's Workers' Compensation Insurance. In case any class of employees is not protected, under the Workers' Compensation Statute, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of such of its employees as are not otherwise protected.

2. Commercial General Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees or damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees, or Subcontractors. The policy shall contain no exclusions for any operations within the scope of this contract.
3. Comprehensive Automobile Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired. Coverage for hired motor vehicles should include endorsement covering liability assumed under this Agreement.
4. Subcontractor's Commercial General Liability Insurance and Commercial Automobile Liability Insurance. The CONTRACTOR shall either require each of its Subcontractors to procure and to maintain Subcontractor's Commercial General Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Supplementary General Conditions or insure the activities of its Subcontractors in the CONTRACTOR's own policy, in like amount.
5. Builder's Risk. This insurance shall be of the "all risks" type, shall be written in completed value form, and shall protect the CONTRACTOR, the OWNER, and the ENGINEER, against risks of damage to buildings, structures, and materials and equipment. The amount of such insurance shall be not less than the insurable value of the WORK at completion. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR and the OWNER, as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, and the ENGINEER. The Builder's Risk policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake. Allowable exclusions, if any, shall be as specified in the Supplementary General Conditions.

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ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

6.1 SUPERVISION AND SUPERINTENDENCE

- A. The CONTRACTOR shall supervise, inspect, and direct the WORK competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the WORK in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incidental thereto. The CONTRACTOR shall be responsible to see that the completed WORK complies accurately with the Contract Documents.
- B. The CONTRACTOR shall designate in writing and keep on the WORK site at all times during its progress a technically qualified, English-speaking superintendent, who is an employee of the CONTRACTOR and who shall not be replaced without written notice to the OWNER and the ENGINEER. The superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall issue all its communications to the OWNER through the ENGINEER and the ENGINEER only.
- C. The CONTRACTOR's superintendent shall be present at the site of the WORK at all times while WORK is in progress. Failure to observe this requirement shall be considered suspension of the WORK by the CONTRACTOR until such time as such superintendent is again present at the site.

6.2 LABOR, MATERIALS, AND EQUIPMENT

- A. The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. The CONTRACTOR shall furnish, erect, maintain, and remove the construction plant and any temporary works as may be required. The CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the WORK or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all WORK at the site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without the OWNER's written consent. The CONTRACTOR shall apply for this consent through the ENGINEER.
- B. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing. Additional compensation will be paid the CONTRACTOR for overtime work only in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the CONTRACTOR for overtime work of a similar nature in the same locality.

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- C. All costs of inspection and testing performed during overtime work by the CONTRACTOR which is allowed solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER shall have the authority to deduct the cost of all such inspection and testing from any partial payments otherwise due to the CONTRACTOR.
- D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the WORK.
- E. All materials and equipment to be incorporated into the WORK shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of the OWNER. If required by the ENGINEER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provisions of any such instructions will be effective to assign to the ENGINEER, or any of the ENGINEER consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraphs 9.9C and 9.9D.
- F. The CONTRACTOR shall at all times employ sufficient labor and equipment for prosecuting the several classes of WORK to full completion in the manner and time set forth in and required by these specifications. All workers shall have sufficient skill and experience to perform properly the WORK assigned to them. Workers engaged in special WORK, or skilled WORK, shall have sufficient experience in such WORK and in the operation of the equipment required to perform all WORK, properly and satisfactorily.
- G. Any person employed by the CONTRACTOR or by any Subcontractor who, in the opinion of the ENGINEER, does not perform the WORK in a proper and skillful manner, or is intemperate or disorderly shall, at the written request of the ENGINEER, be removed forthwith by the CONTRACTOR or Subcontractor employing such person, and shall not be employed again in any portion of the WORK without the approval of the ENGINEER. Should the CONTRACTOR fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the WORK, the ENGINEER may suspend the WORK by written notice until such orders are complied with.
- 6.3 ADJUSTING PROGRESS SCHEDULE. The CONTRACTOR shall submit monthly updates of the progress schedule to the ENGINEER for acceptance in accordance with the provisions in Section 01300 - CONTRACTOR Submittals in the General Requirements.
- 6.4 SUBSTITUTES OR "OR-EQUAL" ITEMS. The CONTRACTOR shall submit proposed substitutes or "or-equal" items in accordance with the provisions in Section 01300 - CONTRACTOR Submittals in the General Requirements.

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6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

- A. The CONTRACTOR shall be responsible to the OWNER and the ENGINEER for the acts and omissions of its Subcontractors and their employees to the same extent as CONTRACTOR is responsible for the acts and omissions of its own employees. Nothing contained in this Paragraph shall create any contractual relationship between any Subcontractor and the OWNER or the ENGINEER nor relieve the CONTRACTOR of any liability or obligation under the prime contract.
- B. The CONTRACTOR shall perform not less than 40% of the WORK with its own forces (i.e., without subcontracting). The 40% requirement shall be understood to mean that the CONTRACTOR shall perform, with its own organization, WORK amounting to at least 40% of the awarded contract amount. The 40% requirement will be calculated based upon the total of the subcontract amounts submitted for contract award, and any other information requested by the OWNER from the apparent low bidder.

6.6 PERMITS

- A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including the furnishing of insurance and bonds if required by such agencies. The enforcement of such requirements under this contract shall not be made the basis for claims for additional compensation. The OWNER shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids. The CONTRACTOR shall pay all charges of utility owners for connections to the WORK.
- B. These Contract Documents may require that the WORK be performed within the conditions and/or requirements of local, state and/or federal permits. These permits may be bound within the Contract Documents, included within the Contract Documents by reference, or included as part of the WORK, as designated in this Section. The CONTRACTOR is responsible for completing the WORK required for compliance with all permit requirements; this WORK is incidental to other items in the Contract Documents. Any reference to the "permittee" in the permits shall mean the CONTRACTOR. If any permits were acquired by the OWNER, this action was done to expedite the start of construction. If the CONTRACTOR does not complete the WORK within the specified permit window, the CONTRACTOR shall be responsible for the permit extension, and for completing any additional requirements placed upon the permit.
- C. These Contract Documents may require that the WORK be performed within the conditions and/or requirements of local, state and/or federal permits. These permits may be bound within the Contract Documents, included within the Contract Documents by reference, or included as part of the WORK, as designated in Section 00700, Article 6.6 - PERMITS. The CONTRACTOR is responsible for completing the WORK required for compliance with all permit requirements; this WORK is incidental to other items in the Contract Documents. Any reference to the "permittee" in the permits shall mean the CONTRACTOR. If any permits were acquired by the OWNER, this action was done to expedite the start of construction. If the CONTRACTOR does not complete the WORK

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within the specified permit window, the CONTRACTOR shall be responsible for the permit extension, and for completing any additional requirements placed upon the permit.

- D. The OWNER shall apply for, and obtain, the necessary building permit for this project, however, the CONTRACTOR is responsible for scheduling and coordinating all necessary inspections. The CBJ Inspection number is 586-1703. All other provisions of this Section remain in effect.
- 6.7 PATENT FEES AND ROYALTIES. The CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the WORK or the incorporation in the WORK of any invention, design, process, product, software or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the WORK and if to the actual knowledge of the OWNER or the ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the OWNER in the Contract Documents. The CONTRACTOR shall indemnify, defend and hold harmless the OWNER and the ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees and court costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product, or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.
- 6.8 LAWS AND REGULATIONS. The CONTRACTOR shall observe and comply with all federal, state, and local laws, ordinances, codes, orders, and regulations which in any manner affect those engaged or employed on the WORK, the materials used in the WORK, or the conduct of the WORK. If any discrepancy or inconsistency should be discovered in this contract in relation to any such law, ordinance, code, order, or regulation, the CONTRACTOR shall report the same in writing to the ENGINEER. The CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, and their officers, agents, and employees against all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by CONTRACTOR or by its employees, Subcontractors, or third parties. Any particular law or regulation specified or referred to elsewhere in the Contract Documents shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of federal, state, and local laws and regulations.
The OWNER may, per AS 36.30, audit the CONTRACTOR's or Subcontractor(s) records that are related to the cost or pricing data for this contract, all related Change Orders, and/or contract modifications.
- 6.9 TAXES. The CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by the CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the WORK.
- 6.10 USE OF PREMISES. The CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to (1) the Project site, (2) the land and areas identified in and permitted by the Contract Documents, and (3) the other land and areas permitted by Laws and Regulations, rights-of-way, permits, leases and easements. The CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the

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performance of the WORK. Should any claim be made against the OWNER or the ENGINEER by any such owner or occupant because of the performance of the WORK, the CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim through litigation. The CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify, defend, and hold the OWNER and the ENGINEER harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers attorneys, and other professionals and court costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any such owner or occupant against the OWNER, the ENGINEER, their Consultants, Sub-consultants, and the officers, directors, employees and agents of each and any of them to the extent caused by or based upon the CONTRACTOR's performance of the WORK.

6.11 SAFETY AND PROTECTION

- A. The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. All employees on the WORK and other persons and organizations who may be affected thereby;
 - 2. All the WORK and materials and equipment to be incorporated therein, whether in storage on or off the site; and
 - 3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- B. The CONTRACTOR shall comply with all applicable Laws and Regulations whether referred to herein or not) of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. The CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and program.
- D. Materials that contain hazardous substances or mixtures may be required on the WORK. A Material Safety Data Sheet shall be requested by the CONTRACTOR from the manufacturer of any hazardous product used.
- E. Material usage shall be accomplished with strict adherence to all safety requirements and all manufacturer's warnings and application instructions listed on the Material Safety Data Sheet and on the product container label.
- F. The CONTRACTOR shall be responsible for coordinating communications on any exchange of Material Safety Data Sheets or other hazardous material information that is

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required to be made available to, or exchanged between, or among, employers at the site in accordance with Laws or Regulations.

- G. The CONTRACTOR shall notify the ENGINEER if it considers a specified product or its intended usage to be unsafe. This notification must be given to the ENGINEER prior to the product being ordered, or if provided by some other party, prior to the product being incorporated in the WORK.

6.12 SHOP DRAWINGS AND SAMPLES

- A. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the ENGINEER for review, all Shop Drawings in accordance with Section 01300 - CONTRACTOR Submittals in the General Requirements.
- B. The CONTRACTOR shall also submit to the ENGINEER for review all samples in accordance with Section 01300 - CONTRACTOR Submittals in the General Requirements.
- C. Before submittal of each shop drawing or sample, the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the WORK and the Contract Documents.

- 6.13 CONTINUING THE WORK. The CONTRACTOR shall carry on the WORK and adhere to the progress schedule during all disputes or disagreements with the OWNER. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the CONTRACTOR and the OWNER may otherwise agree in writing.

6.14 INDEMNIFICATION

- A. To the fullest extent permitted by Laws and Regulations, the CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, their Consultants, Sub-consultants and the officers, directors, employees, and agents of each and any of them, against and from all claims and liability arising under, by reason of or incidentally to the contract or any performance of the WORK, but not from the sole negligence or willful misconduct of the OWNER, and the ENGINEER. Such indemnification by the CONTRACTOR shall include but not be limited to the following:
 - 1. Liability or claims resulting directly or indirectly from the negligence or carelessness of the CONTRACTOR, its employees, or agents in the performance of the WORK, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission of the CONTRACTOR, its employees, agents, or third parties;
 - 2. Liability or claims arising directly or indirectly from bodily injury, occupational sickness or disease, or death of the CONTRACTOR's or Subcontractor's own employees engaged in the WORK resulting in actions brought by or on behalf of such employees against the OWNER, and the ENGINEER;

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3. Liability or claims arising directly or indirectly from or based on the violation of any law, ordinance, regulation, order, or decree, whether by the CONTRACTOR, its employees, or agents;
 4. Liability or claims arising directly or indirectly from the use or manufacture by the CONTRACTOR, its employees, or agents in the performance of this contract of any copyrighted or non-copyrighted composition, secret process, patented or non-patented invention, computer software, article, or appliance, unless otherwise specifically stipulated in this contract.
 5. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the OWNER or any other parties by the CONTRACTOR, its employees, or agents;
 6. Liabilities or claims arising directly or indirectly from the willful or criminal misconduct of the CONTRACTOR, its employees, or agents; and,
 7. Liabilities or claims arising directly or indirectly from any breach of the obligations assumed herein by the CONTRACTOR.
- B. The CONTRACTOR shall reimburse the ENGINEER and the OWNER for all costs and expenses, (including but not limited to fees and charges of engineers, attorneys, and other professionals and court costs including all costs of appeals) incurred by said OWNER, and the ENGINEER in enforcing the provisions of this Paragraph 6.14.
- C. The indemnification obligation under this Paragraph 6.14 shall not be limited in any way by any limitation of the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any such Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- 6.15 **CONTRACTOR'S DAILY REPORTS.** The CONTRACTOR shall complete a daily report indicating total manpower for each construction trade, major equipment on site, each Subcontractor's manpower, weather conditions, etc., involved in the performance of the WORK. The daily report shall be completed on forms provided by the ENGINEER and shall be submitted to the ENGINEER at the conclusion of each work day. The report should comment on the daily progress and status of the WORK within each major component of the WORK. These components will be decided by the ENGINEER.
- 6.16 **ASSIGNMENT OF CONTRACT.** The CONTRACTOR shall not assign, sublet, sell, transfer, or otherwise dispose of the contract or any portion thereof, or its right, title, or interest therein, or obligations thereunder, without the written consent of the OWNER except as imposed by law. If the CONTRACTOR violates this provision, the contract may be terminated at the option of the OWNER. In such event, the OWNER shall be relieved of all liability and obligations to the CONTRACTOR and to its assignee or transferee, growing out of such termination.
- 6.17 **CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES.** It is understood that any turn-on or turn-off, line locates and any other work or assistance necessary by the Borough, will be at the CONTRACTOR's expense unless otherwise stated in the bid documents. All cost must be agreed to prior to any related actions, and will be considered incidental to the project cost. Billing to the CONTRACTOR will be direct from the Borough.

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6.18 OPERATING WATER SYSTEM VALVES

- A. The CONTRACTOR shall submit a written request, to the ENGINEER, for approval to operate any valve on any in-service section of the Haines Borough water system. The request must be submitted at least 24-hours prior to operating any valves. The Haines Borough Water Utilities Division reserves the right to approve or deny the request. The request shall specifically identify each valve to be operated, the time of operation, and the operation to be performed. The CONTRACTOR shall obtain the written approval of the ENGINEER for any scheduled operation before operating any valve.
- B. The CONTRACTOR shall be responsible for all damages, both direct and consequential, to the City or any other party, caused by unauthorized operation of any valve of the Haines Borough water system.

6.19 CONTRACTOR'S WORK SCHEDULE LIMITATIONS. Construction of Buildings and Projects. It is unlawful to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or similar heavy construction equipment before 7:00 a.m. or after 10:00 p.m., Monday through Friday, or before 9:00 a.m. or after 10:00 p.m., Saturday and Sunday, unless a permit shall first be obtained from the Borough Building Official. Such permit shall be issued by the Building Official only upon a determination that such operation during hours not otherwise permitted hereunder is necessary and will not result in unreasonable disturbance to surrounding residents.

ARTICLE 7 OTHER WORK

7.1 RELATED WORK AT SITE

- A. The OWNER may perform other work related to the Project at the site by the OWNER's own forces, have other work performed by utility owners, or let other direct contracts therefor which may contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work.
- B. The CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (or the OWNER, if the OWNER is performing the additional work with the OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the WORK with theirs. The CONTRACTOR shall do all cutting, fitting, and patching of the WORK that may be required to make its several parts come together properly and integrate with such other work. The CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of the ENGINEER and the others whose work will be affected.
- C. If the proper execution or results of any part of the CONTRACTOR's WORK depends upon the work of any such other contractor or utility owner (or OWNER), the CONTRACTOR shall inspect and report to the ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to report such delays, defects, or deficiencies will constitute an acceptance of the other work as fit and proper

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for integration with the CONTRACTOR's WORK except for latent or nonapparent defects and deficiencies in the other work.

- 7.2 COORDINATION. If the OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary General Conditions, and the specific matters to be covered by such authority and responsibility will be itemized and the extent of such authority and responsibilities will be provided in the Supplementary General Conditions.

ARTICLE 8 OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS

- A. The OWNER shall issue all its communications to the CONTRACTOR through the ENGINEER.
- B. The CONTRACTOR shall issue all its communications to the OWNER through the ENGINEER.

- 8.2 PAYMENTS. The OWNER shall make payments to the CONTRACTOR as provided in Paragraphs 14.5, 14.8, 14.9 and 14.10.

- 8.3 LANDS, EASEMENTS, AND SURVEYS. The OWNER's duties in respect of providing lands and easements and providing surveys to establish reference points are set forth in Paragraphs 4.1 and 4.5.

- 8.4 CHANGE ORDERS. The OWNER shall execute Change Orders as indicated in Paragraph 10.1F.

- 8.5 INSPECTIONS AND TESTS. The OWNER's responsibility in respect of inspections, tests, and approvals is set forth in Paragraph 13.3.

- 8.6 SUSPENSION OF WORK. In connection with the OWNER's right to stop WORK or suspend WORK, see Paragraphs 13.4 and 15.1.

- 8.7 TERMINATION OF AGREEMENT. Paragraphs 15.2 and 15.3 deal with the OWNER's right to terminate services of the CONTRACTOR.

ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION

- 9.1 OWNER'S REPRESENTATIVE. The ENGINEER will be the OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of the ENGINEER as the OWNER's representative during construction are set forth in the Contract Documents.

- 9.2 VISITS TO SITE. The ENGINEER will make visits to the site during construction to observe the progress and quality of the WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. Exhaustive or continuous on-site inspections to check the quality or quantity of the WORK will not be required of the ENGINEER. The ENGINEER

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will not, during such visits, or as a result of such observations of the CONTRACTOR's WORK in progress, supervise, direct, or have control over the CONTRACTOR's WORK.

9.3 PROJECT REPRESENTATION. The ENGINEER may furnish an Inspector to assist in observing the performance of the WORK. The duties, responsibilities, and limitations of authority are as follows:

A. Duties, Responsibilities and Limitations of Authority of Inspector

General. The Inspector, who is the ENGINEER's Agent, will act as directed by and under the supervision of the ENGINEER and will confer with the ENGINEER regarding its actions. The Inspector's dealings in matters pertaining to the on-site WORK shall, in general, be only with the ENGINEER and the CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR. Written communication with the OWNER will be only through or as directed by the ENGINEER.

Duties and Responsibilities. The Inspector will:

1. Review the progress schedule, list of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the ENGINEER concerning their acceptability.
2. Attend pre-construction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with the ENGINEER and notify those expected to attend in advance. Attend meetings and maintain and circulate copies of minutes thereof.
3. Serve as the ENGINEER's liaison with the CONTRACTOR, working principally through the CONTRACTOR's superintendent and assist said superintendent in understanding the intent of the Contract Documents. Assist the ENGINEER in serving as the OWNER's liaison with the CONTRACTOR when the CONTRACTOR's operations affect the OWNER's on-site operations.
4. As requested by the ENGINEER, assist in obtaining from the OWNER additional details or information, when required at the site for proper execution of the WORK.
5. Receive and record date of receipt of Shop Drawings and samples, receive samples which are furnished at the site by the CONTRACTOR and notify the ENGINEER of their availability for examination.
6. Conduct on-site observations of the WORK in progress to assist the ENGINEER in determining if the WORK is proceeding in accordance with the Contract Documents.
7. Report to the ENGINEER whenever the Inspector believes that any WORK is unsatisfactory, faulty, or defective or does not conform to the Contract Documents, or does not meet the requirements of any inspection, tests or approval required to be made or has been damaged prior to final payment; and advise the ENGINEER when the Inspector believes WORK should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.
8. Verify that the tests, equipment, and systems startups and operating and maintenance instruction are conducted as required by the Contract Documents and in presence of the required personnel, and that the CONTRACTOR maintains adequate records thereof; observe, record and report to the ENGINEER appropriate details relative to the test procedures and start-ups.

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9. Accompany visiting inspectors representing public or other agencies having jurisdiction over the WORK, record the outcome of these inspections, and report to the ENGINEER.
10. Transmit to the CONTRACTOR the ENGINEER's clarifications and interpretations of the Contract Documents.
11. Consider and evaluate the CONTRACTOR's suggestions for modifications in the Contract Documents and report them with recommendations to the ENGINEER.
12. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and sample submittals, reproductions of original Contract Documents including all addenda, Change Orders, field orders, additional Drawings issued subsequent to the execution of the contract, the ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other related documents.
13. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list all project visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of performing and observing test procedures. Send copies to the ENGINEER.
14. Record names, addresses, and telephone numbers of the CONTRACTOR, Subcontractors, and major suppliers of materials and equipment.
15. Furnish the ENGINEER with periodic reports as required of progress of the WORK and the CONTRACTOR's compliance with the accepted progress schedule and schedule of CONTRACTOR submittals.
16. Consult with the ENGINEER in advance of scheduled major tests, inspections, or start of important phases of the WORK.
17. Report immediately to the ENGINEER upon the occurrence of any accident.
18. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submittal and forward them with recommendations to the ENGINEER, noting particularly their relation to the schedule of values, WORK completed, and materials and equipment delivered at the site but not incorporated in the WORK.
19. During the course of the WORK, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed; and deliver this material to the ENGINEER for its review and forwarding to the OWNER prior to final acceptance of the WORK.
20. Before the ENGINEER prepares a Certificate of Substantial Completion/Notice of completion, as applicable, review the CONTRACTOR's punch list items requiring completion or correction and add any items that CONTRACTOR has omitted.
21. Conduct final inspection in the company of the ENGINEER, the OWNER, and the CONTRACTOR, and prepare a final punch list of items to be completed or corrected.
22. Verify that all items on the punch list have been completed or corrected and make recommendations to the ENGINEER concerning acceptance.

Limitations of Authority. Except upon written instruction of the ENGINEER, the Inspector:

1. Shall not authorize any deviation from the Contract Documents or approve any substitute material or equipment.

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2. Shall not exceed limitations on the ENGINEER's authority as set forth in the Contract Documents.
 3. Shall not undertake any of the responsibilities of the CONTRACTOR, Subcontractors or CONTRACTOR's superintendent, or expedite the WORK.
 4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences, or procedures of construction unless such is specifically called for in the Contract Documents.
 5. Shall not advise on or issue directions as to safety precautions and programs in connection with the WORK.
- 9.4 CLARIFICATIONS AND INTERPRETATIONS. The ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the ENGINEER may determine necessary, which shall be consistent with, or reasonably inferred from, the overall intent of the Contract Documents.
- 9.5 AUTHORIZED VARIATIONS IN WORK. The ENGINEER may authorize variations in the WORK from the requirements of the Contract Documents. These may be accomplished by a Field Order and will require the CONTRACTOR to perform the WORK involved in a manner that minimizes the impact to the WORK and the contract completion date. If the CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time, the CONTRACTOR may make a claim therefor as provided in Article 11 or 12.
- 9.6 REJECTING DEFECTIVE WORK. The ENGINEER will have authority to reject WORK which the ENGINEER believes to be defective and will also have authority to require special inspection or testing of the WORK as provided in Paragraph 13.3G, whether or not the WORK is fabricated, installed, or completed.
- 9.7 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS
- A. In accordance with the procedures set forth in the General Requirements, the ENGINEER will review all CONTRACTOR submittals, including Shop Drawings, samples, substitutes, or "or equal" items, etc., in order to determine if the items covered by the submittals will, after installation or incorporation in the WORK, conform to the requirements of the Contract Documents and be compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. The ENGINEER's review will not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto.
 - B. In connection with the ENGINEER's responsibilities as to Change Orders, see Articles 10, 11, and 12.
 - C. In connection with the ENGINEER's responsibilities in respect of Applications for Payment, see Article 14.
- 9.8 DECISIONS ON DISPUTES
- A. The ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the WORK thereunder. Claims, disputes, and other matters relating to the acceptability of the WORK; the interpretation of the

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requirements of the Contract Documents pertaining to the performance of the WORK; and those claims under Articles 11 and 12 in respect to changes in the Contract Price or Contract Time will be referred initially to the ENGINEER in writing with a request for formal decision in accordance with this paragraph, which the ENGINEER will render in writing within 30 days of receipt of the request. Written notice of each such claim, dispute, and other matter will be delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise thereto. Written supporting data will be submitted to the ENGINEER within 60 days after such occurrence unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.

- B. The rendering of a decision by the ENGINEER with respect to any such claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in Paragraph 14.12) will be a condition precedent to any exercise by the OWNER or the CONTRACTOR) of such rights or remedies as either may otherwise have under the Contract Documents or by Law or Regulations in respect of any such claim, dispute, or other matter.

9.9 LIMITATION ON ENGINEER'S RESPONSIBILITIES

- A. Neither the ENGINEER's authority to act under this Article or other provisions of the Contract Documents nor any decision made by the ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the ENGINEER to the CONTRACTOR, any Subcontractor, any Supplier, any surety for any of them, or any other person or organization performing any of the WORK.
- B. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the ENGINEER as to the WORK, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the WORK for compliance with the requirements of the Contract Documents, and conformance with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the ENGINEER any duty or authority to supervise or direct the performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.9C or 9.9D.
- C. The ENGINEER will not supervise, direct, control, or have authority over or be responsible for the CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the CONTRACTOR to comply with Laws and Regulations, applicable to the performance of the WORK. The ENGINEER will not be responsible for the CONTRACTOR's failure to perform the WORK in accordance with the Contract Documents.
- D. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR nor of any Subcontractor, supplier, or any other person or organization performing any of the WORK.

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ARTICLE 10 CHANGES IN THE WORK

10.1 GENERAL

- A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK; these will be authorized by a written Field Order and/or a Change Order issued by the ENGINEER.
- B. If the CONTRACTOR believes that it is entitled to an increase or decrease in the Contract Price, or an extension or shortening in the Contract Time as the result of a Field Order, a claim may be made as provided in Articles 11 and 12.
- C. If the OWNER and CONTRACTOR agree on the value of any work, or the amount of Contract Time that should be allowed as a result of a Field Order, upon receiving written notice from the ENGINEER, the CONTRACTOR shall proceed so as to minimize the impact on and delays to the work pending the issuance of a Change Order.
- D. If the OWNER and the CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Field Order, the ENGINEER can direct the CONTRACTOR to proceed on the basis of Time and Materials so as to minimize the impact on and delays to WORK, and a claim may be made therefor as provided in Articles 11 and 12.
- E. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work as provided in Paragraph 13.3G.
- F. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:
 - 1. Changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.1A;
 - 2. changes required because of acceptance of Defective WORK under Paragraph 13.7;
 - 3. changes in the Contract Price or Contract Time which are agreed to by the parties; or
 - 4. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by the ENGINEER pursuant to Paragraph 9.8.
- G. If notice of any change is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

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10.2 ALLOWABLE QUANTITY VARIATIONS

- A. In the event of an increase or decrease in Bid item quantity of a unit price contract, the total amount of WORK actually done or materials or equipment furnished shall be paid for according to the unit price established for such WORK under the Contract Documents, wherever such unit price has been established; provided, that an adjustment in the Contract Price may be made for changes which result in an increase or decrease in excess of 25% of the estimated quantity of any major item of the WORK. Major Item is defined as any bid item amount that is ten percent (10%) or more of the total contract amount.
- B. In the event a part of the WORK is to be entirely eliminated and no lump sum or unit price is named in the Contract Documents to cover such eliminated work, the price of the eliminated work shall be agreed upon in writing by the OWNER and the CONTRACTOR. If the OWNER and the CONTRACTOR fail to agree upon the price of the eliminated work, said price shall be determined in accordance with the provisions of Article 11.

ARTICLE 11 CHANGE OF CONTRACT PRICE

11.1 GENERAL

- A. The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. All duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR to complete the WORK shall be at its expense without change in the Contract Price.
- B. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 7 days) after the start of the occurrence or the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within 14 days after such occurrence (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by the ENGINEER in accordance with Paragraph 9.8A if the OWNER and the CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Paragraph 11.1B.
- C. The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
 - 1. Where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 - 2. By mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.4.

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3. On the basis of the cost of work (determined as provided in Paragraphs 11.3) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.4).

11.2 COSTS RELATING TO WEATHER. The CONTRACTOR shall have no claims against the OWNER for damages for any injury to WORK, materials, or equipment, resulting from the action of the elements. If, however, in the opinion of the ENGINEER, the CONTRACTOR has made all reasonable efforts to protect the materials, equipment and work, the CONTRACTOR may be granted a reasonable extension of Contract Time to make proper repairs, renewals, and replacements of the work, materials, or equipment.

11.3 COST OF WORK (BASED ON TIME AND MATERIALS)

- A. General. The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of extra work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.5 EXCLUDED COSTS.
- B. Labor. The costs of labor will be the actual cost for wages prevailing for each craft or type of workers performing the extra work at the time the extra work is done, plus employer payments of payroll taxes, worker's compensation insurance, liability insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental. The labor costs for forepersons shall be proportioned to all of their assigned work and only that applicable to extra work shall be paid. Non-direct labor costs including superintendence shall be considered part of the mark-up set out in paragraph 11.4.
- C. Materials. The cost of materials reported shall be at invoice or lowest current price at which materials are locally available and delivered to the job in the quantities involved, plus the cost of freight, delivery and storage, subject to the following:
 1. Trade discounts available to the purchaser shall be credited to the OWNER notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.
 2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER. Mark-up except for actual costs incurred in the handling of such materials will not be allowed.
 3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on extra work items or the current wholesale price for such materials delivered to the work site, whichever price is lower.
 4. If in the opinion of the ENGINEER the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of such material, then the cost shall be deemed to be the lowest current wholesale price for the

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quantity concerned delivered to the work site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim shall be allowed by the CONTRACTOR for costs and profit on such materials.

- D. Equipment. The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the Supplementary General Conditions. Such rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate resulting in the least total cost to the OWNER for the total period of use. If it is deemed necessary by the CONTRACTOR to use equipment not listed in the publication specified in the Supplementary General Conditions, an equitable rental rate for the equipment will be established by the ENGINEER. The CONTRACTOR may furnish cost data which might assist the ENGINEER in the establishment of the rental rate.
1. All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used.
 2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the ENGINEER, in duplicate, a description of the equipment and its identifying number.
 3. Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
 4. Individual pieces of equipment or tools having a replacement value of \$200 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.
 5. Rental time will not be allowed while equipment is inoperative due to breakdowns.
 6. Equipment Rental Rates. Unless otherwise agreed in writing, the CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication: "Rental Rate Blue Book" as published by Dataquest (a company of the Dunn and Bradstreet Corporation), 1290 Ridder Park Drive, San Jose, CA 95131, telephone number (800) 227-8444.
- E. Equipment on the Work Site. The rental time to be paid for equipment on the work site shall be the time the equipment is in productive operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except, that moving time will not be paid if the equipment is used on other than the extra work, even though located at the site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made for loading and transporting costs when the equipment is used at the site of the extra work on other than the extra work. The following shall be used in computing the rental time of equipment on the work site.

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1. When hourly rates are listed, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
 2. When daily rates are listed, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraphs (3), (4), and (5), following.
 3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.3D, herein.
 4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the work site, or in the absence of such labor, established by collective bargaining agreements for the type of worker and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.3B, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all other payments made to or on behalf of workers other than actual wages.
 5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.4, herein.
- F. Specialty Work. Specialty work is defined as that work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. The following shall apply in making estimates for payment for specialty work:
1. Any bid item of WORK to be classified as Specialty Work shall be listed as such in the Supplementary General Conditions. Specialty work shall be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the ENGINEER, invoices for specialty work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs.
 2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the job site, the charges for that portion of the work performed at the off-site facility may, by agreement, be accepted as specialty work and accordingly, the invoices for the work may be accepted without detailed itemization.
 3. All invoices for specialty work will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of the allowances for overhead and profit specified in Paragraph 11.4, herein, an allowance of 5 percent will be added to invoices for specialty work.
- G. Sureties. All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the CONTRACTOR's sureties shall be bound with reference thereto as under the original Agreement. Copies of all amendments to surety bonds or supplemental surety bonds shall be submitted to the OWNER for review prior to the performance of any work hereunder.

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11.4 CONTRACTOR'S FEE

- A. Extra work ordered on the basis of time and materials will be paid for at the actual necessary cost as determined by the ENGINEER, plus allowances for overhead and profit. The allowance for overhead and profit shall include full compensation for superintendence, bond and insurance premiums, taxes, field office expense, extended overhead, home office overhead, and all other items of expense or cost not included in the cost of labor, materials, or equipment provided for under Paragraph 11.3. The allowance for overhead and profit will be made in accordance with the following schedule:

Actual Overhead and Profit Allowance	
Labor	15 percent
Materials	10 percent
Equipment	10 percent

To the sum of the costs and mark-ups provided for in this Article, one percent shall be added as compensation for bonding.

- B. It is understood that labor, materials, and equipment may be furnished by the CONTRACTOR or by the Subcontractor on behalf of the CONTRACTOR. When all or any part of the extra work is performed by a Subcontractor, the allowance specified herein shall be applied to the labor, materials, and equipment costs of the Subcontractor, to which the CONTRACTOR may add 5 percent of the Subcontractor's total cost for the extra work. Regardless of the number of hierarchical tiers of Subcontractors, the 5 percent increase above the Subcontractor's total cost which includes the allowances for overhead and profit specified herein may be applied one time only.

11.5 EXCLUDED COSTS. The term Cost of the Work shall not include any of the following:

- A. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, estimators, attorneys' auditors, accountants, purchasing and contracting agents, expenditures, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the work, or not specifically covered by paragraph 11.3, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.
- B. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- C. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- D. Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by paragraph 11.4 above).
- E. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including

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but not limited to, the correction of Defective WORK, disposal of materials or equipment wrongly supplied and making good any damage to property.

- F. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in paragraph 11.4.

ARTICLE 12 CHANGE OF CONTRACT TIME

12.1 GENERAL

- A. The Contract Time may only be changed by a Change Order. Any claim for an extension of the Contract Time (or Milestones) shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 60 days after such occurrence (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR'S written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the ENGINEER in accordance with Paragraph 9.8 if the OWNER and the CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this Paragraph 12.1A. An increase in Contract Time does not mean that the Contractor is due an increase in Contract Price. Only Compensable time extensions will result in an increase in Contract Price.
- B. All time limits stated in the Contract Documents are of the essence of the Agreement.
- C. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost on the critical path of the project due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, unprecedented weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.
- D. Where CONTRACTOR is prevented from completing any part of the WORK within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost on the critical path of the project due to such delay shall be CONTRACTOR'S sole and exclusive remedy for such delay. In no event shall the OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics abnormal weather conditions, acts of God or acts or

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neglect by utility owners or other contractors performing other work as contemplated by Article 7.

- 12.2 EXTENSIONS OF TIME FOR DELAY DUE TO WEATHER. Contract Time may be extended by the ENGINEER because of delays in completion of the WORK due to unusually severe weather, provided that the CONTRACTOR shall, within 10 days of the beginning of any such delay, notify the ENGINEER in writing of the cause of delay and request an extension of Contract Time. The ENGINEER will ascertain the facts and the extent of the delay and extend the time for completing the work when, in the ENGINEER's judgment, the findings of fact justify such an extension. Unprecedented, abnormal, or unusually severe weather will be defined as an event, or events, with a greater than 50-year recurrence interval, as determined by the National Weather Service, or equivalent State or Federal agency

ARTICLE 13 WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

- 13.1 WARRANTY AND GUARANTEE. The CONTRACTOR warrants and guarantees to the OWNER and the ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of defects known to the OWNER or ENGINEER shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in this Article 13.
- 13.2 ACCESS TO WORK. OWNER, ENGINEER, their Consultants, sub-consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.
- 13.3 TESTS AND INSPECTIONS
- A. The CONTRACTOR shall give the ENGINEER timely notice of readiness of the WORK for all required inspections, tests, or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
 - B. If Laws or Regulations of any public body having jurisdiction other than the OWNER require any WORK to specifically be inspected, tested, or approved, the CONTRACTOR shall pay all costs in connection therewith. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the OWNER's or the ENGINEER's acceptance of a Supplier of materials or equipment proposed as a substitution or (or-equal) to be incorporated in the WORK, or of materials or equipment submitted for review prior to the CONTRACTOR's purchase thereof for incorporation in the WORK. The cost of all inspections, tests, and approvals in addition to the above which are required by the Contract Documents shall be paid by the OWNER (unless otherwise specified).
 - C. The ENGINEER will make, or have made, such inspections and tests as the ENGINEER deems necessary to see that the WORK is being accomplished in accordance with the requirements of the Contract Documents. Unless otherwise specified in the Supplementary General Conditions, the cost of such inspection and testing will be borne

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by the OWNER. In the event such inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the ENGINEER, as well as the cost of subsequent reinspection and retesting. Neither observations by the ENGINEER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

- D. All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to the ENGINEER and the CONTRACTOR.
 - E. If any work (including the work of others) that is to be inspected, tested, or approved is covered without written concurrence of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the ENGINEER timely notice of the CONTRACTOR's intention to perform such test or to cover the same and the ENGINEER has not acted with reasonable promptness in response to such notice.
 - F. If any WORK is covered contrary to the written request of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER's observation and recovered at the CONTRACTOR's expense.
 - G. If the ENGINEER considers it necessary or advisable that covered WORK be observed by the ENGINEER or inspected or tested by others, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, material, and equipment. If it is found that such work is defective, the CONTRACTOR shall bear all direct, indirect, and consequential costs and damages of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, including but not limited to fees and charges of engineers, attorneys, and other professionals. However, if such work is not found to be defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, the CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.
- 13.4 OWNER MAY STOP THE WORK. If the WORK is defective, or the CONTRACTOR fails to perform work in such a way that the completed WORK will conform to the Contract Documents, the OWNER may order the CONTRACTOR to stop the WORK, or any portion thereof, until the cause for such order has been eliminated; however, this right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.
- 13.5 CORRECTION OR REMOVAL OF DEFECTIVE WORK. If required by the ENGINEER, the CONTRACTOR shall promptly, either correct all defective work, whether or not fabricated, installed, or completed, or, if the WORK has been rejected by the ENGINEER, remove it from the site and replace it with non-defective work. The CONTRACTOR shall bear all direct, indirect

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and consequential costs and damages of such correction or removal, including but not limited to fees and charges of engineers, attorneys, and other professionals made necessary thereby.

13.6 ONE YEAR CORRECTION PERIOD

- A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, the CONTRACTOR shall promptly, without cost to the OWNER and in accordance with OWNER's written notification, (i) correct such Defective WORK, or, if it has been rejected by the OWNER, remove it from the site and replace it with non-defective work, and (ii) satisfactorily correct or remove and replace any damage to other work of others resulting therefrom. If the CONTRACTOR does not promptly comply with such notification, or in an emergency where delay would cause serious risk of loss or damage, the OWNER may have the Defective WORK corrected or the rejected WORK removed and replaced, and all direct, indirect, and consequential costs and damages of such removal and replacement including but not limited to fees and charges of engineers, attorneys and other professionals will be paid by the CONTRACTOR.
- B. Where Defective WORK (and damage to other WORK resulting therefrom) has been corrected, removed or replaced under this paragraph 13.6, the correction period hereunder with respect to such WORK will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

13.7 ACCEPTANCE OF DEFECTIVE WORK. If, instead of requiring correction or removal and replacement of defective work, the OWNER prefers to accept the WORK, the OWNER may do so. The CONTRACTOR shall bear all direct, indirect, and consequential costs attributable to the OWNER's evaluation of and determination to accept such defective work. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK, and the OWNER shall be entitled to an appropriate decrease in the Contract Price.

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 SCHEDULE OF VALUES (LUMP SUM PRICE BREAKDOWN). The schedule of values or lump sum price breakdown established as provided in the General Requirements shall serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the ENGINEER.

14.2 UNIT PRICE BID SCHEDULE. Progress payments on account of Unit Price work will be based on the number of units completed.

14.3 APPLICATION FOR PROGRESS PAYMENT

- A. Unless otherwise prescribed by law, on the 25th of each month, the CONTRACTOR shall submit to the ENGINEER for review, an Application for Payment filled out and signed by the CONTRACTOR covering the WORK completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

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- B. The Application for Payment shall identify, as a sub-total, the amount of the CONTRACTOR'S Total Earnings to Date, plus the Value of Materials Stored at the Site which have not yet been incorporated in the WORK, and less a deductive adjustment for materials installed which were not previously incorporated in the WORK, but for which payment was allowed under the provisions for payment for Materials Stored at the Site, but not yet incorporated in the WORK.
- C. The Net Payment Due the CONTRACTOR shall be the above-mentioned subtotal from which shall be deducted the total amount of all previous payments made to the CONTRACTOR. Progress payments will be paid in full in accordance with Article 14 of the General Conditions until 90% of the Contract Price has been paid. The remaining 10% of the Contract Price amount may be withheld until:
1. Final inspection has been made;
 2. completion of the project; and
 3. acceptance of the project by the OWNER.
- D. The Value of Materials Stored at the Site shall be an amount equal to the specified percent of the value of such materials as set forth in the Supplementary General Conditions. Said amount shall be based upon the value of all acceptable materials and equipment not incorporated in the WORK but delivered and suitably stored at the site or at another location agreed to in writing; provided, each such individual item has a value of more than \$5,000.00 and will become a permanent part of the WORK. The Application for Payment shall also be accompanied by an invoice (including shipping), a certification that the materials meet the applicable contract specifications, and any evidence required by the OWNER that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the OWNER's interest therein, all of which will be satisfactory to the OWNER. Payment for materials will not constitute final acceptance. It shall be the CONTRACTOR's responsibility to protect the material from damage, theft, loss, or peril while in storage. Unless otherwise prescribed by law, the Value of Materials Stored at the Site shall be paid at the invoice amount up to a maximum of 85% of the Contract Price for those items.
- 14.4 CONTRACTOR'S WARRANTY OF TITLE. The CONTRACTOR warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the WORK or not, will pass to the OWNER no later than the time of payment free and clear of all liens.
- 14.5 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT
- A. The ENGINEER will, within 7 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the OWNER, or return the Application to the CONTRACTOR indicating in writing the ENGINEER's reasons for refusing to recommend payment. In the later case, the CONTRACTOR may make the necessary corrections and resubmit the Application. If the ENGINEER still disagrees with a portion of the Application, it will submit the Application recommending the undisputed portion of the Application to the OWNER for payment and provide reasons for recommending non-payment of the disputed amount. Thirty days after presentation of the Application for Payment with the ENGINEER's

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recommendation, the amount recommended will (subject to the provisions of Paragraph 14.5B) become due and when due will be paid by the OWNER to the CONTRACTOR.

- B. The OWNER may refuse to make payment of the full amount recommended by the ENGINEER because claims have been made against the OWNER on account of the CONTRACTOR's performance of the WORK or Liens have been filed in connection with the WORK or there are other items entitling the OWNER to a credit against the amount recommended, but the OWNER must give the CONTRACTOR written notice within 7 days (with a copy to the ENGINEER) stating the reasons for such action.

14.6 PARTIAL UTILIZATION

- A. The OWNER shall have the right to utilize or place into service any item of equipment or other usable portion of the WORK prior to completion of the WORK. Whenever the OWNER plans to exercise said right, the CONTRACTOR will be notified in writing by the OWNER, identifying the specific portion or portions of the WORK to be so utilized or otherwise placed into service.
- B. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all of the WORK shall be borne by the CONTRACTOR. Upon issuance of said written notice of partial utilization, the OWNER will accept responsibility for the protection and maintenance of all such items or portions of the WORK described in the written notice.
- C. The CONTRACTOR shall retain full responsibility for satisfactory completion of the WORK, regardless of whether a portion thereof has been partially utilized by the OWNER and the CONTRACTOR's one year correction period shall commence only after the date of Substantial Completion for the WORK.

14.7 SUBSTANTIAL COMPLETION. When the CONTRACTOR considers the WORK ready for its intended use the CONTRACTOR shall notify the OWNER and the ENGINEER in writing that the WORK is substantially complete. The CONTRACTOR will attach to this request a list of all work items that remain to be completed and a request that the ENGINEER prepare a Notice of Completion. Within a reasonable time thereafter, the OWNER, the CONTRACTOR, and the ENGINEER shall make an inspection of the WORK to determine the status of completion. If the ENGINEER does not consider the WORK substantially complete, or the list of remaining work items to be comprehensive, the ENGINEER will notify the CONTRACTOR in writing giving the reasons therefor. If the ENGINEER considers the WORK substantially complete, the ENGINEER will prepare and deliver to the OWNER, for its execution and recording, the Notice of Completion signed by the ENGINEER and CONTRACTOR, which shall fix the date of Substantial Completion.

14.8 FINAL APPLICATION FOR PAYMENT. After the CONTRACTOR has completed all of the remaining work items referred to in Paragraph 14.7 and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, record as-built documents (as provided in the General Requirements) and other documents, all as required by the Contract Documents, and after the ENGINEER has indicated that the WORK is acceptable, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called

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for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to the OWNER) of all liens arising out of or filed in connection with the WORK.

14.9 FINAL PAYMENT AND ACCEPTANCE

- A. If, on the basis of the ENGINEER's observation of the WORK during construction and final inspection, and the ENGINEER's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the WORK has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will, within 14 days after receipt of the final Application for Payment, indicate in writing the ENGINEER's recommendation of payment and present the Application to the OWNER for payment.
- B. After acceptance of the WORK by the OWNER's governing body, the OWNER will make final payment to the CONTRACTOR of the amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract Documents, including the following items:
 - 1. Liquidated damages, as applicable.
 - 2. Two times the value of outstanding items of correction work or punch list items yet uncompleted or uncorrected, as applicable. All such work shall be completed or corrected to the satisfaction of the OWNER within the time stated on the Notice of Completion, otherwise the CONTRACTOR does hereby waive any and all claims to all monies withheld by the OWNER to cover the value of all such uncompleted or uncorrected items.

14.10 RELEASE OF RETAINAGE AND OTHER DEDUCTIONS

- A. After executing the necessary documents to initiate the lien period, and not more than 45 days thereafter (based on a 30-day lien filing period and 15-day processing time), the OWNER will release to the CONTRACTOR the retainage funds withheld pursuant to the Agreement, less any deductions to cover pending claims against the OWNER pursuant to Paragraph 14.5B.
- B. After filing of the necessary documents to initiate the lien period, the CONTRACTOR shall have 30 days to complete any outstanding items of correction work remaining to be completed or corrected as listed on a final punch list made a part of the Notice of Completion. Upon expiration of the 45 days, referred to in Paragraph 14.10A, the amounts withheld pursuant to the provisions of Paragraph 14.9B herein, for all remaining work items will be returned to the CONTRACTOR; provided, that said work has been completed or corrected to the satisfaction of the OWNER within said 30 days. Otherwise, the CONTRACTOR does hereby waive any and all claims for all monies withheld by the OWNER under the Contract to cover 2 times the value of such remaining uncompleted or uncorrected items.

14.11 CONTRACTOR'S CONTINUING OBLIGATION. The CONTRACTOR's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the ENGINEER, nor the issuance of a Notice of Completion, nor any payment by the OWNER to the CONTRACTOR under the

SECTION 00700 - GENERAL CONDITIONS

Contract Documents, nor any use or occupancy of the WORK or any part thereof by the OWNER, nor any act of acceptance by the OWNER nor any failure to do so, nor any review of a Shop Drawing or sample submittal, will constitute an acceptance of work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

- 14.12 FINAL PAYMENT TERMINATES LIABILITY OF OWNER. Final payment is defined as the last progress payment made to the CONTRACTOR for earned funds, less monies withheld as applicable, pursuant to Paragraph 14.10A. The acceptance by the CONTRACTOR of the final payment referred to in Paragraph 14.9 herein, shall be a release of the OWNER and its agents from all claims of liability to the CONTRACTOR for anything done or furnished for, or relating to, the WORK or for any act of neglect of the OWNER or of any person relating to or affecting the WORK, except demands against the OWNER for the remainder, if any, of the amounts kept or retained under the provisions of Paragraph 14.9 herein; and excepting pending, unresolved claims filed prior to the date of the Notice of Completion.

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

- 15.1 SUSPENSION OF WORK BY OWNER. The OWNER, acting through the ENGINEER, may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than 90 days by notice in writing to the CONTRACTOR. The CONTRACTOR shall resume the WORK on receipt from the ENGINEER of a notice of resumption of work. The CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.
- 15.2 TERMINATION OF AGREEMENT BY OWNER (CONTRACTOR DEFAULT)
- A. In the event of default by the CONTRACTOR, the OWNER may give 10 days written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement and provide the CONTRACTOR an opportunity to remedy the conditions constituting the default. It shall be considered a default by the CONTRACTOR whenever CONTRACTOR shall: (1) declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors; (2) fail to provide materials or quality of work meeting the requirements of the Contract Documents; (3) disregard or violate provisions of the Contract Documents or ENGINEER's instructions; (4) fail to prosecute the WORK according to the approved progress schedule; or, (5) fail to provide a qualified superintendent, competent workers, or materials or equipment meeting the requirements of the Contract Documents. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue the Notice of Termination.
- B. In the event the Agreement is terminated in accordance with Paragraph 15.2A, herein, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK shall be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the

SECTION 00700 - GENERAL CONDITIONS

balance which would have been due, the CONTRACTOR shall not have claim to the difference.

- 15.3 **TERMINATION OF AGREEMENT BY OWNER (FOR CONVENIENCE).** The OWNER may terminate the Agreement at any time if it is found that reasons beyond the control of either the OWNER or CONTRACTOR make it impossible or against the OWNER's interests to complete the WORK. In such a case, the CONTRACTOR shall have no claims against the OWNER except: (1) for the value of work performed up to the date the Agreement is terminated; and, (2) for the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Agreement is terminated which would be needed in the WORK and which meet the requirements of the Contract Documents. The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined by the ENGINEER in accordance with the procedure prescribed for the making of the final application for payment and payment under Paragraphs 14.8 and 14.9.
- 15.4 **TERMINATION OF AGREEMENT BY CONTRACTOR.** The CONTRACTOR may terminate the Agreement upon 10 days written notice to the OWNER, whenever: 1) the WORK has been suspended under the provisions of Paragraph 15.1, herein, for more than 90 consecutive days through no fault or negligence of the CONTRACTOR, and notice to resume work or to terminate the Agreement has not been received from the OWNER within this time period; or, 2) the OWNER should fail to pay the CONTRACTOR any monies due him in accordance with the terms of the Contract Documents and within 60 days after presentation to the OWNER by the CONTRACTOR of a request therefor, unless within said 10-day period the OWNER shall have remedied the condition upon which the payment delay was based. In the event of such termination, the CONTRACTOR shall have no claims against the OWNER except for those claims specifically enumerated in Paragraph 15.3, herein, and as determined in accordance with the requirements of said paragraph.

ARTICLE 16 MISCELLANEOUS

- 16.1 **GIVING NOTICE.** Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.
- 16.2 **RIGHTS IN AND USE OF MATERIALS FOUND ON THE WORK**
- A. The CONTRACTOR may use on the Project, with ENGINEER's approval, such stone, gravel, sand, or other material determined suitable by the ENGINEER, as may be found in the excavation. The CONTRACTOR will be paid for the excavation of such material at the corresponding contract unit price. No additional payment will be made for utilizing the material from excavation as borrow, or select borrow.
 - B. The CONTRACTOR shall replace, at its own expense, with other acceptable material, all of that portion of the excavated material so removed and used which was needed for use on the project. No charge for the materials so used will be made against the CONTRACTOR except that the CONTRACTOR shall be responsible for payment of any royalties required.

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- C. The CONTRACTOR shall not excavate or remove any material from within the Project location which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from the ENGINEER.
 - D. In the event the CONTRACTOR has processed materials from OWNER-furnished sources in excess of the quantities required for performance of this contract, including any waste material produced as a by-product, the CBJ may retain possession of such materials without obligation to reimburse the CONTRACTOR for the cost of their production. When such materials are in a stockpile, the ENGINEER may require: That it remain in stockpile; the CONTRACTOR level such stockpile(s); or that the CONTRACTOR remove such materials and restore the premises to a satisfactory condition at the CONTRACTOR's expense. This provision shall not preclude the CBJ from arranging with the CONTRACTOR to produce material over and above the contract needs, payment for which shall be by written agreement between the CBJ and the CONTRACTOR.
 - E. Unless otherwise provided, the material from any existing old structure may be used temporarily by the CONTRACTOR in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the ENGINEER.
- 16.3 RIGHT TO AUDIT. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon Subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.
- 16.4 ARCHAEOLOGICAL OR HISTORICAL DISCOVERIES. When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, such as shell heaps, land or sea mammal bones or tusks, or other items of historical significance, the CONTRACTOR shall cease operations immediately and notify the ENGINEER. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the ENGINEER order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra work, such order(s) shall be covered by an appropriate contract change document.
- 16.5 CONSTRUCTION OVER OR ADJACENT TO NAVIGABLE WATERS. All work over, on, or adjacent to navigable waters shall be so conducted that free navigation of the waterways will not be interfered with and the existing navigable depths will not be impaired, except as allowed by permit issued the U.S. Coast Guard and/or the U.S. Army Corps of Engineers, as applicable.

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16.6 GRATUITY AND CONFLICT OF INTEREST. The CONTRACTOR agrees to not extend any loan, gratuity or gift of money of any form whatsoever to any employee or elected official of the OWNER, nor will the CONTRACTOR rent or purchase any equipment or materials from any employee or elected official of the OWNER, or to the best of the CONTRACTOR's knowledge, from any agent of any employee or elected official of the OWNER. Before final payment, the CONTRACTOR shall execute and furnish the OWNER an affidavit certifying that the CONTRACTOR has complied with the above provisions of the contract.

16.7 SUITS OF LAW CONCERNING THE WORK

- A. Should a suit of law be entered into, either by the CONTRACTOR (or the CONTRACTOR's surety) against the OWNER, or by the OWNER against the CONTRACTOR (or the CONTRACTOR's surety), the suit of law shall be tried in the First Judicial District of Alaska.
- B. If one of the questions at issue is the satisfactory performance of the work by the CONTRACTOR and should the appropriate court of law judge the work of the CONTRACTOR to be unsatisfactory, then the CONTRACTOR (or the CONTRACTOR's surety) shall reimburse the OWNER for all legal and all other expenses (as may be allowed and set by the court) incurred by the OWNER because of the suit of the law and, further, it is agreed that the OWNER may deduct such expense from any sum or sums then, or any that become due the CONTRACTOR under the contract.

16.8 CERTIFIED PAYROLLS

- A. All CONTRACTORS or Subcontractor who perform work on a public construction contract for the OWNER shall file a certified payroll with the Alaska Department of Labor before Friday of each week that covers the preceding week (Section 14-2-4 ACLA 1949; am Section 4 ch 142 SLA 1972).
- B. In lieu of submitting the State payroll form, the CONTRACTOR's standard payroll form may be submitted, provided it contains the information required by AS 36.05.040 and a statement that the CONTRACTOR is complying with AS 36.10.010.
- C. A CONTRACTOR or Subcontractor, who performs work on public construction in the State, as defined by AS 36.95.010(3), shall pay not less than the current prevailing rate of wages as issued by the Alaska Department of Labor before the end of the pay period. (AS 36.05.010).

16.9 PREVAILING WAGE RATES

- A. Wage rates for Laborers and Mechanics on Public Contracts, AS 36.05.070. The CONTRACTOR, or Subcontractors, shall pay all employees unconditionally and not less than once a week. Wages may not be less than those stated in Paragraph 16.8C, regardless of the contractual relationship between the CONTRACTOR or Subcontractors and laborers, mechanics, or field surveyors. The scale of wages to be paid shall be posted by the CONTRACTOR in a prominent, easily accessible place at the site of the WORK.

SECTION 00700 - GENERAL CONDITIONS

- B. Failure to Pay Agreed Wages, AS 36.05.080. 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 or wages less than the established rate, the OWNER may, by written notice, terminate the CONTRACTOR or Subcontractors right to proceed with the work. The OWNER may prosecute the work to completion by contract or otherwise, and the CONTRACTOR and sureties will be held liable to the OWNER for excess costs for completing the WORK. (Section 2 ch 52 SLA 1959).
- C. Listing CONTRACTOR's Who Violate Contracts, AS 36.05.090. In addition, a list giving the names of persons who have disregarded the rights of their employees shall be distributed to all departments of State government and all political subdivisions. No person appearing on this list, and no firm, corporation, partnership or association in which the person has an interest, may 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. (Section 3 ch 52 SLA 1959; am Section 9 ch 142 SLA).

16.10 EMPLOYMENT REFERENCE. Workers employed in the execution of the contract by the CONTRACTOR or by any Subcontractor under this contract shall not be required or permitted to labor more than 8 hours a day or 40 hours per week in violation of the provisions of the Alaska Wage and Hour Act, Section 23.10.060.

16.11 COST REDUCTION INCENTIVE

- A. At any time within 45 days after the date of the Notice of Award, the CONTRACTOR may submit to the ENGINEER in writing, proposals for modifying the plans, specifications, or other requirements of this contract for the sole purpose of reducing the total cost of construction. The cost reduction proposal shall not impair in any manner the essential functions or characteristics of the project, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance or design and safety standards.
- B. The cost reduction proposal shall contain the following information:
 - 1. Description of both the existing contract requirements for performing the WORK and the proposed changes.
 - 2. An itemization of the contract requirements that must be changed if the proposal is adopted.
 - 3. A detailed estimate of the time required and the cost of performing the WORK under both the existing contract and the proposed change.
 - 4. A statement of the date by which the CONTRACTOR must receive the decision from the OWNER on the cost reduction proposal.
 - 5. The contract items of WORK effected by the proposed changes including any quantity variations.
 - 6. A description and estimate of costs the OWNER may incur in implementing the proposed changes, such as test and evaluation and operating and support costs.
 - 7. A prediction of any effects the proposed change would have on future operations and maintenance costs to the OWNER.

SECTION 00700 - GENERAL CONDITIONS

- C. The provisions of this section shall not be construed to require the OWNER to consider any cost reduction proposal which may be submitted; nor will the OWNER be liable to the CONTRACTOR for failure to accept or act upon any cost reduction proposal submitted, or for delays to the work attributable to the consideration or implementation of any such proposal.
- D. If a cost reduction proposal is similar to a change in the plans or specifications for the project under consideration by the OWNER at the time the proposal is submitted, the OWNER will not accept such proposal and reserves the right to make such changes without compensation to the CONTRACTOR under the provisions of this section.
- E. The CONTRACTOR shall continue to perform the work in accordance with the requirements of the contract until an executed Change Order incorporating the cost reduction proposal has been issued. If any executed Change Order has not been issued by the date upon which the CONTRACTOR's cost reduction proposal specifies that a decision should be made by the OWNER, in writing, the cost reduction proposal shall be considered rejected.
- F. The OWNER, shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings in Contract Time and construction costs resulting from the adoption of all or any part of such proposal. Should the CONTRACTOR disagree with OWNER's decision on the cost reduction proposal, there is no further consideration. The OWNER reserves the right to make final determination.
- G. If the CONTRACTOR's cost reduction proposal is accepted in whole or in part, such acceptance will be made by a contract Change Order, which specifically states that the change is executed pursuant to this cost reduction proposal section. Such Change Order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted to be put into effect and shall include any conditions upon which the OWNER's approval is based, if such approval is conditional. The Change Order shall also describe the estimated net savings in the cost of performing the work attributable to the cost reduction proposal, and shall further provide that the contract cost be adjusted by crediting the OWNER with the estimated net savings amount.
- H. Acceptance of the cost reduction proposal and performance of the work does not extend the time of completion of the contract, unless specifically provided in the Change Order authorizing the use of the submitted proposal. Should the adoption of the cost reduction proposal result in a Contract Time savings, the total Contract Time shall be reduced by an amount equal to the time savings realized.
- I. The amount specified to the CONTRACTOR in the Change Order accepted in the cost reduction proposal shall constitute full compensation for the performance of WORK. No claims for additional costs as a result of the changes specified in the cost reduction proposal shall be allowed.
- J. The OWNER reserves the right to adopt and utilize any approved cost reduction proposal for general use on any contract administered when it is determined suitable for such application. Cost reduction proposals identical, similar, or previously submitted will not be accepted for consideration if acceptance and compensation has previously been

SECTION 00700 - GENERAL CONDITIONS

approved. The OWNER reserves the right to use all or part of any cost reduction proposal without obligation or compensation of any kind to the CONTRACTOR.

- K. The CONTRACTOR shall bear the costs, if any, to revise all bonds and insurance requirements for the project, to include the cost reduction WORK.

END OF SECTION

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

GENERAL. These Supplementary General Conditions make additions, deletions, or revisions to the General Conditions as indicated herein. All provisions which are not so added, deleted, or revised remain in full force and effect. Terms used in these Supplementary General Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SGC 2.2 COPIES OF DOCUMENTS. *Add* the following:

The OWNER shall furnish to the CONTRACTOR 10 copies of the Contract Documents which may include bound reduced Drawings. (Note: Full size drawings (22"x36") are not available for this project.) Additional quantities of the Contract Documents will be furnished at reproduction cost.

SGC 4.2 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES. *Add* the following:

- C. In the preparation of the Contract Documents, the Engineer of Record has relied upon:
1. The following report of exploration and tests of subsurface conditions at the site of the WORK:
 - a. March, 2015 GEOTECHNICAL REPORT prepared by PND Engineers, Inc.
 - b. Copies of the report may be examined at the office of the Haines Borough during regular business hours. As provided in paragraph 4.2 of the General Conditions and as identified and established above, the CONTRACTOR may rely upon the accuracy of the technical data contained in this report, which is incorporated into the Contract Documents by reference. However, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with non-technical data, interpretations and opinions contained in such reports or drawings, which are not a part of Contract Documents, or the completeness thereof is the responsibility of the CONTRACTOR.
 2. Field measurements and visual inspection of the existing structures and surface conditions.

Add the following SCG 4.7:

SCG 4.7 ROAD CLEANING GUARANTEE. In order to ensure that quarry or gravel material is not tracked or spilled from trucks on the Project haul route a street cleaning deposit is required. The CONTRACTOR is required to submit the "Road Cleaning Guarantee Permit" included at the end of this section, to the OWNER prior to issuance of Notice to Proceed. This permit can be obtained from the Haines Borough.

SGC 5.2 INSURANCE AMOUNTS. The limits of liability for the insurance required by Paragraph 5.2 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

- A. Workers' Compensation: (under Paragraph 5.2C.1 of the General Conditions) as in accordance with AS 23.30.045:
1. State: Statutory

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

2. Applicable Federal (e.g., Longshore): Statutory

Note: If the WORK called for in the Contract Documents involves work in or on any navigable waters, the CONTRACTOR shall provide Workers' Compensation coverage which shall include coverage under the Longshore and Harbor Workers' Compensation Act, the Jones Act, and any other coverage required under Federal or State laws pertaining to workers in or on navigable waters.

3. Employers Liability

Bodily Injury by Accident:	\$100,000.00	Each Accident
Bodily Injury by Disease:	\$100,000.00	Each Employee
Bodily Injury by Disease:	\$500,000.00	Policy Limit

- a. CONTRACTOR agrees to waive all rights of subrogation against the OWNER and ENGINEER for work performed under Contract.
- b. If CONTRACTOR directly utilizes labor outside of the State of Alaska in the prosecution of the WORK, "Other States" endorsement shall be required as a condition of the Contract.

B. Commercial General Liability: (under Paragraph 5.2C.2 of the General Conditions):

1. Combined Single Limit

a. General Policy	\$1,000,000.00	Each Occurrence
	\$2,000,000.00	Annual Aggregate
b. Products/Completed Operations	\$1,000,000.00	Each Occurrence
	\$2,000,000.00	Annual Aggregate
c. Personal Injury	\$1,000,000.00	Each Occurrence

C. Commercial Automobile Liability: (under Paragraph 5.2C.3 of the General Conditions) including Owned, Hired, and Non-Owned Vehicles:

Combined Single Limit, Bodily Injury and Property Damage \$1,000,000.00

D. Builder's Risk: (under Paragraph 5.2C.5 of the General Conditions) in an amount equal to 100% of the amount of the Bid award.

E. Marine Protection and Indemnity: \$1,000,000.00 per Accident or Occurrence. Divers must have appropriate certifications.

F. Policies shall also specify insurance provided by CONTRACTOR will be considered primary and not contributory to any other insurance available to the OWNER or the ENGINEER.

G. All policies will provide for 30 Days written notice prior to any cancellation or nonrenewal of insurance policies required under Contract. "Will endeavor" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the Company, its agents or representatives" wording will be deleted from certificates.

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H. The City and Borough of Juneau shall be named as an "Additional Insured" under all liability coverages listed in this Section, except for workers' compensation insurance.

SGC 14.9 FINAL PAYMENT AND ACCEPTANCE. *Add* the following paragraph:

B. Prior to the final payment the CONTRACTOR shall contact the Alaska Department of Labor (ADOL) and provide the OWNER with clearance from the ADOL for the CONTRACTOR and all Subcontractors that have worked on the Project. This clearance shall indicate that all Employment Security Taxes have been paid. A sample letter for this purpose is at the end of this section.

SGC 16.8 CERTIFIED PAYROLLS. *Change* paragraph A. to read:

A. All CONTRACTORS or Subcontractors who perform work on a public construction contract for the OWNER shall file a certified payroll with Alaska Department of Labor. See Section 00830 - Alaska Labor Standards, Reporting, and Prevailing Wage Rate Determination.

Date: _____

Alaska Department of Labor
Juneau Field Tax Office
FAX 907-465-2374

From: _____

Subject: **PORTAGE COVE HARBOR EXPANSION**

Timeframe of Contract _____

Please advise whether or not clearance is granted for the following CONTRACTOR or Subcontractor:

Name Address

Per AS 23.20.265 of the Alaska Employment Security Act, this request is for tax liability clearance and release to make final payment for WORK performed under the subject contract. Please send your response to:

David Sosa
Borough Manager
Haines Borough
PO Box 1209
Haines, Alaska 99827
Phone: 907-766-2231
Fax: 907-766-2716

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

- Tax Clearance is granted.
- Tax Clearance is NOT granted.

Remarks: _____

Signature

Date

Title

END OF SECTION

**SECTION 00830 - ALASKA LABOR STANDARDS, REPORTING, AND
PREVAILING WAGE RATE DETERMINATION**

State of Alaska, Department of Labor, Laborers' and Mechanics' Minimum Rates of Pay, AS 36.05.010 and AS 36.05.050, Wage and Hour Administration Pamphlet No. 600, the latest edition published by the State of Alaska, Department of Labor inclusive, are made a part of this contract by reference.

The CONTRACTOR is responsible for contacting the Alaska Department of Labor to determine compliance with current regulations.

Required Reporting During Contract (to be provided by every CONTRACTOR and Subcontractor):

- A. **Certified Payrolls must be submitted every two weeks. Before the second Friday**, each CONTRACTOR and Subcontractor must file Certified Payrolls with Statements of Compliance for the previous two weeks. If there was no activity for that pay period, indicate "**No Activity.**" Indicate "**Start**" on your first payroll, and "**Final**" on your last payroll for this Project. Send to:

<i>Wage and Hour Section</i> Labor Law Compliance Division Alaska Department of Labor P.O. Box 020630 Juneau, AK 99802-0630 (907) 465-4842	and	<i>Borough Manager</i> Haines Borough P.O. Box 1209 Haines, Alaska 99827 (907) 766-2231
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- B. **Within 10 Days of "Notice of Award/Notice to Proceed"** make a list of **all** Subcontractors. Include their name, address, phone, estimated subcontract amount, and estimated start and finish dates. Send to:

<i>David Sosa, Borough Manager</i> Haines Borough P.O. Box 1209 Haines, Alaska 99827 (907) 766-2231	and	<i>Wage and Hour Section</i> Labor Law Compliance Division Alaska Department of Labor P.O. Box 020630 Juneau, AK 99802-0630 (907) 465-4839/4842
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- C. As part of the **final payment request package**:

A completed Compliance Certificate and Release form (provided in Section 01700 - Project Closeout) from every CONTRACTOR and Subcontractor.

A final Subcontractor list complete with final subcontract amounts and including all equipment rentals (with operators).

END OF SECTION

SECTION 00852 – PERMITS

PART 1 – GENERAL

INDEX OF PERMITS

1. To be included upon receipt.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 00853 – STANDARD DETAILS

PART 1 - GENERAL

1.1 The Alaska Department of Transportation and Public Facilities Standard Drawings Manual dated March 2015 with current revisions as applicable are made a part of these Contract Documents and shall be utilized as referenced in the Plans and Technical Specifications.

A. Standard drawings are available in PDF format for download from the Alaska Department of Transportation and Public Facilities website at the following address:

1. <http://www.dot.state.ak.us/stwddes/dcsprecon/stddwgeng.shtml>

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01010 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 GENERAL

- A. WORK to be performed under this contract shall consist of furnishing all plant, tools, equipment, materials, supplies, manufactured articles, labor, transportation and services, including fuel, power, water, and essential communications, and performing all WORK, or other operations required for the fulfillment of the contract in strict accordance with the Contract Documents. The WORK shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents that may be necessary for the complete and proper construction of the WORK in good faith shall be provided by the CONTRACTOR as though originally so indicated, at no increase in cost to the OWNER.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Base Bid WORK generally consists of various quantities of mobilization, demolition, salvage, disposal, clearing, shot rock borrow, base course, armor rock, HDPE wastewater pipe, storm drain pipe, storm drain manholes, construction surveying, geotextile fabric, dredging and disposal, steel wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.
- B. Additive Alternate A WORK consists of various quantities of mobilization, demolition, salvage and disposal, armor rock, dredging and disposal, steel pipe piles and other miscellaneous improvements and appurtenances.
- C. Additive Alternate B WORK consists of various quantities of mobilization, dredging and disposal, and other miscellaneous improvements and appurtenances.
- D. Additive Alternate C WORK consists of various quantities of mobilization, wave barrier, steel pipe piles, and other miscellaneous improvements and appurtenances.
- E. Additive Alternate D WORK consists of various quantities of mobilization, supply and installation of pile anodes, field photos, continuity and potential readings report, and miscellaneous associated appurtenances.

1.3 SITE OF THE WORK

- A. The site of the WORK is located at Portage Cove in Haines, Alaska.

1.4 BEGINNING AND COMPLETION OF THE WORK

- A. Time is the essence of the contract. In accordance with the provisions of Article 2 of SECTION 00500 - AGREEMENT, the CONTRACTOR shall begin the WORK on the date specified in the written Notice to Proceed from the OWNER, and shall complete all the WORK in accordance with the following schedule:

WORK DESCRIPTION	DATE
1. Substantial Completion	May 31, 2017
2. Final Completion All WORK under the Contract Documents	June 30, 2017

1.5 CONTRACT METHOD

- A. The WORK hereunder will be constructed under a unit price Contract.

SECTION 01010 – SUMMARY OF WORK

1.6 WORK By Others

- A. The CONTRACTOR's attention is directed to the fact that WORK may be conducted at the site by other contractors during the performance of the WORK under this Contract. The CONTRACTOR shall conduct its operations so as to cause a minimum of interference with the WORK of such other Contractors, and shall cooperate fully with such Contractors to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts.
- B. Interference With WORK On Utilities: The CONTRACTOR shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.7 CONTRACTOR USE OF PROJECT SITE

- A. The CONTRACTOR's use of the Project site shall be limited to its construction operations, including on site storage of materials.

1.8 OWNER USE OF THE PROJECT SITE

- A. The OWNER may utilize all or part of the existing site during the entire period of construction for the conduct of the OWNER's normal operations. The CONTRACTOR shall cooperate and coordinate with the ENGINEER to facilitate the OWNER's operations and to minimize interference with the CONTRACTOR's operations at the same time. In any event, the OWNER shall be allowed access to the Project site during the period of construction.
- B. Areas of Portage Cove not within the scope of this project shall remain an active harbor occupied by harbor patrons. The Contractor shall conduct operations to minimize interference with the day-to-day operation of the harbor. The CONTRACTOR shall coordinate with the OWNER and the ENGINEER all interruptions of utility service, all required moorage relocations and any other WORK that may affect harbor patrons a minimum of 48 hours in advance or longer as specified elsewhere in the Contract Documents.

1.9 PROJECT MEETINGS

- A. Pre-Construction Conference
 - 1. Prior to the commencement of WORK at the site, a Pre-Construction Conference will be held at a mutually agreed time and place which shall be attended by the CONTRACTOR's Project manager, its superintendent, and its Subcontractors as the CONTRACTOR deems appropriate. Other attendants will be:
 - a. ENGINEER and the Inspector.
 - b. Representatives of OWNER.
 - c. Governmental representatives as appropriate.
 - d. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
 - 2. Unless previously submitted to the ENGINEER, the CONTRACTOR shall bring one copy each of the following:

SECTION 01010 – SUMMARY OF WORK

- a. Plan of Operation.
 - b. Project CPM Schedule in GANTT bar chart format.
 - c. Project cash flow assessment.
 - d. Procurement schedule of major equipment and materials and items requiring long lead time.
 - e. Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.
 - f. Name and telephone number of CONTRACTOR's Project Supervisor.
3. The purpose of the Pre-Construction Conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the CONTRACTOR prior to the meeting date.
4. The CONTRACTOR should be prepared to discuss all of the items listed below:
- a. Status of CONTRACTOR's insurance and bonds.
 - b. CONTRACTOR's tentative schedules.
 - c. Transmittal, review, and distribution of CONTRACTOR's Submittals.
 - d. Processing applications for payment.
 - e. Maintaining record documents.
 - f. Critical Work sequencing.
 - g. Field decisions and Change Orders.
 - h. Use of Project site, office and storage areas, security, housekeeping, and OWNER's needs.
 - i. Major equipment deliveries and priorities.
 - j. CONTRACTOR's assignments for safety and first aid.
5. The OWNER will preside at the Pre-Construction Conference and will arrange for keeping and distributing the minutes to all persons in attendance.
6. The CONTRACTOR and its Subcontractors should plan on the conference taking no less than 2 hours. The items listed in paragraph 3 will be covered as well as reviewing the Plans and Specifications, in extensive detail, with the ENGINEER and the OWNER.
- B. Progress Meetings
1. The CONTRACTOR shall schedule and hold regular on-site progress meetings at least weekly and at other times as requested by the ENGINEER, or as required by progress of the WORK. The CONTRACTOR, ENGINEER, and all Subcontractors active on the site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its Suppliers, Manufacturers, and other Subcontractors.

SECTION 01010 – SUMMARY OF WORK

2. The ENGINEER shall preside at the meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings will be to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems that may develop. During each meeting, the CONTRACTOR is required to present any issues that may impact its WORK, with a view to resolve these issues expeditiously.

1.10 DEFINITIONS APPLICABLE TO TECHNICAL SPECIFICATIONS. The following words have the meaning defined in the Technical Portions of the WORK:

- A. Furnish: means to supply and deliver to the site, to unload and unpack ready for assembly, installation, testing, and start-up.
- B. Indicated: a word used to direct the CONTRACTOR to information contained on the drawings or in the Specifications. Terms such as "shown," "noted," "scheduled," and "specified" also may be used to assist in locating information but no limitation of location is implied or intended
- C. Install: defines operations at the site including; assembly, erection, placing, anchoring, applying, shaping to dimension, finishing, curing, protecting, and cleaning, that prepare items in the manner intended by the Contract Documents for the OWNER's use.
- D. Installer: a person or firm engaged by the CONTRACTOR or its Subcontract or any Subcontractor for the performance of installation, erection, or application work at the site. Installers must be expert in the operations they are engaged to perform.
- E. Provide: is defined as furnish and install, ready for the intended use.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01025 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

- A. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of WORK being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).
- B. No separate payment shall be made for any WORK item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenant items of WORK.
- C. In addition to other incidental items of WORK listed elsewhere in the contract, the following items shall also be considered as incidental to other items of WORK under this contract:
 - 1. Removal and replacement of survey monuments and markers disturbed during construction, whether shown on the Plans or not.
 - 2. Re-vegetating areas disturbed during construction.
 - 3. Trench excavation and bedding as required for all piping, structures, and vault installations.
 - 4. Erosion and pollution control in accordance with local, state and federal standard, including floating sediment booms.
 - 5. Temporary shoring of trenches or bracing of existing facilities as required for constructing any/all improvements.
 - 6. Maintenance of all services through the Project area, including water, storm, garbage pickup, mail delivery, other deliveries and emergency vehicles.
 - 7. All traffic control, including flaggers and preparation of satisfactory Traffic Control Plans.
 - 8. Minor grading of fill materials as required to match existing grades and maintain positive surface drainage.
 - 9. Minor changes in grades to fit field conditions.
 - 10. Miscellaneous connecting and attachment hardware as required installing new equipment.
 - 11. Excavating, bedding, and backfilling for all utilities and structures.
 - 12. Concrete collars required around manhole structures as shown in the Plans and Standard Details.
 - 13. Pile splices required to make up the pile lengths shown in the pile schedule.
 - 14. Accommodating the OWNER's salvage operations as required.
 - 15. Coordination with trash and utility services as required.
 - 16. Procurement, installation and finishing of all concrete form liners and associated concrete work.

PART 2 – PAY ITEMS

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01025 – MEASUREMENT AND PAYMENT

- 1.1 MOBILIZATION (Pay Item Nos. 1505.1, 1505.1-A, 1501.1-B, 1505.1-C, 1505.1-D) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Mobilization shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Mobilization under shall be made at the amount shown on the Bid Schedule under Pay Item No. 1505.1, which payment shall constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.
 - C. Payment for Mobilization under shall be made at the amount shown on the Additive Alternate A under Pay Item No. 1505.1-A, which payment shall constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.
 - D. Payment for Mobilization under shall be made at the amount shown on the Additive Alternate B under Pay Item No. 1505.1-B, which payment shall constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.
 - E. Payment for Mobilization under shall be made at the amount shown on the Additive Alternate C under Pay Item No. 1505.1-C, which payment shall constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.
 - F. Payment for Mobilization under shall be made at the amount shown on the Additive Alternate D under Pay Item No. 1505.1-D, which payment shall constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.
 - G. Partial payments shall be made as the WORK progresses as follows:
 - 1. When 5% of the total original contract amount is earned from other pay items, 50% of the amount bid for Mobilization, or 5% of the original contract amount, whichever is lesser, shall be paid.
 - 2. When 10% of the total original contract amount is earned from other pay items, 95% of the amount bid for Mobilization, or 10% of the original Contract amount, whichever is lesser, shall be paid.
 - 3. Upon completion of all WORK on the Project, payment of any remaining amount bid for Mobilization shall be paid.
- 1.2 EROSION AND SEDIMENT CONTROL – UPLAND MEASURES AND MONITORING (Pay Item No. 1570.1) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Erosion and Sediment Control shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this Pay Item includes obtaining all necessary permits for storm water control as required by Alaska Department of Conservation and the Environmental Protection Agency. This includes Storm Water Pollution Prevention Plan preparation and maintenance as required and obtaining an Alaska Construction General Permit. Furnishing, installing and maintaining all measures required by these permits shall be included under this pay item.

SECTION 01025 – MEASUREMENT AND PAYMENT

- C. Payment for Erosion and Sediment Control shall be made at the amount shown on the Bid Schedule under Pay Item No. 1570.1, which payment shall constitute full compensation for all WORK described in Section 01570 - Erosion and Sediment Control, as shown on the Plans and as directed by the ENGINEER.
- 1.3 SILT CONTAINMENT BOOM WITH NAVIGATION LIGHTS (Pay Item No. 1570.2) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for payment for Silt Containment Boom shall be per actual linear foot installed, complete in place, including navigation lights, continuing maintenance of silt boom, continuing maintenance of navigation lights and other miscellaneous appurtenances, all in accordance with the requirement of the Contract Documents.

Payment for Silt Containment Boom shall be made at the amount shown on the Bid Schedule under Pay Item 1570.2, which payment shall constitute full compensation for all WORK described in Section 02882 – Silt Containment Boom, as shown on the Plans and as directed by the ENGINEER.

DIVISION 2 – SITE WORK

- 2.1 DEMOLITION, SALVAGE AND DISPOSAL (Pay Item Nos. 2060.1, 2060.1-A) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Demolition, Salvage and Disposal shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents and as shown on the Plans.
 - B. Payment for Demolition, Salvage and Disposal shall be made at the amount shown on the Bid Schedule under Pay Item No. 2060.1, which payment shall constitute full compensation for all WORK described in Section 02060 - Demolition and Disposal, as shown on the Plans, and as directed by the ENGINEER.
 - C. Payment for Demolition, Salvage and Disposal shall be made at the amount shown on the Additive Alternate A under Pay Item No. 2060.1-A, which payment shall constitute full compensation for all WORK described in Section 02060 - Demolition and Disposal, as shown on the Plans, and as directed by the ENGINEER.
- 2.2 ASSIST OWNER WITH SEAPLANE FLOAT REMOVAL AND REINSTALLATION (Pay Item No. 2060.2) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Assist Owner with Seaplane Float Removal and Reinstallation shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents and as shown on the plans.
 - B. Payment for Assist Owner with Seaplane Float Removal and Reinstallation shall be made at the amount shown on the Bid Schedule under Pay Item No. 2060.2, which payment shall constitute full compensation for all WORK described in Section 02060 - Demolition and Disposal, as shown on the Plans, and as directed by the ENGINEER.
- 2.3 REMOVE, SALVAGE AND REINSTALL EXISTING LIGHT FIXTURES (Pay Item No. 2060.3-A)
- A. Measurement for payment for Remove, Salvage and Reinstall Existing Light Fixtures shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the Contract Documents and as shown on the plans.

SECTION 01025 – MEASUREMENT AND PAYMENT

- B. Payment for Remove, Salvage and Reinstall Existing Light Fixtures shall be made at the amount shown on the Additive Alternate A under Pay Item No. 2060.3-A, which payment shall constitute full compensation for all WORK described in Section 02060 - Demolition and Disposal, as shown on the Plans, and as directed by the ENGINEER.
- 2.4 CLEARING AND GRUBBING (Pay Item No. 2201.1) PRICE BASED ON QUANTITY, ACRE
- A. Measurement for payment for Clearing and Grubbing shall be based upon the actual acres cleared, complete in place, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this item includes removal and disposal of all trees, tree clusters, stumps, bushes, man-made and natural debris, logs, vegetation, organic layers and other items within the construction limits, as shown or described on the plans.
 - C. Payment for Clearing and Grubbing shall be made at the amount shown on the Bid Schedule under Pay Item No. 2201.1, which payment shall constitute full compensation for all WORK described in Section 02201 – Clearing and Grubbing, as shown in the plans and as directed by the ENGINEER.
- 2.5 CLASS A SHOT ROCK BORROW (Pay Item No. 2202.1) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Class A Shot Rock Borrow shall be based on the number of cubic yards of material in place as determined by the average end area method, based upon final design template neat lines. Where impractical to measure by the average end area method, the ENGINEER may approve other acceptable methods involving three-dimensional measurements.
 - B. Class A Shot Rock Borrow placed outside of the lines, grades and typical sections indicated in the Plans or as directed by the ENGINEER shall not be included in the borrow quantities for pay purposes.
 - C. Payment for Class A Shot Rock Borrow shall be made at the amount shown on the Bid Schedule under Pay Item No. 2202.1, which payment shall constitute full compensation for all WORK described in Section 02202 - Excavation and Embankment, as shown on the Plans and as directed by the ENGINEER.
- 2.6 CLASS B SHOT ROCK BORROW (Pay Item No. 2202.2) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Class B Shot Rock Borrow shall be based on the number of cubic yards of material in place as determined by the average end area method, based upon final design template neat lines. Where impractical to measure by the average end area method, the ENGINEER may approve other acceptable methods involving three-dimensional measurements.
 - B. Class B Shot Rock Borrow placed outside of the lines, grades and typical sections indicated in the Plans or as directed by the ENGINEER shall not be included in the borrow quantities for pay purposes.
 - C. Payment for Class B Shot Rock Borrow shall be made at the amount shown on the Bid Schedule under Pay Item No. 2202.2, which payment shall constitute full compensation for all WORK described in Section 02202 - Excavation and Embankment, as shown on the Plans and as directed by the ENGINEER.
- 2.7 BASE COURSE, GRADING C-1 (Pay Item No. 2204.1) PRICE BASED ON QUANTITY, CUBIC YARD

SECTION 01025 – MEASUREMENT AND PAYMENT

- A. Measurement for payment for Base Course, Grading C-1 shall be based on the number of cubic yards of material in place as determined by the average end area method based on design neat lines. Where impractical to measure by the average end area method, the ENGINEER may approve other acceptable methods involving three-dimensional measurements.
 - B. Base course placed outside of the lines, grades and typical sections indicated in the plans or as directed by the ENGINEER shall not be included in the quantities for pay purposes.
 - C. Payment for Base Course, Grading C-1 shall be made at the amount shown on the Bid Schedule under Pay Item No. 2204.1, which payment shall constitute full compensation for all WORK described in Section 02204 – Base Course, as shown on the plans and as directed by the ENGINEER.
- 2.8 CLASS II ARMOR ROCK (Pay Item Nos. 2205.1, 2205.1-A) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Class II Armor Rock shall be based on the number of cubic yards of material in place as determined by the average end area method, based upon original ground sections and final design template neat lines. Where impractical to measure by the average end area method, the ENGINEER may approve other acceptable methods involving three-dimensional measurements.
 - B. Armor rock placed outside of the lines, grades and typical sections indicated in the Plans or as directed by the ENGINEER shall not be included in the quantities for pay purposes.
 - C. Payment for Class II Armor Rock shall be made at the amount shown on in the Bid Schedule under Pay Item No. 2205.1, which payment shall constitute full compensation for all WORK described in Section 02205 –Armor Rock, as shown on the Plans and as directed by the ENGINEER.
 - D. Payment for Class II Armor Rock shall be made at the amount shown on in the Additive Alternate A under Pay Item No. 2205.1-A, which payment shall constitute full compensation for all WORK described in Section 02205 –Armor Rock, as shown on the Plans and as directed by the ENGINEER.
- 2.9 CLASS III ARMOR ROCK (Pay Item No. 2205.2) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Class III Armor Rock shall be based on the number of cubic yards of material in place as determined by the average end area method, based upon original ground sections and final design template neat lines. Where impractical to measure by the average end area method, the ENGINEER may approve other acceptable methods involving three-dimensional measurements.
 - B. Armor rock placed outside of the lines, grades and typical sections indicated in the Plans or as directed by the ENGINEER shall not be included in the quantities for pay purposes.
 - C. Payment for Class III Armor Rock shall be made at the amount shown on the Bid Schedule under Pay Item No. 2205.2, which payment shall constitute full compensation for all WORK described in Section 02205 –Armor Rock, as shown on the Plans and as directed by the ENGINEER.
- 2.10 FURNISH 16-INCH DIA. HDPE WASTEWATER OUTFALL PIPE (Pay Item No. 2401.1) PRICE BASED ON QUANTITY, LINEAR FOOT

SECTION 01025 – MEASUREMENT AND PAYMENT

- A. Measurement for payment for Furnish 16-Inch Dia. HDPE Wastewater Outfall Pipe shall be per actual linear foot delivered to site or ENGINEER approved storage location, complete, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, and other miscellaneous appurtenances, all in accordance with the requirement of the Contract Documents.
 - B. Payment for Furnish 16-Inch Dia. HDPE Wastewater Outfall Pipe shall be made at the amount shown on the Bid Schedule under Pay Item 2401.1, which payment shall constitute full compensation for all WORK described in Section 02401- Sanitary Sewer Pipe, as shown on the Plans and as directed by the ENGINEER.
- 2.11 INSTALL 16-INCH DIA. HDPE WASTEWATER OUTFALL PIPE STATION 01+50 TO STATION 06+50 (Pay Item No. 2401.2) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 01+50 to Station 06+50 shall be per actual linear foot installed, complete in place, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, trenching, bedding and backfill, and other miscellaneous appurtenances, all in accordance with the requirement of the Contract Documents.
 - B. Payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 01+50 to Station 06+50, shall be made at the amount shown on the Bid Schedule under Pay Item 2401.2, which payment shall constitute full compensation for all WORK described in Section 02401- Sanitary Sewer Pipe, as shown on the Plans and as directed by the ENGINEER.
- 2.12 INSTALL 16-INCH DIA. HDPE WASTEWATER OUTFALL PIPE STATION 06+50 TO STATION 08+25 (Pay Item No. 2401.3) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 6+50 to Station 08+25, shall be per actual linear foot installed, complete in place, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, trenching, bedding and backfill, and other miscellaneous appurtenances, all in accordance with the requirement of the Contract Documents.
 - B. Payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 06+50 to Station 08+25, shall be made at the amount shown on the Bid Schedule under Pay Item 2401.3, which payment shall constitute full compensation for all WORK described in Section 02401- Sanitary Sewer Pipe, as shown on the Plans and as directed by the ENGINEER.
- 2.13 INSTALL 16-INCH DIA. HDPE WASTEWATER OUTFALL PIPE STATION 08+25 TO STATION 26+50 (Pay Item No. 2401.4) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 08+25 to Station 26+50, shall be per actual linear foot installed, complete in place, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, trenching, bedding and backfill, and other miscellaneous appurtenances, all in accordance with the requirement of the Contract Documents.
 - B. Payment for Install 16-Inch Dia. HDPE Wastewater Outfall Pipe Station 08+25 to Station 26+50, shall be made at the amount shown on the Bid Schedule under Pay Item 2401.4, which payment shall constitute full compensation for all WORK described in Section 02401- Sanitary Sewer Pipe, as shown on the Plans and as directed by the ENGINEER.
- 2.14 FURNISH AND INSTALL WASTEWATER OUTFALL DIFFUSER (Pay Item No. 2401.5) PRICE BASED ON LUMP SUM

SECTION 01025 – MEASUREMENT AND PAYMENT

- A. Measurement for payment for Wastewater Outfall Diffuser shall be based upon the actual completion, complete, including all earthwork, concrete collars, frames and covers, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Wastewater Outfall Diffuser shall be made at the amount shown on the Bid Schedule under Pay Item No. 2401.5, which payment shall constitute full compensation for all WORK described in Section 02401- Sanitary Sewer Pipe, as shown in the plans and as directed by the ENGINEER.
- 2.15 CONNECT TO EXISTING 16-INCH DIA. HDPE OUTFALL PIPE (Pay Item No. 2401.6) PRICED BASED ON LUMP SUM
- A. Measurement for payment for Connect to Existing 16-Inch Dia. Outfall Pipe shall be based upon the actual completion, complete, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this item includes Connect to Existing 16-Inch Dia. HDPE Outfall Pipe, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, trenching, bedding and backfill, and other miscellaneous appurtenances.
 - C. Payment for Connect to Existing 16-Inch Dia. Outfall Pipe shall be for the amount shown on the Bid Schedule under Pay Item No. 2401.5, which payment shall constitute full compensation for all WORK described in section 02401 – Sanitary Sewer Pipe, as shown in the plans and as directed by the ENGINEER.
- 2.16 FURNISH AND INSTALL WASTEWATER OUTFALL CONCRETE ANCHOR, TYPE [] (Pay Item Nos. 2402.1, 2402.2) PRICE BASED ON QUANTITY, EACH
- A. Wastewater Outfall Concrete Anchor Type [] shall be measured per each, complete in place, including all earthwork, concrete collars frames and covers all in accordance with the requirements of the Contract Documents.
 - B. Payment for Wastewater Outfall Concrete Anchor Type I shall be made at the amount shown on the Bid Schedule under Pay Item No. 2402.1, which payment shall constitute full compensation for all WORK described in Section 02402 – Sanitary Sewer Manholes and Cleanouts, as shown in the plans and as directed by the ENGINEER.
 - C. Payment for Wastewater Outfall Concrete Anchor Type II shall be made at the amount shown on the Bid Schedule under Pay Item No. 2402.2, which payment shall constitute full compensation for all WORK described in Section 02402 – Sanitary Sewer Pipe Manholes and Cleanouts, as shown in the plans and as directed by the ENGINEER.
- 2.17 [] - INCH [] STORM DRAIN PIPE (Pay Item Nos. 2501.1, 2501.2, 2501.3) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for Payment for []-Inch[] Storm Drain Pipe shall be per actual linear foot installed, complete in place, including all trenching, bedding, backfill, coupling bands, bends and other items necessary for the proper joining of the culvert pipe sections all in accordance with the requirements of the Contract Documents.
 - B. Drain pipes for culverts shall be measured by the staked length, from center to center of structures or to ends of pipe if no structure is present.
 - C. Excavation, bedding and backfill shall not be measured for payment, but shall be considered incidental to other WORK.
 - D. Dissimilar pipe couplings and pipe segments required to connect to existing pipes shall not be measured for payment, but shall be considered incidental to other WORK.

SECTION 01025 – MEASUREMENT AND PAYMENT

- E. Payment for 12” CPEP Storm Drain Pipe shall be made at the amount shown on the Bid Schedule under Pay Item No. 2501.1, which payment shall constitute full compensation for all WORK described in Section 02501 – Storm Sewer Pipe, as shown on the plans and as directed by the ENGINEER.
 - F. Payment for 24” CPEP Storm Drain Pipe shall be made at the amount shown on the Bid Schedule under Pay Item No. 2501.2, which payment shall constitute full compensation for all WORK described in Section 02501 – Storm Sewer Pipe, as shown on the plans and as directed by the ENGINEER.
 - G. Payment for 36” CPEP Storm Drain Pipe shall be made at the amount shown on the Bid Schedule under Pay Item No. 2501.3, which payment shall constitute full compensation for all WORK described in Section 02501 – Storm Sewer Pipe, as shown on the plans and as directed by the ENGINEER.
- 2.18 CLEAN EXISTING STORM DRAIN PIPE TO UPSTREAM MANHOLE (Pay Item No. 2501.4) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Cleaning Existing Storm Drain Pipe to Upstream Manhole shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place, including all incidentals and in accordance with the requirements of the Contract Documents.
 - B. Payment for Cleaning Existing Storm Drain Pipe to Upstream Manhole shall be made at the amount shown in the Bid Schedule under Pay Item No. 2501.4, which payment shall constitute full compensation for all WORK described in Section 02501 – Storm Sewer Pipe, as shown on the Drawings and as directed by the ENGINEER.
- 2.19 CONNECT TO EXISTING STORM DRAIN PIPE (Pay Item No. 2501.5) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Connecting to the Existing Storm Drain Pipe shall be measured per each, complete in place, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this item includes connecting the existing Storm Drain Pipe to the New Storm Drain Pipe, including all fittings, joint restraints, geotextile fabric, clamps, connections, transitions, trenching, bedding and backfill, and other miscellaneous appurtenances.
 - C. Payment for Connecting to the Existing Storm Drain Pipe shall be for the amount shown on the Bid Schedule under Pay Item No. 2501.5, which payment shall constitute full compensation for all WORK described in Section 02501 – Storm Sewer Pipe, as shown in the plans and as directed by the ENGINEER.
- 2.20 STORM DRAIN MANHOLE TYPE [] (Pay Item Nos. 2502.1, 2502.2) PRICE BASED ON QUANTITY, EACH
- A. Storm Drain Manhole Type [] shall be measured per each, complete in place, including all earthwork, concrete collars, frames and covers all in accordance with the requirements of the Contract Documents.
 - B. Payment for Storm Drain Manhole Type I shall be made at the amount shown on the Bid Schedule under Pay Item No. 2502.1, which payment shall constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets, and Catch Basins, as shown in the plans and as directed by the ENGINEER.

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- C. Payment for Storm Drain Manhole Type II shall be made at the amount shown on the Bid Schedule under Pay Item No. 2502.2, which payment shall constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets, and Catch Basins, as shown in the plans and as directed by the ENGINEER.
- 2.21 STORM DRAIN OIL-WATER SEPARATOR (Pay Item No. 2502.3) PRICE BASED ON EACH
- A. Measurement for Payment for Storm Drain Oil-Water Separator shall be based measured per each, complete in place, including all earthwork, bypass pipe, risers, concrete collars, frames and covers all in accordance with the requirements of the Contract Documents.
 - B. Payment for Storm Drain Oil-Water Separator shall be made at the amount shown on the Bid Schedule under Pay Item No. 2502.5, which payment shall constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets, and Catch Basins, as shown in the plans and as directed by the ENGINEER.
- 2.22 STORM DRAIN OUTFALL STRUCTURE (Pay Item No. 2502.4) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Storm Drain Outfall Structure shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place, including all earthwork, piping, concrete work, geotextile fabric, steel grate, check valve, and dissimilar pipe coupling in accordance with the requirements of the Contract Documents.
 - B. Payment for Storm Drain Outfall Structure shall be made at the amount shown on the Bid Schedule under Pay Item No. 2502.4, which payment shall constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets, and Catch Basins, as shown in the plans and as directed by the ENGINEER.
- 2.23 CONSTRUCTION SURVEYING (Pay Item No. 2702.1) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Construction Surveying shall be based on the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Construction Surveying shall be made at the amount shown on the Bid Schedule under Pay Item No. 2702.1, which payment shall constitute full compensation for all WORK described in Section 02702 - Construction Surveying, as shown on the Plans, and as directed by the ENGINEER.
- 2.24 GEOTEXTILE FABRIC (Pay Item No. 2714.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement for payment for Geotextile Fabric shall be measured per square yard, based upon the actual amount of ground surface covered, complete in place. Overlapping area or stitching shall be considered incidental and shall not be measured for payment.
 - B. Geotextile Fabric installed without the direction and approval of the ENGINEER shall not be measured for payment.
 - C. Payment for Geotextile Fabric shall be made at the amount shown on the Bid Schedule under Pay Item No. 2714.1, which payment shall constitute full compensation for all WORK described in Section 02714 – Geotextile Fabric, as shown on the plans and as directed by the ENGINEER.
- 2.25 DREDGING AND OFFSHORE DISPOSAL (Pay Item Nos. 2881.1, 2881.1-A, 2881.1-B) PRICE BASED ON QUANTITY, CUBIC YARD

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- A. Measurement for payment for Dredging and Offshore Disposal, shall be based upon the actual amount of cubic yards dredged and placed at approved disposal site, complete in place.
 - B. Dredging beyond the maximum pay depth shall be considered incidental and shall not be measured for payment.
 - C. All material used to fill dredging beyond the maximum pay depth shall be approved by the ENGINEER. All costs associated with filling to maximum pay depth shall be considered incidental and shall not be measured for payment.
 - D. Payment for Dredging and Offshore Disposal shall be made at the amount shown on the Bid Schedule under Pay Item No. 2881.1, which payment shall constitute full compensation for all WORK described in Section 02881 – Dredging and Disposal, as shown on the plans and as directed by the ENGINEER.
 - E. Payment for Dredging and Offshore Disposal shall be made at the amount shown on the Additive Alternate A under Pay Item No. 2881.1-A, which payment shall constitute full compensation for all WORK described in Section 02881 – Dredging and Disposal, as shown on the plans and as directed by the ENGINEER.
 - F. Payment for Dredging and Offshore Disposal shall be made at the amount shown on the Additive Alternate B under Pay Item No. 2881.1-B, which payment shall constitute full compensation for all WORK described in Section 02881 – Dredging and Disposal, as shown on the plans and as directed by the ENGINEER.
- 2.26 DREDGING AND ONSHORE PLACEMENT AT PARKING AREA (Pay Item No. 2881.2) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Dredging and Onshore Placement at Parking Area shall be based upon the actual amount of cubic yards dredged and placed in uplands parking area, complete in place. Dredging beyond the maximum pay depth shall be considered incidental and shall not be measured for payment.
 - B. Dredging beyond the maximum pay depth shall be considered incidental and shall not be measured for payment.
 - C. All material used to fill dredging beyond the maximum pay depth shall be approved by the ENGINEER. All costs associated with filling to maximum pay depth shall be considered incidental and shall not be measured for payment.
 - D. Payment for Dredging and Onshore Placement at Parking Area shall be made at the amount shown on the Bid Schedule under Pay Item No. 2881.2, which payment shall constitute full compensation for all WORK described in Section 02811 – Dredging and Disposal, as shown on the plans and as directed by the ENGINEER.
- 2.27 FURNISH AND INSTALL WAVE BARRIER PILE, 24-INCH DIA. X 0.500-INCH THICK WITH SHEETPILE WING (Pay Item Nos. 2896.1, 2896.1-C) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Furnish and Install Wave Barrier Pile, 24-Inch Dia. x 0.500-Inch Thick with Sheetpile Wing, shall be based on quantity in place, complete in place, including driving shoes, conical tips, pile caps, galvanizing and Sheetpile Wings.

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- B. Payment for Furnish and Install Wave Barrier Pile, 24-Inch Dia. x 0.500-Inch Thick with Sheetpile Wing shall be made at the amount shown on the Bid Schedule under Pay Item 2896.1, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and directed by the ENGINEER.
 - C. Payment for Furnish and Install Wave Barrier Pile, 24-Inch Dia. x 0.500-Inch Thick with Sheetpile Wing shall be made at the amount shown on the Additive Alternate C under Pay Item 2896.1-C, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and directed by the ENGINEER.
- 2.28 FURNISH [] PILE []-INCH DIA.X []-INCH THICK (Pay Item Nos. 2896.2, 2896.3, 2896.3-C) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Furnish [] pile, []-Inch Dia. x []-Inch Thick shall be measured by linear foot furnished complete including driving shoes, conical tips, pile caps and galvanizing furnished by the CONTRACTOR in the lengths indicated on the Plans.
 - B. Payment for Furnish Work Float Pile, 24-Inch Dia. x 0.500-Inch Thick shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.2, which payment shall constitute full compensation for all WORK described in Section 02896 - Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.
 - C. Payment for Furnish Bearing Pile, 30-Inch Dia. x 0.750-Inch Thick Steel Pipe Pile shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.3, which payment shall constitute full compensation for all WORK described in Section 02896 - Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.
 - D. Payment for Furnish Bearing Pile, 30-Inch Dia. x 0.750-Inch Thick Steel Pipe Pile shall be made at the amount shown on the Additive Alternate C under Pay Item No. 2896.3-C, which payment shall constitute full compensation for all WORK described in Section 02896 - Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.
- 2.29 INSTALL [] PILE []-INCH DIA. X []-INCH THICK (Pay Item Nos. 2896.4, 2896.5, 2896.5-C) PRICE BASED ON QUANTITY, EACH
- A. Measurement for Payment for Install []-Inch Dia. Steel Pipe Pile shall be measured per each, complete in place, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Install Work Float Pile, 24-Inch Dia. x 0.500-Inch Thick shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.4, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
 - C. Payment for Install Bearing Pile, 30-Inch Dia. x 0.750-Inch Thick shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.5, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
 - D. Payment for Install Bearing Pile, 30-Inch Dia. x 0.750-Inch Thick shall be made at the amount shown on the Additive Alternate C under Pay Item No. 2896.5-C, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.30 SPIN FIN[®], 30-INCH DIA. PILE (Pay Item Nos. 2896.6, 2896.6-C) PRICE BASED ON QUANTITY, EACH

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- A. Measurement for Payment for SPIN FIN[®], 30-Inch Dia. Pile shall be measured per each, complete in place, all in accordance with the requirements of the Contract Documents.
 - B. Payment for SPIN FIN[®], 30-Inch Dia. Pile shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.6, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
 - C. Payment for SPIN FIN[®] Pile Tip, 30-Inch Dia. Pile shall be made at the Unit Price named in the Additive Alternate C under Pay Item No. 2896.6-C, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.31 FIELD SPLICE WORK FLOAT PILE, 24-INCH DIA. (Pay Item No. 2896.7) PRICE BASED ON QUANTITY, EACH
- A. Field Splice Work Float Pile, 24-Inch Dia. is a contingent item of WORK to be used in the event field splicing of piles is necessary due to unforeseen site conditions that require piles to be extended in the field. Measurement for payment for Field Splice Work Float Pile, 24-Inch Diameter shall be measured per each, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Field Splice Work Float Pile, 24-Inch Dia. shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.7, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.32 FIELD INSTALL CUTTING SHOE, 24-INCH DIA. (Pay Item No. 2896.8) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Field Install Cutting Shoe, 24-Inch Dia. shall be measured per each, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Field Install Cutting Shoe, 24-Inch Dia. shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.8, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.33 FURNISH TRANSIENT FLOAT PILE, 12.75-INCH DIA. X 0.500-INCH THICK (Pay Item No. 2896.9-A) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Furnish Transient Float Pile, 12.75-Inch Dia. x 0.500-Inch Thick shall be measured by linear foot furnished complete including driving shoes, conical tips, pile caps and galvanizing furnished by the CONTRACTOR in the lengths indicated on the Plans.
 - B. Payment for Furnish Transient Float Pile, 12.75-Inch Dia. x 0.500-Inch Thick Steel Pipe Pile shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.9-A, which payment shall constitute full compensation for all WORK described in Section 02896 - Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.
- 2.34 INSTALL TRANSIENT FLOAT PILE, 12.75-INCH DIA. X 0.500-INCH THICK (Pay Item No. 2896.10-A) PRICE BASED ON QUANTITY, EACH
- A. Measurement for Payment for Install Transient Float Pile, 12.75-Inch Dia. x 0.500-Inch Thick shall be measured per each, complete in place, all in accordance with the requirements of the Contract Documents.

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- B. Payment for Install Transient Float Pile, 12.75-Inch Dia. x 0.500-Inch Thick shall be made at the amount shown on the Bid Schedule under Pay Item No. 2896.10-A, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.35 FIELD SPLICE TRANSIENT FLOAT PILE, 12.75-INCH DIA. (Pay Item No. 2896.11-A) PRICE BASED ON QUANTITY, EACH
- A. Field Splice Transient Float Pile, 12.75-Inch Dia. is a contingent item of WORK to be used in the event field splicing of piles is necessary due to unforeseen site conditions that require piles to be extended in the field. Measurement for payment for Field Splice Transient Float Pile, 12.75-Inch Diameter shall be measured per each, complete, all in accordance with the requirements of the Contract Documents.
- B. Payment for Field Splice Transient Float Pile, 12.75-Inch Dia. shall be made at the Unit Price named in the Additive Alternate A under Pay Item No. 2896.11-A, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.36 FIELD INSTALL CUTTING SHOE, 12.75-INCH DIA. PILE (Pay Item No. 2896.12-A) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Field Install Cutting Shoe, 12.75-Inch Dia. Pile shall be measured per each, complete, all in accordance with the requirements of the Contract Documents.
- B. Payment for Field Install Cutting Shoe, 12.75-Inch Dia. Pile shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.12-A, which payment shall constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans, and as directed by the ENGINEER.
- 2.37 FURNISH AND INSTALL BARRIER WALER (Pay Item Nos. 2901.1, 2901.1-C) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Measurement for payment for Furnish and Install Barrier Waler shall be per actual linear foot installed, complete in place, including all attachment hardware and components, all in accordance with the requirements of the Contract Documents.
- B. Payment for Furnish and Install Barrier Waler shall be made at the amount shown on the Bid Schedule under Pay Item No. 2901.1, which payment shall constitute full payment for all WORK described in Section 02901 – Wave Barrier, as shown on the plans and as directed by the ENGINEER.
- C. Payment for Furnish and Install Barrier Waler shall be made at the amount shown on the Additive Alternate C under Pay Item No. 2901.1-C, which payment shall constitute full payment for all WORK described in Section 02901 – Wave Barrier, as shown on the plans and as directed by the ENGINEER.
- 2.38 FURNISH AND INSTALL BEARING CAPS AND CONNECTIONS (Pay Item Nos. 2901.2, 2901.2-C) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Furnish and Install Bearing Caps and Connections shall be per each installed, complete in place, including all attachment hardware and components, all in accordance with the requirements of the Contract Documents.

SECTION 01025 – MEASUREMENT AND PAYMENT

- B. Payment for Furnish and Install Bearing Caps and Connections shall be made at the amount shown on the Bid Schedule under Pay Item No. 2901.2, which payment shall constitute full payment for all WORK described in Section 02901 – Wave Barrier, as shown on the plans and as directed by the ENGINEER.
 - C. Payment for Furnish and Install Bearing Caps and Connections shall be made at the amount shown on the Additive Alternate C under Pay Item No. 2901.2-C, which payment shall constitute full payment for all WORK described in Section 02901 – Wave Barrier, as shown on the plans and as directed by the ENGINEER.
- 2.39 WAVE BARRIER AMENITIES – FENDERS, LIGHT, ARMOR EXCAVATION, MISC. (Pay Item No. 2901.3) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Wave Barrier Amenities – Fenders, Light, Armor Excavation, Misc. shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, in accordance with the requirements of the Contract Documents.
 - B. Payment for Wave Barrier Amenities – Fenders, Light, Armor Excavation, Misc. shall be made at the amount shown on the Bid Schedule under Pay Item No. 2901.3, which payment shall constitute full compensation for all WORK described in Section 02901 – Wave Barrier, as shown on the Plans and as directed by the ENGINEER.
- 2.40 SUPPLY ANODE (Pay Item No. 2996.1-D) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Supply Anode shall be per each, based upon the actual number of anodes supplied and delivered to the site, complete, including mounting tabs and aluminum anode, all in accordance with the requirements of the Contract Documents and as shown on the Plans.
 - B. Payment for Supply Anode under Additive Alternate D shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2996.1-D, which payment shall constitute full compensation for all WORK described in Section 02996 - Pile Anodes, as shown on the Plans and as directed by the ENGINEER.
- 2.41 INSTALL ANODE (Pay Item No. 2996.2-D) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment for Install Anode shall be per each, complete in place, all in accordance with the requirements of the Contract Documents, and as shown on the Plans.
 - B. Payment for Install Anode under Additive Alternate D shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2996.2-D, which payment shall constitute full compensation for all WORK described in Section 02996 - Pile Anodes, as shown on the Plans and as directed by the ENGINEER.
- 2.42 FIELD PHOTOS, CONTINUITY, POTENTIAL READINGS AND REPORT (Pay Item No. 2996.3-D) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Field Photos, Continuity, Potential Readings and Report shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Field Photos, Continuity, Potential Readings and Report under Additive Alternate D shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2996.3-D, which payment shall constitute full compensation for all WORK described in Section 2996 – Pile Anodes, as shown on the plans and as directed by the ENGINEER.

SECTION 01025 – MEASUREMENT AND PAYMENT

END OF SECTION

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 DEFINITION

- A. "Cutting and Patching" is defined to include the cutting and patching of nominally completed and previously existing concrete, steel, wood and miscellaneous metal structures; piping and pavement, in order to accommodate the coordination of WORK, or the installation of other facilities or structures or to uncover other facilities and structures for access or inspection, or to obtain samples for testing, or for similar purposes.

1.2 REQUIREMENTS OF STRUCTURAL WORK

- A. Structural WORK shall not be cut and patched in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.
- B. Prior to cutting and patching the following categories of WORK, the CONTRACTOR shall obtain the ENGINEER's approval to proceed with:
 - 1. Structural steel
 - 2. Miscellaneous structural metals, including equipment supports, stair systems and similar categories of work
 - 3. Structural concrete
 - 4. Foundation construction including piles
 - 5. Timber and primary wood framing and bullrails
 - 6. Bearing and retaining walls
 - 7. Structural decking
 - 8. Pressurized piping, vessels and equipment
 - 9. Asphalt pavement, concrete or asphalt curb/gutter, and concrete sidewalk
 - 10. Concrete or timber floats

1.3 OPERATIONAL AND SAFETY LIMITATIONS

- A. The CONTRACTOR shall not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
- B. Prior to cutting and patching the following categories of WORK, the CONTRACTOR shall obtain the ENGINEER's approval to proceed with:
 - 1. Sheeting, shoring and cross bracing
 - 2. Operating systems and equipment
 - 3. Water, moisture, vapor, air, smoke barriers, membranes and flashing
 - 4. Noise and vibration control elements and systems
 - 5. Control, communication, conveying and electrical wiring systems

1.4 VISUAL REQUIREMENTS

- A. The CONTRACTOR shall not cut and patch WORK which is exposed on the exterior or exposed in occupied spaces, in a manner resulting in a reduction of visual qualities or

SECTION 01045 - CUTTING AND PATCHING

resulting in substantial evidence of the cut and patch work, both as judged solely by the ENGINEER. The CONTRACTOR shall remove and replace WORK judged by the ENGINEER to have been cut and patched in a visually unsatisfactory manner.

1.5 APPROVALS

- A. Where prior approval of cutting and patching is required, the CONTRACTOR shall submit the request and obtain approval prior to performing the WORK. The request should include a description of why cutting and patching cannot reasonably be avoided; how it will be performed; how structural elements (if any) will be reinforced; products to be used; firms and tradespeople who will perform the WORK; approximate dates of the WORK; and anticipated results in terms of structural, operational, and visual variations from the original WORK.

PART 2 - PRODUCTS

2.1 MATERIALS USED IN CUTTING AND PATCHING

- A. Except as otherwise indicated, the CONTRACTOR shall provide materials for cutting and patching which will result in equal-or-better WORK than the WORK being cut and patched, in terms of performance characteristics and including visual effects where applicable. The CONTRACTOR shall use material identical with the original materials where feasible.
- B. Materials shall comply with the requirements of the Technical Specifications wherever applicable.

PART 3 - EXECUTION

3.1 PREPARATION

- A. The CONTRACTOR shall provide adequate temporary support for WORK to be cut to prevent failure.
- B. The CONTRACTOR shall provide adequate protection of other WORK during cutting and patching.

3.2 INSTALLATION

- A. The CONTRACTOR shall employ skilled tradespeople to perform cutting and patching. Except as otherwise indicated, the CONTRACTOR shall proceed with cutting and patching at the earliest feasible time and perform the WORK promptly.
- B. The CONTRACTOR shall use methods least likely to damage WORK to be retained and WORK adjoining.
 1. In general, where physical cutting action is required, the CONTRACTOR shall cut WORK with sawing and grinding tools, not with hammering and chopping tools. Openings through concrete work shall be core-drilled and all final edges shall be ground smooth to prevent wear.

SECTION 01045 - CUTTING AND PATCHING

2. Comply with the requirements of Technical Specifications wherever applicable.
 3. Comply with the requirements of applicable sections of Division 2 where cutting and patching requires excavation and backfill.
- C. The CONTRACTOR shall patch with seams which are as invisible as possible and comply with specified tolerances for the WORK.
- D. The CONTRACTOR shall restore exposed seams of patched area; and, where necessary, extend finish restoration onto retained WORK adjoining, in a manner which will eliminate evidence of patching.

END OF SECTION

SECTION 01070 - ACRONYMS OF INSTITUTIONS

PART 1 - GENERAL

1.1 GENERAL

- A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these Specifications, the following acronyms which may appear in these Specifications shall have the meanings indicated herein.

1.2 ACRONYMS

AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABS	American Bureau of Shipping
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
ATM	Alaska Test Methods
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International

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BHMA	Builders Hardware Manufacturer's Association
CBM	Certified Ballast Manufacturers
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
DCDMA	Diamond Core Drill Manufacturer's Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
FPL	Forest Products Laboratory
HI	Hydronics Institute
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IOS	International Organization for Standardization
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturer's Association
MPTA	Mechanical Power Transmission Association
MTI	Marine Testing Institute
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NLGI	National Lubricating Grease Institute
NMA	National Microfilm Association
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SMA	Screen Manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPIB	Southern Pine Inspection Bureau
SPR	Simplified Practice Recommendation
SSA	Swedish Standards Association
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction

SECTION 01070 - ACRONYMS OF INSTITUTIONS

TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WIC	Woodwork Institute of California
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01090 - REFERENCE STANDARDS

PART 1 - GENERAL

1.1 GENERAL

- A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for Bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable Laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- C. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the Specifications, all WORK specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents.
 - 1. References herein to "Building Code" or "International Building Code" shall mean International Building Code of the International Code Council (ICC).
 - 2. Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for Bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.
 - 3. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarification and

SECTION 01090 - REFERENCE STANDARDS

directions prior to ordering or providing any materials or furnishing labor. The CONTRACTOR shall Bid for the most stringent requirements.

- B. The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.
- C. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- D. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01300 – CONTRACTOR SUBMITTALS

PART 1 – GENERAL

1.1 GENERAL

- A. Wherever submittals are required hereunder, all such submittals shall be submitted to the ENGINEER by the CONTRACTOR.
- B. In all instances where paper copies are required herein the CONTRACTOR may provide a single digital copy in PDF format upon ENGINEER and OWNER approval.
- C. Within 14 Days after the date of commencement as stated in the Notice To Proceed, the CONTRACTOR shall submit the following items to the ENGINEER for review:
 - 1. A preliminary schedule of Shop Drawings, sample, and proposed substitutes or “or-equal” submittals.
 - 2. A list of all permits and licenses the CONTRACTOR shall obtain indicating the agency required to grant the permit and the expected date of submittal for the permit and required date for receipt of the permit.
 - 3. A complete progress schedule for all phases of the Project.
 - 4. Material Safety Data Sheets on products used on the Project.
 - 5. A traffic maintenance plan, as required.
 - 6. A plan for temporary erosion control and pollution control, as required.
 - 7. A letter designating the CONTRACTOR’s Superintendent, defining that person’s responsibility and authority.
 - 8. A letter designating the CONTRACTOR’s safety representative and the Equal Employment Opportunity (EEO) Officer and that person’s responsibility and authority.
 - 9. Individual Mining Plan shall be submitted and approved, by CBJ Engineering, prior to any materials extraction from the CBJ/State Lemon Creek Gravel Pit.
- D. No payments shall be made to the CONTRACTOR until all of these items are submitted in their entirety, as determined by the ENGINEER.

1.2 SHOP DRAWING SUBMITTAL

- A. Wherever called for in the Contract Documents, or where required by the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER, for review, eight (8) copies of each Shop Drawing submittal. The term “Shop Drawings” as used herein shall be understood to include detail design calculations, Shop Drawings, fabrication drawings, installation drawings, erection drawings, lists, graphs, operating instructions, catalog sheets, data sheets, and similar items.
- B. All Shop Drawing submittals shall be accompanied by the CONTRACTOR’s standard submittal transmittal form. Any submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for re-submittal.
- C. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer’s “package” or are so functionally related that

SECTION 01300 – CONTRACTOR SUBMITTALS

expediency indicates review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the ENGINEER.

- D. Except as may otherwise be provided herein, the ENGINEER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within 30 calendar days following receipt of them by the ENGINEER. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the ENGINEER by the second submission of a submittal item. The OWNER reserves the right to withhold monies due to the CONTRACTOR to cover additional costs of the ENGINEER's review beyond the second submittal. The ENGINEER's maximum review period for each submittal including all re-submittals will be 30 days per submission. In other works, for a submittal that requires two re-submittals before it is complete, the maximum review period for that submittal could be 90 days.
- E. If three (3) copies of a submittal are returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision and resubmission of said submittal will not be required.
- F. If three (3) copies of a submittal are returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal revision and resubmission of said submittal is not required.
- G. If one (1) copy of the submittal is returned to the CONTRACTOR marked "AMEND-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.
- H. If one (1) copy of the submittal is returned to the CONTRACTOR marked "REJECTED-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.
- I. Fabrication of an item may be commenced only after the ENGINEER has reviewed the pertinent submittal and returned copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the Contract requirements only a Change Order can alter the Contract Price, Contract Time, or Specifications.
- J. All CONTRACTOR Shop Drawing submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR, prior to submission to the ENGINEER. Each submittal shall be dated, signed, and certified by the CONTRACTOR, as being correct and in strict conformance with the Contract Documents. In the case of Shop Drawings, each sheet shall be dated, signed, and certified. No consideration for review by the ENGINEER of any CONTRACTOR submittal will be made for any items which have not been so certified by the CONTRACTOR. All non-certified submittals will be returned to the CONTRACTOR without action taken by the ENGINEER, and any delays caused by thereby shall be the total responsibility of the CONTRACTOR.

SECTION 01300 – CONTRACTOR SUBMITTALS

- K. The ENGINEER's review of CONTRACTOR Shop Drawing submittals shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in CONTRACTOR submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.

1.3 SAMPLES SUBMITTAL

- A. Whenever in the Specifications samples are required, the CONTRACTOR shall submit not less than three (3) samples of each item or material to the ENGINEER for acceptance at not additional cost to the OWNER.
- B. Samples, as required herein, shall be submitted for acceptance a minimum of 21 days prior to ordering such material for delivery to the job site, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the WORK.
- C. All samples shall be individually and indelibly labeled or tagged indicating thereon all specified physical characteristics and supplier's names for identification and submitted to the ENGINEER for acceptance. Upon receiving acceptance of the ENGINEER, one (1) set of the samples will be stamped and dated by the ENGINEER and returned to the CONTRACTOR, and one (1) set of samples will be retained by the ENGINEER, and one (1) set of samples shall remain at the job site until completion of the WORK.
- D. Unless clearly stated otherwise, it is assumed that all colors and textures of specified items presented in sample submittal are from the manufacturer's standard colors and standard materials, products, or equipment lines. If the samples represent non-standard colors, materials, products or equipment lines, and their selection will require an increase in Contract Time or Contract Price, the CONTRACTOR will clearly indicate this on the transmittal page of the submittal.

1.4 OPERATIONS AND MAINTENANCE MANUAL SUBMITTAL

- A. The CONTRACTOR shall include in the Operations and Maintenance Manuals for each item of mechanical, electrical, and instrumentation equipment, the following:
 - 1. Complete operating instructions, including location of controls, special tools or other equipment required, related instrumentation, and other equipment needed for operation.
 - 2. Lubrication schedules, including the lubricant SAE grade and type, temperature range of lubricants, and including frequency of required lubrication.
 - 3. Preventive maintenance procedures and schedules.
 - 4. Parts lists, by generic title and identification number, complete, with exploded views of each assembly.
 - 5. Disassembly and reassembly instructions.
 - 6. Name and location of nearest supplier and spare parts warehouse.
 - 7. Recommended troubleshooting and startup procedures.
 - 8. Reproducible prints of the record Drawings, including diagrams and schematics, as required under the electrical and instrumentation portions of these Specifications.

SECTION 01300 – CONTRACTOR SUBMITTALS

9. Tabulation of proper settings for all pressure relief valves, (low/high) pressure switches and other related equipment protection devices.
 10. Detailed test procedures to determine performance efficiency of equipment.
 11. List of all electrical relay settings including alarm and contract settings.
- B. The CONTRACTOR shall furnish to the ENGINEER five identical sets of technical manuals. Each set shall consist of one or more volumes, each of which shall be bound in a standard size, 3-ring, loose-leaf vinyl plastic hard cover binder suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches. A table of contents shall be provided which indicates all equipment in the technical manuals.
- C. All technical manuals shall be submitted complete and in final form to the ENGINEER prior to the requests for final payment.
- D. Incomplete or unacceptable Operations and Maintenance Manuals shall constitute sufficient justification to withhold payment for WORK completed.

1.5 SPARE PARTS LIST SUBMITTAL

- A. The CONTRACTOR shall furnish to the ENGINEER five (5) identical sets of spare parts information for all mechanical, electrical, and instrumentation equipment. The spare parts list shall include the current list price of each spare part. The spare parts list shall be limited to those spare parts which each manufacturer recommends be maintained by the OWNER in the inventory at the plant site. Each manufacturer or supplier shall indicate the name, address, and telephone number of its nearest outlet of spare parts to facilitate the OWNER in ordering. The CONTRACTOR shall cross-reference all spare parts lists to the equipment numbers designated in the Contract Documents. The spare parts lists shall be bound in standard size, 3-ring, loose leaf, vinyl plastic hard cover binders suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches.

1.6 RECORD DRAWINGS SUBMITTALS

- A. The CONTRACTOR shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or directed to indicate, fully, the WORK as actually constructed. These master record Drawings, of the CONTRACTOR's representation of as-built conditions, including all revisions made necessary by Addenda, Change Orders, and the like shall be maintained up-to-date during the progress of the WORK.
- B. In the case of those Drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by Change Order Drawings or final Shop Drawings, and by including appropriate reference

SECTION 01300 – CONTRACTOR SUBMITTALS

information describing the Change Orders by number and the Shop Drawings by manufacturer, Drawing, and revision numbers.

- C. Record drawings shall be accessible to the ENGINEER at all times during the construction period and shall be delivered to the ENGINEER on the 20th working day of every third month after the month in which the Notice to Proceed is given as well as upon completion of the WORK.
- D. Final payment will not be acted upon until the CONTRACTOR-prepared Record Drawings have been delivered to the ENGINEER.

1.7 PROGRESS SCHEDULES

- A. The progress schedule shall be in Bar Chart or Critical Path Method (CPM) form as required by the ENGINEER.
- B. The progress schedule shall show the order in which the CONTRACTOR proposes to carry out the WORK and the contemplated date on which the CONTRACTOR and their Subcontractors will start and finish each of the salient features of the WORK, including any scheduled periods of shutdown. The schedule shall also indicate any anticipated periods of multiple-shift WORK.
- C. Upon substantial changes to the CONTRACTOR's progress schedule of work or upon request of the ENGINEER, the CONTRACTOR shall submit a revised progress schedule(s) in the form required. Such revised schedule(s) shall conform with the contract time and take into account delays which may have been encountered in the performance of the WORK. In submitting a revised schedule, the CONTRACTOR shall state specifically the reason for the revision and the adjustments made in his schedule or methods of operation to ensure the completion of all the WORK within the contract time.

1.8 PROPOSED SUBSTITUTES OR "OR-EQUAL" ITEM SUBMITTAL

- A. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and equality required. If the name is followed by the words "or-equal" indicating that a substitution is permitted, materials or equipment of other suppliers may be accepted by the ENGINEER if sufficient information is submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named, subject to the following requirements:
 - 1. The burden of proof as to the type, function, and quality of any such substitute material or equipment shall be upon the CONTRACTOR.
 - 2. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitute material or equipment and the ENGINEER's decision shall be final.
 - 3. The ENGINEER may require the CONTRACTOR, to furnish at the CONTRACTOR's expense, additional data about the proposed substitute.

SECTION 01300 – CONTRACTOR SUBMITTALS

4. The OWNER may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.
 5. Acceptance by the ENGINEER of a substitute item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item.
 6. The CONTRACTOR shall be responsible for resultant changes and all additional costs which the accepted substitution requires in the CONTRACTOR's WORK, the WORK of its Subcontractors and of other contractors, and shall effect such changes without cost to the OWNER. This shall include the cost for redesign and claims of other Contractor affected by the resulting change.
- B. The procedure for review by the ENGINEER will include the following:
1. If the CONTRACTOR proposes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the ENGINEER on the "Substitution Request Form" for acceptance thereof.
 2. Unless otherwise provided by law or authorized in writing by the ENGINEER, the "Substitution Request Form(s)" shall be submitted within the 21-day period after Notice To Proceed.
 3. Wherever a proposed substitute material or equipment has not been submitted within said 21-day period, or wherever the submission of a proposed substitute material or equipment has been judged to be unacceptable by the ENGINEER, the CONTRACTOR shall provide material or equipment named in the Contract Documents.
 4. The CONTRACTOR shall certify that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified, and be suited to the same use as that specified.
 5. The ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. In no case will this reasonable time period be less than 30 days.
 6. As applicable, no Shop Drawing submittals will be made for a substitute item nor will any substitute item be ordered, installed, or utilized without the ENGINEER's prior written acceptance of the CONTRACTOR's "Substitution Request Form" which will be evidenced by a Change Order.
 7. The ENGINEER will record the time required by the ENGINEER in evaluating substitutions proposed by the CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute, the CONTRACTOR shall reimburse the OWNER for the charges of the ENGINEER for evaluating each proposed substitute.
- C. The CONTRACTOR's application using the "Substitution Request Form" shall contain the following statements and/or information which shall be considered by the ENGINEER in evaluating the proposed substitution:
1. The evaluation and acceptance of the proposed substitute will not prejudice the CONTRACTOR's achievement of Substantial Completion on time.

SECTION 01300 – CONTRACTOR SUBMITTALS

2. Whether or not acceptance of the substitute for use in the WORK will require a change in any of the Contract Documents to adopt the design to the proposed substitute.
3. Whether or not incorporation or use of the substitute in connection with the WORK is subject to payment of any license fee or royalty.
4. All variations of the proposed substitute for that specified will be identified.
5. Available maintenance, repair, and replacement service and its estimated cost will be indicated.
6. Itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including cost of redesign and claims of other contractors affected by the resulting change.

1.9 MATERIAL CERTIFICATION SUBMITTAL

- A. The ENGINEER may permit the use, prior to sampling, inspection and testing, of certain materials or assemblies when accompanied by manufacturer's material certifications stating that such materials or assemblies fully comply with the requirements of the Contract. The certification shall be signed by the manufacturer, and will specifically reference the material's compliance with the AASHTO and/or ASTM Standards specified in the applicable Contract Documents.
- B. Material certifications shall be submitted to the ENGINEER prior to incorporating the item into the WORK.
- C. Materials or assemblies used on the basis of material certifications may be sampled, inspected and/or tested at any time, and if found not in conformity with these specifications, will be subject to rejection whether in place or not.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

(SUBSTITUTION REQUEST FORM - next page)

SECTION 01300 – CONTRACTOR SUBMITTALS

**Haines Borough
SUBSTITUTION REQUEST FORM**

TO: _____ Project: _____

Contract No.: _____

OWNER: _____

SPECIFIED ITEM:

Section	Page	Paragraph	Description
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The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: _____
Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request. Applicable portions of the data are clearly identified.

The undersigned states that the following paragraphs, unless modified on attachments are correct:

1. The proposed substitution does not affect dimensions shown on Drawings and will not require a change in any of the Contract Documents.
2. The undersigned will pay for changes to the design, including engineering design, detailing, and construction costs caused by the requested substitution which is estimated to be \$_____.
3. The proposed substitution will have no adverse affect on other contractors, the construction schedule (specifically the date of substantial completion), or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. The incorporation or use of the substitute in connection with the WORK is not subject to payment of any license fee or royalty.

The undersigned further states that the function, appearance, and quality of the Proposed Substitution are equivalent or superior to the Specified item.

Submitted by CONTRACTOR: _____	Reviewed by ENGINEER _____
Signature _____	<input type="checkbox"/> Accepted <input type="checkbox"/> Accepted as Noted
Firm: _____	<input type="checkbox"/> Not Accepted <input type="checkbox"/> Received Too Late
By: _____	Date: _____
Title: _____	Telephone: _____
Date: _____	
Attachments: _____	

END OF SECTION

SECTION 01400 - QUALITY CONTROL

PART 1 - GENERAL

1.1 DEFINITION

- A. Specific quality control requirements for the WORK are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the WORK beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.2 INSPECTION AT PLACE OF MANUFACTURE

- A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the ENGINEER at the place of manufacture.
- B. The presence of the ENGINEER at the place of manufacturer, however, shall not relieve the CONTRACTOR of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the ENGINEER.

1.3 SAMPLING AND TESTING

- A. Unless otherwise indicated, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, ATM, and AASHTO as applicable to the class and nature of the article or materials considered; however, the OWNER reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the ENGINEER will insure the OWNER that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver by the OWNER of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, shall not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the ENGINEER reserves the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, shall be reasonable cause for the ENGINEER to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

1.4 INSPECTION AND TESTING LABORATORY SERVICE

- A. Inspection and testing laboratory service shall comply with the following:
 - 1. OWNER will appoint, employ, and pay for services of an independent firm to perform inspection and testing or will perform inspection and testing itself unless specific quality control testing is required by the CONTRACTOR under these specifications.

SECTION 01400 - QUALITY CONTROL

2. The ENGINEER will perform inspections as specified in individual specification sections, unless specified otherwise.
3. Reports will be submitted by the independent firm to the ENGINEER in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
4. The CONTRACTOR shall cooperate with the ENGINEER or independent firm and furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
5. The CONTRACTOR shall notify ENGINEER 24 hours prior to the expected time for operations requiring inspection and laboratory testing services.
6. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the ENGINEER. The CONTRACTOR shall bear all costs from such retesting at no additional cost to the OWNER.
7. For samples and tests required for CONTRACTOR'S use, the CONTRACTOR shall make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the CONTRACTOR'S use shall be included in the Contract Price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Inspection: The CONTRACTOR shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation, and reject damaged and defective items.
- B. Measurements: The CONTRACTOR shall verify measurements and dimensions of the WORK, as an integral step of starting each installation.
- C. Manufacturer's Instructions: Where installations include manufactured products, the CONTRACTOR shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

END OF SECTION

SECTION 01505 - MOBILIZATION

PART 1 - GENERAL

1.1 GENERAL

- A. Mobilization shall include the obtaining of all PERMITS; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the WORK. Mobilization shall include the following principal items:
1. Moving on to the site of all CONTRACTOR's plant and equipment required for operations.
 2. Providing all on-site communication facilities, including radios and cellular phones.
 3. Providing on-site sanitary facilities.
 4. Obtaining all required PERMITS.
 5. Having all OSHA required notices and establishment of safety programs.
 6. Having the CONTRACTOR's superintendent at the job site full time.
 7. Submitting initial submittals.

1.2 PAYMENT FOR MOBILIZATION

- A. The CONTRACTOR's attention is directed to the condition that no payment for Mobilization, or any part thereof will be approved for payment under the contract until all Mobilization items listed above have been completed as specified.
- B. As soon as practicable after receipt of the Notice to Proceed, the CONTRACTOR shall submit a breakdown to the ENGINEER for approval, which shall show the estimated value of each major component of Mobilization. When approved by the ENGINEER, the breakdown will be the basis for initial progress payments in which Mobilization is included.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01520 - SECURITY

PART 1 - GENERAL

1.1 SECURITY PROGRAM

A. The CONTRACTOR shall:

1. Protect WORK, existing premises and OWNER's operations from theft, vandalism, and unauthorized entry.
2. Coordinate security with OWNER's operations at job mobilization.
3. Maintain program throughout construction period until OWNER's occupancy.

1.2 ENTRY CONTROL

A. The CONTRACTOR shall:

1. Control entry of persons and vehicles onto Project construction site and existing facilities. Utilize fencing and gates as required to control entry.
2. Allow entry on the construction site only to authorized persons with proper identification.
3. Coordinate access of OWNER's personnel to site in coordination with CONTRACTOR's security forces.

B. OWNER will control entrance of persons and vehicles related to OWNER's operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01530 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

PART 1 - GENERAL

1.1 GENERAL

- A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- A. B. All utility locates shall be the responsibility of the CONTRACTOR. DIAL BEFORE YOU DIG for locates of all underground utilities within the WORK limits prior to any WORK. Contact the local utility companies at the following telephone numbers:
1. WATER AND WASTEWATER: (907) 766-2237 or 766-2200
 2. POWER & LIGHT, AP&T: (907) 766-2331
 3. CATV: (907) 766-2137
 4. TELEPHONE, GTE ALASKA: (907) 766-2311
- C. The CONTRACTOR shall verify the exact locations and depths of all utilities and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the WORK. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's WORK. Any utility or service in conflict with the WORK will be reburied by the CONTRACTOR prior beginning the WORK to avoid damage.
- D. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.
- E. The ENGINEER shall be notified of the CONTRACTOR's field-locate schedule.

1.2 RIGHTS-OF-WAY

- A. The CONTRACTOR shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, cable television, telegraph, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified by the ENGINEER that the OWNER has secured authority therefore from the proper party. After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support or otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the OWNER shall determine the sequence and order of the WORK. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the OWNER to the CONTRACTOR so desiring, to the extent, amount, in the manner, and at the times permitted.
- B. No such decision as to the method or time of conducting the WORK or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the WORK in Article 15 of the General Conditions of the contract.

SECTION 01530 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

1.3 PROTECTION OF SURVEY MONUMENTS, STREET AND/OR ROADWAY MARKERS

- A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. All survey monuments, markers or points disturbed by the CONTRACTOR shall be accurately re-established, at the CONTRACTOR's expense unless provided for elsewhere in the contract, after all street or roadway resurfacing has been completed. Re-establishment of all survey monuments shall be by a Registered Alaskan Land Surveyor.

1.4 RESTORATION OF PAVEMENT

- A. General: All paved areas, including asphalt concrete berms, cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement OWNER. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.
- B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.
- C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.
- D. Restoration of Sidewalks or Private Driveways: Wherever sidewalks or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of times is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.5 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The CONTRACTOR shall protect all above ground, underground and offshore utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary. Special precautions shall be taken to protect the offshore HDPE wastewater force main laying on the seafloor adjacent to the WORK area. This is an active sewer and it shall not be disturbed. The CONTRACTOR shall repair any damages occurring to the sewer line.

SECTION 01530 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

- B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the OWNER to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- C. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the OWNER of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
- D. OWNER's Right of Access: The right is reserved to the OWNER and to the OWNERS of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this contract.
- E. Underground Utilities Indicated: Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR.
- F. Underground Utilities Not Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra WORK contained in Articles 10, 11, and 12 of the General Conditions.
- G. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the WORK which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such WORK will be paid for as extra WORK in accordance with the provisions of Articles 10, 11, and 12 of the General Conditions.
- H. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement OWNER before being concealed by backfill or other WORK.
- I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone, cable television or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the OWNER of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for

SECTION 01530 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.6 TREES WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

A. General: The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or OWNER. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a certified tree company under permit from the jurisdictional agency and/or the OWNER. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

1. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.
2. Replacement: The CONTRACTOR shall immediately notify the jurisdictional agency and/or the OWNER if any tree is damaged by the CONTRACTOR's operations. If, in the opinion of said agency or the OWNER, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, the CONTRACTOR shall pay to the OWNER of said tree a compensatory payment acceptable to the tree OWNER, subject to the approval of the jurisdictional agency or OWNER.

1.7 PROTECTION OF EXISTING STRUCTURES

- A. Compaction Equipment and Operations: The CONTRACTOR shall restrict its compaction operations as necessary to assure no damage occurs to adjacent buildings. This may require the use of smaller compaction equipment than is usually employed for trench backfill and roadway embankment compaction operations when in the vicinity of buildings sensitive to vibrating or other impact-type activities. It shall be the CONTRACTOR's responsibility to determine in which areas of the project the compaction operations must be restricted, to avoid damage to existing buildings. The CONTRACTOR is advised that some structures on the project, especially those founded on steep or unstable ground, and are especially sensitive to vibrations caused by heavy construction equipment. The foregoing restrictions on the size of, and magnitude of impact energy exerted by, compaction equipment will in no way relieve the CONTRACTOR from the compaction requirements as specified in other Sections of the Contract.
- B. The CONTRACTOR shall notify all affected businesses and other residents in advance of any operations that will cause vibrations that may damage belongings within the buildings. All property damage caused by the CONTRACTOR's operations shall be repaired or replaced at CONTRACTOR's expense.

PART 2 PRODUCTS – (Not Used)

PART 3 EXECUTION - (Not Used)

END OF SECTION

SECTION 01550 - SITE ACCESS AND STORAGE

PART 1 - GENERAL

- 1.1 HIGHWAY LIMITATIONS. The CONTRACTOR shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge and dock load limits, and other limitations affecting transportation and ingress and egress to the site of the WORK. It shall be the CONTRACTOR's responsibility to construct and maintain any haul roads required for its construction operations.
- 1.2 TEMPORARY CROSSINGS
- A. General: Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, private residences, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 200 feet shall be provided. The CONTRACTOR shall cooperate with parties involved in the delivery of mail and removal of trash and garbage so as to maintain existing schedules for such services. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time, as approved by the ENGINEER.
- B. Temporary Bridges: Wherever necessary, the CONTRACTOR shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the CONTRACTOR shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the ENGINEER prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the CONTRACTOR shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.
- 1.3 MAINTENANCE OF TRAFFIC
- A. General: Unless otherwise provided, the roadway undergoing improvements shall be kept open to all traffic by the CONTRACTOR. Nothing herein shall be construed to entitle the CONTRACTOR to the exclusive use of any public street, alleyway, or parking area during the performance of the WORK hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. The CONTRACTOR shall provide unimpeded access through the Project limits for emergency vehicles and make every effort to provide minimum delay to United States Postal Service vehicles and garbage collection vehicles.
- B. The CONTRACTOR shall submit three (3) approved copies of a traffic control plan to the ENGINEER for approval a minimum of two (2) weeks prior to construction. The ENGINEER reserves the right to observe these traffic control Plans in use and to make any changes as field conditions warrant. Any changes shall supersede these Plans and be done solely at the CONTRACTOR's expense.
- C. No street shall be closed to the public without first obtaining permission of the ENGINEER and proper governmental authority. Where so provided on the Plans or otherwise approved by the ENGINEER, the CONTRACTOR may by-pass traffic over a detour route. When no longer required, the detour shall be removed and the approached obliterated.

SECTION 01550 - SITE ACCESS AND STORAGE

- D. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the ENGINEER or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the WORK shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.
- E. The CONTRACTOR's equipment shall stop at all points of intersection with the traveling public unless satisfactory traffic control measures, approved in writing by the ENGINEER, are installed and maintained at CONTRACTOR's expense.
- F. When the CONTRACTOR is required to maintain traffic through grading, roadway excavation and embankment areas, the construction shall be conducted in such a manner as to provide a reasonably smooth and even surface satisfactory for use by public traffic at all times. The surface of the roadbed shall be properly crowned for drainage. In advance of other grading operations, sufficient fill shall be placed at culverts and bridges to permit traffic to cross unimpeded. Part width construction techniques shall be employed when the traffic is routed through roadway cuts or over embankments under construction. The material shall be excavated or placed in layers and the construction activities shall be alternated from one side to the other, with traffic routed over the side opposite the one under construction.
- G. During the removal and laying of culvert pipe, a maximum time of one hour of road closure may be permitted, providing the removal and laying of the culvert pipe cannot be completed for one-half width of the roadway and provided that a detour cannot be constructed around the culvert being laid. Closure shall be scheduled so as not to delay buses and peak hour traffic. The CONTRACTOR shall post, at the site of the closure within view of the waiting public traffic, the time the closure started and the time the road will again be open to traffic. The CONTRACTOR shall notify the Fire and Police Departments of such closures prior to commencement of WORK.
- H. At intervals of 48 hours and 24 hours prior to start up of construction operations, and at weekly intervals during the construction period, the CONTRACTOR shall advertise in the CHILKAT VALLEY NEWS and have broadcast on all local radio stations the precise location, time of commencement, and proposed completion date of the WORK scheduled for the following week which will require detouring or otherwise effect public traffic. Detours shall be described in sufficient detail to efficiently inform the traveling public of the modified traffic pattern. The cost of these advertisements shall be considered incidental to other contract Bid items. The CONTRACTOR will notify the property owners 24 hours prior to commencement of WORK.
- I. When, in the opinion of the ENGINEER, conditions are such that the safety and/or convenience of the traveling public is adversely affected, the CONTRACTOR will be immediately notified in writing. The notice will state the defect(s) and the corrective action(s) required. In the event that the CONTRACTOR neglects to take immediate corrective action, the ENGINEER may suspend all WORK on the project until satisfactory corrective action is performed. In the event the CONTRACTOR does not take corrective action within 24 hours, the ENGINEER may order such WORK as deemed necessary for public convince and safety accomplished by outside forces. The cost of this WORK shall be deducted from any monies due or that may become due under the terms or the Contract.
- J. The CONTRACTOR shall bear all expense of maintaining the traffic over the section of road undergoing improvement, including dust control and snow plowing, and of

SECTION 01550 - SITE ACCESS AND STORAGE

constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary, without direct compensation, except as provided below:

1. Special Detours. When the proposal contains a Bid item for detours, the payment for such item shall cover all cost of constructing and maintaining such detour or detours, including the construction of any and all temporary bridges and accessory features and the removal of the same, and obliteration of the detour road. Right-of-way for temporary highways or bridges will be furnished by the OWNER.
 2. Maintenance of Traffic during Suspension of WORK. The CONTRACTOR shall make passable and shall open to traffic such portions of the Project and temporary roadways as may be agreed upon between the CONTRACTOR and the ENGINEER for the temporary accommodation of necessary traffic during the anticipated period of suspension. If the suspension is seasonal (winter shutdown), thereafter, and until an issuance of an order for the resumption of construction operations, the maintenance of the temporary route of line of travel agreed upon will be the responsibility of the OWNER. Prior to the OWNER accepting the Project for winter shutdown, the CONTRACTOR shall do all WORK necessary to provide a roadway surface and subgrade that will not require the OWNER to perform additional maintenance WORK during the shutdown period, except for purpose of snow removal. If the WORK is suspended due to unfavorable weather, failure of the CONTRACTOR to correct conditions unsafe for the workers or the general public, failure to carry out provisions of the contract, or for failure to carry out orders of the ENGINEER, all costs for maintenance of traffic during the suspended period shall be borne by the CONTRACTOR. When WORK is resumed, the CONTRACTOR shall replace or renew any WORK or materials lost or damaged because of temporary use of the project; shall remove, to the extent directed by the ENGINEER, any WORK or materials used in the temporary maintenance; and shall complete the Project as though its prosecution had been continuous and without interference.
- K. Traffic Control: All locations requiring redirection or stopping of the traveling public shall be properly signed and/or flagged by the CONTRACTOR. For the protection of traffic in public or private streets and ways, the CONTRACTOR shall provide, flaggers and provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations," (MUTCD) published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1) with the current State of Alaska supplements.
- L. The CONTRACTOR shall take all necessary precautions for the protection of the WORK and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The CONTRACTOR shall station such guards or flaggers and shall conform to such special safety Regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of Subpart G, Part 1926, of the OSHA Safety and Health Standards for Construction.
- M. Special pedestrian detours are often necessary in areas adjacent to new construction or demolition of existing structures. The ENGINEER shall determine when walkways are required. Plans for walkways must be approved by the ENGINEER.

SECTION 01550 - SITE ACCESS AND STORAGE

- N. The CONTRACTOR shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.
- O. Temporary Street Closure: If closure of any street is required during construction, the CONTRACTOR shall apply in writing to the City Public Works Department and any other jurisdictional agency at least 30 days in advance of the required closure and again at 48 hours. A Detour and Traffic Control Plan shall accompany the application.
- P. The CONTRACTOR shall notify the Police and Fire Departments and any other affected agency of all planned street closures. Notification shall consist of giving the time of commencement and proposed date of completion of WORK and names of street, schedule of operations, and routes of detours. Such notification shall be given at least 48 hours before such closure is to take effect.
- Q. Temporary Driveway Closure: The CONTRACTOR shall maintain access to all residential, commercial and street approaches. Any temporary closures shall require prior approval by the ENGINEER. The CONTRACTOR shall notify the OWNER or occupant (if not owner-occupied) of the closure of the driveways to be closed more than one (1) eight-hour work day at least three (3) working days prior to the closure. The CONTRACTOR shall minimize the inconvenience and minimize the time period that the driveways will be closed. The CONTRACTOR shall fully explain to the owner/occupant how long the WORK will take and when closure is to start.
- R. On-Site Cellular Phones: The CONTRACTOR shall maintain one active cellular phone at the project site at all times with the phone number provided to the Haines Borough Fire, Police, Ports/Harbors and Public Works Departments. The cellular phone shall be carried by the person in charge of the field operations. The CONTRACTOR shall provide and allow the use of the CONTRACTOR's radio frequency to facilitate communication between the CONTRACTOR and the ENGINEER.
- S. Street Closure Requirements. The following street closure allowances and limitations shall apply to this contract, and shall take precedence over any conflicting public access requirements and limitations given elsewhere in the Contract Documents.
1. The CONTRACTOR will not be permitted to obstruct vehicular traffic between the hours of 4:30pm and 8:00am, seven (7) days per week.
 2. Emergency vehicle, pedestrian, garbage, and mail delivery access is required at all times. The CONTRACTOR shall contact Arrow Refuse, Inc. regarding any work affecting scheduled garbage pickup.
 3. Street closure to vehicular traffic will not be permitted until all Project site residents or other users of Project site parking lots affected by the closure have been notified. This notification shall be given at least eight (8) hours prior to the closure.
 4. At the time of each road closure, the CONTRACTOR shall contact the Fire and Police Departments and inform them of the planned period of closure. Further contact shall be made when the planned closure period is changed.

1.4 CONTRACTOR'S WORK AND STORAGE AREA

- A. The CONTRACTOR shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the WORK.

SECTION 01550 - SITE ACCESS AND STORAGE

- B. Should the CONTRACTOR find it necessary to use any additional land for its camp or for other purposes during the construction of the WORK, it shall provide for the use of such lands at its own expense.
- C. The CONTRACTOR shall construct and use a separate storage area for hazardous materials used in constructing the WORK.
 - 1. For the purpose of this paragraph, hazardous materials to be stored in the separate area are all products labeled with any of the following terms: **Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive**. In addition, whether or not so labeled, the following materials shall be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid, cement, paints and paint thinners, two-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbent.
 - 2. The CONTRACTOR shall develop and submit to the ENGINEER a plan for storing and disposing of the materials above.
 - 3. The CONTRACTOR shall obtain and submit to the ENGINEER a single EPA number for wastes generated at the site.
 - 4. The separate storage area shall meet all the requirements of all authorities having jurisdiction over the storage of hazardous materials.
 - 5. The separate storage area shall be inspected by the ENGINEER prior to construction of the area, upon completion of construction of the area, and upon cleanup and removal of the area.
 - 6. All hazardous materials which are delivered in containers shall be stored in the original containers until use. Hazardous materials which are delivered in bulk shall be stored in containers which meet the requirements of authorities having jurisdiction.

1.5 PARKING

- A. The CONTRACTOR shall direct its employees to park in areas as directed by the ENGINEER.
- B. Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud, and construction materials. The CONTRACTOR shall repair breaks, potholes, low areas which collect standing water, and other deficiencies.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01560 - TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 DUST ABATEMENT

- A. The CONTRACTOR shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The CONTRACTOR shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the CONTRACTOR is relieved of further responsibility by the ENGINEER.

1.2 RUBBISH CONTROL

- A. During the progress of the WORK, the CONTRACTOR shall keep the site of the WORK and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The CONTRACTOR shall dispose of all rubbish and waste materials of any nature occurring at the WORK site, and shall establish regular intervals of collection and disposal of such materials and waste. The CONTRACTOR shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and to the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.3 SANITATION

- A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.
- B. Sanitary and Other Organic Wastes: The CONTRACTOR shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the CONTRACTOR or organic material wastes from any other source related to the CONTRACTOR's operations shall be disposed of away from the site in a manner satisfactory to the ENGINEER and in accordance with all laws and regulations pertaining thereto.

1.4 CHEMICALS.

- A. All chemicals used during project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer. In addition, see the requirements set forth in paragraph 6.11 of the General Conditions.

SECTION 01560 - TEMPORARY ENVIRONMENTAL CONTROLS

1.5 CULTURAL RESOURCES

- A. The CONTRACTOR's attention is directed to the National Historic Preservation Act of 1966 (16 U.S.C. 470) and 36 CFR 800 which provides for the preservation of potential historical architectural, archaeological, or cultural resources (hereinafter called "cultural resources").
- B. The CONTRACTOR shall conform to the applicable requirements of the National Historic Preservation Act of 1966 as it relates to the preservation of cultural resources.
- C. In the event potential cultural resources are discovered during subsurface excavations at the site of construction, stop work immediately and notify the ENGINEER.

1.6 EAGLES

- A. Eagles are known to exist in the project area. The CONTRACTOR has the responsibility for adherence to the Bald Eagle Protection Act (16 U.S.C. 668-668d) which prohibits molesting or disturbing bald eagles, their nests, eggs, or young.
- B. Guidelines for compliance to the Bald Eagle Protection Act are supervised by the U.S. Department of the Interior, Fish and Wildlife Service, Raptor Management Studies, P.O. Box 021287, Juneau, Alaska 99802-1287, phone (907) 586-7243. The contact person is Mike Jacobson, Eagle Management Specialist.

1.7 NOISE ORDINANCE

- A. The CONTRACTOR shall comply with the all local ordinances concerning equipment use and noise.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01570 – EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall provide for erosion control during construction in accordance with the requirements of the Alaska Department of Environmental Conservation (ADEC). All discharge of pollutants and sedimentation from onsite drainage shall be caught on-site.
- B. Erosion Control includes preparation and maintenance of a Storm Water Pollution Prevention Plan (SWPPP), control of erosion, sedimentation and discharge of pollutants, in accordance with the ADEC Construction General Permit (CGP).
- C. The WORK under this section includes providing all labor, materials, tools and equipment necessary to construct and maintain temporary erosion control works; including but not limited to, wattles, silt fences, floating silt containment booms, settling ponds, check dams, ditches, etc.
 - 1. Silt containment booms shall be installed around all work within the intertidal zone. An example of a silt containment boom is shown in the Plans. The contractor may install this or something similar.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials shall be suitable for the intended use and perform effectively to control silt and surface erosion. All materials shall remain the property of the CONTRACTOR.

PART 3 - EXECUTION

3.1 GENERAL

- A. The CONTRACTOR is responsible to prepare, submit and maintain a SWPPP, as required by the CGP, that is in accordance with their construction methodologies and sequences.
 - 1. For projects disturbing greater than 1 Acre, this requirement shall include submission of a Notice of Intent (NOI) to ADEC prior to beginning of WORK. Copies of the NOI and SWPPP shall also be submitted to the ENGINEER within 5 days of submittal to ADEC.
 - 2. For projects disturbing less than 1 acre, the SWPPP shall be submitted to the ENGINEER prior to the beginning of WORK; submittal to ADEC or an NOI are not required.
- B. WORK at the Project site will not be permitted until the above documents are submitted to the ENGINEER and acceptance of this plan has been obtained from the governing agency or agencies (if required by the CGP).
- C. The CONTRACTOR shall install temporary erosion control structures and devices as required by their SWPPP, prepared in accordance with the ADEC CGP. They shall be maintained in effective operating condition at all times. Prior to completion of work, the CONTRACTOR shall clean and remove all silt and debris from the settling pond and check dams.

SECTION 01570 – EROSION AND SEDIMENT CONTROL

- D. Temporary erosion control structures shall remain in place until the project is completed and replaced by permanent erosion control WORK, protected by final stabilization or until the ENGINEER approves their removal.
- E. The CONTRACTOR shall be responsible for meeting the requirements of all permits (including permits naming the OWNER, or other parties); therefore, shall be responsible for the quality of the run-off water from the Project site and for any fines and/or penalties resulting from the construction operation.
- F. The CONTRACTOR shall submit NOT (Notice of Termination) at completion of the WORK and removal of all SWPPP items.

END OF SECTION

SECTION 01600 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 GENERAL

- A. The word "Products," as used herein, is defined to include purchased items for incorporation into the WORK, regardless of whether specifically purchased for project or taken from CONTRACTOR's stock of previously purchased products. The word "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialties," "systems," "structure," "finishes," "accessories," "furnishings," special construction," and similar terms, which are self-explanatory and have recognized meanings in the construction industry.
- B. Neither "Products" nor "Materials" nor "Equipment" includes machinery and equipment used for preparation, fabrication, conveying and erection of the WORK.

1.2 QUALITY ASSURANCE

- A. Source Limitations: To the greatest extent possible for each unit of WORK, the CONTRACTOR shall provide products, materials, or equipment of a singular generic kind from a single source.
- B. Compatibility of Options: Where more than one choice is available as options for CONTRACTOR's selection of a product, material, or equipment, the CONTRACTOR shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

- 1.3 **PRODUCT DELIVERY/STORAGE/HANDLING.** The CONTRACTOR shall deliver, handle, and store products in accordance with manufacturer's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, the CONTRACTOR shall ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

1.4 TRANSPORTATION AND HANDLING

- A. Products shall be transported by methods to avoid product damage and shall be delivered in undamaged condition in manufacturer's unopened containers or packaging.
- B. The CONTRACTOR shall provide equipment and personnel to handle products, materials, and equipment by methods to prevent soiling and damage.
- C. The CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

SECTION 01600 - MATERIALS AND EQUIPMENT

1.5 STORAGE AND PROTECTION

- A. Products shall be stored in accordance with manufacturer's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight climate controlled enclosures and temperature and humidity ranges shall be maintained within tolerances required by manufacturer's written instructions.
- B. For exterior storage of fabricated products, they shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.
- C. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
- D. Storage shall be arranged in a manner to provide access for maintenance and inspection. The CONTRACTOR shall periodically inspect to assure products are undamaged and are maintained under required conditions.

1.6 MAINTENANCE OF STORAGE

- A. Stored products shall be periodically inspected on a scheduled basis. The CONTRACTOR shall maintain a log of inspections and shall make said log available to the ENGINEER on request.
- B. The CONTRACTOR shall verify that storage facilities comply with manufacturer's product storage requirements.
- C. The CONTRACTOR shall verify that manufacturer-required environmental conditions are maintained continually.
- D. The CONTRACTOR shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes does not occur.
- E. For mechanical and electrical equipment, the CONTRACTOR shall provide a copy of the manufacturer's service instructions with each item and the exterior of the package shall contain notice that instructions are included.
- F. Products shall be serviced on a regularly scheduled basis, and a log of services shall be maintained and submitted as a record document prior to acceptance by the OWNER in accordance with the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01700 - PROJECT CLOSE-OUT

PART 1 - GENERAL

1.1 FINAL CLEAN UP

- A. The CONTRACTOR shall promptly remove from the vicinity of the completed WORK, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the WORK by the OWNER will be withheld until the CONTRACTOR has satisfactorily compiled with the foregoing requirements for final clean up of the Project site.

1.2 CLOSEOUT TIMETABLE

- A. The CONTRACTOR shall establish dates for equipment testing, acceptance periods, and on-site instructional periods as required under the contract. Such dates shall be established not less than one (1) week prior to beginning any of the foregoing items, to allow the OWNER, the ENGINEER, and their authorized representatives sufficient time to schedule attendance at such activities.

1.3 FINAL SUBMITTALS

- A. The CONTRACTOR, prior to requesting final payment, shall obtain and submit the following items to the ENGINEER for transmittal to the OWNER:
 - 1. Written guarantees, where required
 - 2. Maintenance stock items; spare parts; special tools, where required
 - 3. Completed record Drawings
 - 4. Certificates of inspection and acceptance by local governing agencies having jurisdiction
 - 5. Releases from all parties who are entitled to claims against the subject Project, property, or improvement pursuant to the provisions of law
 - 6. Compliance Certificate and Release form signed by the CONTRACTOR shall be submitted to the Port Director (blank attached to this Section).
- B. Before final payment can be made, the CONTRACTOR shall supply a copy of the "Notice of Completion of Public Works" form approved by Wage and Hour Administration of the Labor Standards and Safety Division of the Alaska Department of Labor and Workforce Development.
- C. Before final payment, the CONTRACTOR shall provide the OWNER with clearance from the Alaska Department of Labor and Workforce Development for the CONTRACTOR and all Subcontractors that have worked on the Project. This clearance shall indicate that all Employment Security Taxes have been paid. A sample form for this purpose is at the end of Section 00800 – Supplementary General Conditions.

1.4 WARRANTY AND GUARANTEE

- A. The CONTRACTOR shall comply with the warranty and guarantee requirements contained in Article 13 of the General Conditions.

SECTION 01700 - PROJECT CLOSE-OUT

- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as part of such required repair WORK, and any repair or resurfacing constructed by the CONTRACTOR which becomes necessary by reason of such settlement shall likewise be considered as part of such required repair WORK unless the CONTRACTOR shall have obtained a statement in writing from the affected private owner or public agency releasing the OWNER from further responsibility in connection with such repair or resurfacing.

- C. The CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from the OWNER. If the CONTRACTOR fails to make such repairs or replacements promptly, the OWNER reserves the right to do the WORK and the CONTRACTOR and the CONTRACTOR's surety shall be liable to the OWNER for the cost thereof.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 01700 - PROJECT CLOSE-OUT

COMPLIANCE CERTIFICATE AND RELEASE FORM

PROJECT: PORTAGE COVE HARBOR EXPANSION
CONTRACT NO: _____

The **CONTRACTOR** must complete and submit this to the OWNER with respect to the entire contract.

Completed forms may be submitted upon completion of the Project. All requirements and submittals must be met before final payment will be made to the CONTRACTOR.

I certify that the following and any referenced attachments are true:

- All WORK has been performed, materials supplied, and requirements met in accordance with the applicable Drawings, Specifications, and Contract Documents.
- All Suppliers and Subcontractors have been paid in full with no claims for labor, materials or other services outstanding. If all Subcontractors and suppliers are not paid in full, please explain on a separate sheet.
- All employees have been paid not less than the current prevailing wage rates set by the State of Alaska (or U.S. Department of Labor, as applicable).
- All equal employment opportunity, certified payroll and other reports have been filed in accordance with the prime contract.
- The attached list of Subcontractors is complete (required from CONTRACTOR). The City Engineer was advised and approved of all Subcontractors before WORK was performed and has approved any substitutions of Subcontractors.

I understand it is unlawful to misrepresent information in order to receive a payment which would otherwise be withheld if these conditions were not met. I am an authorized agent of this firm and sign this freely and voluntarily. The foregoing statements are true and apply to the following project contractor.

Firm Name Capacity: CONTRACTOR

Signed Printed Name and Title Date

Return completed form to: David Sosa, Borough Manager, P.O. Box 1209, Haines, Alaska 99827. Call (907) 766-2231 if we can be of further assistance or if you have any questions.

END OF SECTION

SECTION 01704 - FINAL CLEAN-UP AND SITE RESTORATION

PART 1 - GENERAL

- 1.1 DESCRIPTION. The WORK under this Section includes providing all supervision, labor, materials, tools and equipment necessary for final clean-up and restoration of all areas disturbed by construction activities, to a condition equal to, or better than, before construction started. This does not include clean-up or restoration incidental to, or directly provided for by, other construction items.

PART 2 - PRODUCTS

- 2.1 MATERIALS. Any materials required shall conform to the appropriate Section of these Specifications.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. The CONTRACTOR shall clean up all sites disturbed during construction of the project. This includes removal of all construction equipment, disposal of all excess materials, disposal of all rubbish and debris, removal of all temporary structures, and grading of the sites so that no standing water is evident.

END OF SECTION

SECTION 02060 – DEMOLITION AND DISPOSAL

PART 1 - GENERAL

1.1 DESCRIPTION

WORK under this Section shall include all labor, materials, tools and equipment necessary for the demolition, salvage and proper offsite disposal or storage of all items as designated herein and as shown on the Plans or as otherwise required to complete the WORK. The CONTRACTOR shall provide an appropriate disposal site for all items designated to be disposed. Demolition and disposal methods shall meet all local, state and federal regulations.

WORK under this section includes the demolition and disposal of all onshore and offshore marine elements designated herein and as shown on the Plans.

1.2 SUBMITTALS

Provide public notification in local newspaper, on local radio and to USCG to notify public of anticipated interruption to traffic along Front Street. Provide copy of all public notices to the ENGINEER for review prior to placing notices.

The CONTRACTOR shall submit a traffic control plan to AKDOT&PF right of way and obtain approval prior to any demolition activities within the AKDOT&PF right of way. The traffic control plan approved by the AKDOT&PF shall be submitted to the ENGINEER.

PART 2 - PRODUCTS (Not Used).

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

Prior to commencement of WORK, the CONTRACTOR shall visit the site with ENGINEER and OWNER to ascertain existing conditions and to determine the complete scope of demolition and disposal WORK.

Conduct demolition to minimize interference with adjacent structures and interruption to public services.

Cease operations immediately if adjacent structures appear to be in danger and notify the ENGINEER. Do not resume operations until directed by the ENGINEER.

3.2 DEMOLITION SALVAGE AND DISPOSAL

Demolition salvage and disposal shall be performed in accordance with all applicable codes and standards and shall be completed as shown on the Plans.

Prior to commencement of demolition activities, the CONTRACTOR shall salvage and provide to the OWNER a number of items as designated in the Plans. The CONTRACTOR shall coordinate with the OWNER for delivery and storage of these items.

Conduct demolition activities in an organized manner ensuring demolished materials are promptly removed from the site.

The CONTRACTOR is responsible to secure waste disposal sites, including obtaining written permission of the land owner and any required permits, if none are indicated on the plans. The cost of securing such sites shall be borne by the CONTRACTOR. If requested by the ENGINEER, the CONTRACTOR shall furnish copies of all required permits for the disposal sites.

SECTION 02060 – DEMOLITION AND DISPOSAL

Stockpile salvaged materials to be incorporated into the WORK and take measures to ensure stockpiled materials are safe, secure and undamaged. All stock piled material shall be appropriately protected from sediment runoff in accordance with the CONTRACTOR's Construction General Permit.

Repair any damaged structures or materials designated to remain or to be salvaged.

Demolish and dispose all other incidental and miscellaneous items as required to complete the project.

Place construction signs and barricades, as required, to prevent public entry into Work area.

Repair any damage to existing facilities designated to remain.

Excavation required to complete demolition work shall be considered incidental.

3.3 ASPHALT CONCRETE PAVEMENT REMOVAL

- A. Pavement to be removed shall be neatly saw cut full depth along straight lines. Only such pavement shall be removed as is necessary to excavate to the lines and grades shown on the plans, but the pavement shall be cut a sufficient distance outside the excavation to prevent damage to adjacent pavement by lifting or tearing the mat. All removed pavement shall be disposed of at an approved site.
- B. After backfilling is complete, the edges of existing pavement shall be neatly saw cut vertically as shown on the Plans. All loose, cracked or undermined sections of existing pavement shall be removed.

END OF SECTION

SECTION 02201 – CLEARING AND GRUBBING

PART 1 – GENERAL

1.1 GENERAL

- A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for clearing, grubbing, removing and disposing of all vegetation and debris (including earthen materials incidentally removed with vegetation and debris), and removing structures and obstructions located within the limits shown on the Drawings or designated by the ENGINEER, except such objects as are designated to remain in place or are to be removed in accordance with other sections of these Specifications. The WORK shall also include the preservation from injury or defacement of all vegetation and objects designated to remain.

PART 2 – PROJECTS (Not Used)

PART 3 – EXECUTION

3.1 GENERAL

- A. The ENGINEER will establish the limits of the WORK and will designate all trees, plants, shrubs and other items to remain. The CONTRACTOR shall protect and preserve all items designated to remain.
- B. Miscellaneous trimming of trees or shrubs designated to remain shall be conducted when directed by the ENGINEER. Trimming shall be in accordance with good tree surgery practice.
- C. All vegetation and debris to be removed shall be disposed of by the CONTRACTOR within areas indicated on the Drawings or areas approved by the ENGINEER. When burning is permitted, it shall be under the constant care of competent employees. Burning shall be performed in a manner such that anything designated to remain on the right-of-way, the surrounding forest cover, or other adjacent property will not be jeopardized. Burning shall be done in accordance with all applicable laws and ordinances. The CONTRACTOR shall obtain all required permits.
- D. The CONTRACTOR is responsible for:
1. Securing waste disposal sites,
 2. obtaining written permission of the owner of the disposal site and
 3. securing any required permits, if none is indicated on the Drawings.

The cost of securing such sites shall be borne by the CONTRACTOR. If requested by the ENGINEER, the CONTRACTOR shall furnish the permit numbers of all required permits for disposal sites.

- E. Merchantable timber within the clearing limits will become the property of the CONTRACTOR, unless otherwise specified.

SECTION 02201 – CLEARING AND GRUBBING

3.2 GRUBBING

- A. All trees, stumps, roots and other objects not designated to remain shall be cleared and grubbed.
- B. In areas outside of the grading limits of cut and embankment areas and to the established limits of the WORK, all stumps and nonperishable solid objects permitted to remain in place shall be cut off not more than six inches above the ground line or low water level.
- C. Except in areas to be excavated, stump holes and other holes from which obstructions are removed shall be backfilled with suitable materials and compacted in accordance with the Contract Documents.

3.3 HAND CLEARING

- A. In areas where Hand Clearing is indicated on the Drawings or designated by the ENGINEER, no equipment on wheels or tacks shall be used. Care shall be taken to insure that the grass, moss cover, or the natural ground is not disturbed. Stumps shall be cut flush with the ground, except that in areas within four feet or more of embankment cover, stumps may be cut off six inches above the natural ground.

3.4 SELECTED TREE REMOVAL

- A. Trees designated by the Engineer, outside of the normal clearing and grubbing and/or hand clearing limits, shall be removed and disposed of in accordance with this Section. Trees to be removed may be designated by the ENGINEER at any time during the performance of the contract, and may be subject to the conditions specified under Hand Clearing. Trees designated for selective removal shall be cut off within six inches of the ground.

3.5 REMOVE AND RELOCATE BUSH OR TREE

- A. Bushes or trees shown on the Drawings for removal and relocation shall be removed and relocated as directed by the ENGINEER.
- B. Bushes and trees designated for removal and relocation shall be carefully removed with enough of the root wad kept intact to ensure the survival of the bush or tree in its new locations. Bushes and trees designated for removal and relocation that are damaged, or that do not survive as a result of the transplanting, shall be replaced by the CONTRACTOR at its expense. The relocated bush or tree shall be placed to original depth at a location within 15 feet of the original location, as directed by the ENGINEER.

END OF SECTION

SECTION 02202-EXCAVATION AND EMBANKMENT

PART 1 - GENERAL

- 1.1 DESCRIPTION. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for excavation and embankment construction to the lines, grades and cross sections indicated in the Plans or as directed by the ENGINEER.

PART 2 - PRODUCTS

- 2.1 UNUSABLE EXCAVATION. All excavation deemed unsuitable for use within the fill prism by the ENGINEER shall be unusable excavation, and shall consist of excavation and disposal of all materials, of whatever character, encountered in the WORK.
- A. Disposal of unusable excavation to an off-site location provided by the CONTRACTOR shall be incidental to Unusable Excavation.
- 2.2 USABLE EXCAVATION. Usable Excavation shall be all excavated material designated for salvage and reuse by the ENGINEER.
- A. Usable Excavation shall consist of non-frost-susceptible earth, sand, gravel, fractured rock or combination thereof containing no muck, peat, frozen materials, roots, sod or other deleterious materials, and shall be compactable to the density required by the Specifications.
- B. WORK required to salvage, stockpile, replace, compact and grade this material to the final lines, grades and limits as shown on the Plans shall be incidental to Usable Excavation.
1. Usable Excavation shall include material designated by the ENGINEER for salvage from the surcharge fill prism to the neat line limits shown on the Plans.
2. Additional handling required to salvage surcharge material including removal of wire baskets, hog rings, ties backs, stakes, geo-grid mesh and all geotextile material as required by the ENGINEER shall be considered incidental to Usable Excavation.
- 2.3 CLASS A SHOT ROCK BORROW. Class A shot rock borrow shall consist of hard angular and blasted quarry rock having a percentage of wear of not more than 50 at 1000 revolutions, as determined by ASTM C535.
- A. Class A Shot Rock Borrow shall meet the following gradation as determined by WAQTC FOP for AASHTO T 27/T 11.

SIEVE SIZE	% PASSING BY WEIGHT
6-Inch	100
4-Inch	70 – 100
2-Inch	40 – 80
No. 4	10 – 40
No. 200*	0 – 4

*Gradation shall be determined on that portion passing the 3-inch screen.

- B. Class A Shot Rock Borrow shall consist of stone material having its greatest dimension no longer than twice its smallest dimension.

SECTION 02202-EXCAVATION AND EMBANKMENT

- C. Class A Shot Rock Borrow shall contain no muck, frozen material, roots, sod or other deleterious matter.
- 2.4 CLASS B SHOT ROCK BORROW. Class B Shot Rock Borrow shall consist of blasted quarry rock. Class B Shot Rock Borrow shall consist of well-graded 18 inch minus pit run shot rock having no more than 6% passing the No. 200 sieve as determined by that portion of a sample passing the 3-inch screen. Material shall not consist of predominantly all one size or an open graded mix but rather a uniform grading of shot rock material smaller than 18 inch in size.
- 2.5 SAND. Sand containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as determined by WAQTC FOPs for AASHTO T 89 AND T 90.
 - A. Sand shall meet the following gradation as determined by WAQTC FOP for AASHTO T 27/T 11.

SIEVE SIZE	% PASSING BY WEIGHT
3/8-Inch	100
No. 4	95 – 100
No. 200	0 – 6

PART 3 - EXECUTION

3.1 MINING AREA AND ROAD CLEANING GUARANTEE

- A. The CONTRACTOR shall be responsible for removal of dirt, mud, rocks and other debris from Haines Borough and State Right-of-Ways accumulated from the hauling and quarry operations. It is the intent that the traveled public way be kept as clean as practical to minimize dust and to avoid unsafe traffic conditions.
- B. The Contractor shall be responsible for restoration of their mining area in accordance to the conditions of the material source used and mining plan submitted.

3.2 EXCAVATION

- A. Clearing and grubbing in excavation areas must be completed prior to beginning excavation operations.
- B. Excavations shall be reasonably smooth and uniform to the lines, grades and cross-sections shown in the Plans or as directed by the ENGINEER. Excavations shall be conducted to ensure that material outside of excavation limits remains undisturbed.
- C. Excavations shall be protected from erosion and maintained to drain freely at all times.
- D. Where excavation to the limits indicated on the Plans encounters unsuitable underlying material as determined by the ENGINEER, the CONTRACTOR shall remove the unsuitable material and backfill with approved material. The CONTRACTOR shall allow time to take the necessary cross section measurements before backfill is placed.
- E. Excavated soils that do not meet the requirements for Usable Excavation shall be disposed of by the CONTRACTOR at a location provided by the CONTRACTOR. No material may be wasted without the prior approval of the ENGINEER

SECTION 02202-EXCAVATION AND EMBANKMENT

- F. The CONTRACTOR is responsible for securing Unusable Excavation disposal sites if none are indicated on the Plans. The CONTRACTOR shall obtain the written permission of the Landowner for use of all disposal sites, and shall either obtain any required permits or assure that others have obtained them. If requested by the ENGINEER, the CONTRACTOR shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the CONTRACTOR.
- G. Disposal areas shall be uniformly graded to drain, with the outer limits feathered to blend with the existing ground. Disposal areas shall be seeded, capped with suitable material, or otherwise protected from long-term erosion.
- H. Temporary storage of Usable Excavation is the responsibility of the CONTRACTOR, and no additional payment will be made.
 - 1. Usable Excavation shall be stored on-site at a location approved by the ENGINEER. Usable Excavation shall be protected from erosion and sediment run-off in a manner consistent with the requirement of the CONTRACTOR's Construction General Permit.
- I. If the CONTRACTOR fails to comply with the provisions of any city ordinance or permit pertaining to disposal sites the Borough shall have the right, after giving 30 days written notice, to bring the disposal sites into compliance and collect the cost of the work from the CONTRACTOR, either directly or by withholding monies otherwise due under the Contract.
- J. The CONTRACTOR shall conduct all operations to prevent contaminating Useable Excavation with Unusable Excavation or otherwise unsuitable material.
- K. When frozen material is excavated and meets all other requirements for Usable Excavation, it shall be allowed to thaw and drain prior to placing in the embankment. This material will be considered Useable Excavation and no additional payment will be made.
- L. The CONTRACTOR shall provide added care including bracing and shoring as required when excavating adjacent to existing retaining walls, fences and buildings. Damage caused to existing walls, fences and buildings by the CONTRACTOR shall be repaired at the CONTRACTOR's expense.
- M. Where excavations occur adjacent to existing roadways or other paved surfaces designated to remain undisturbed the CONTRACTOR shall record existing surface elevations prior to excavating and take necessary measures to ensure pavement is not damaged and existing elevations and grades are maintained throughout the WORK and upon completion. Damage caused to existing pavements by the CONTRACTOR shall be repaired at the CONTRACTOR's expense.
- N. After excavation to the sub-cut limit is complete and prior to placing geotextile fabric and backfilling, the bottom of the sub-cut shall be adequately compacted until a firm base for the backfill material is obtained.

3.3 EMBANKMENT

- A. Embankments shall be constructed to a reasonably smooth and uniform shape conforming to the lines, grades and cross sections indicated on the Plans or as directed by the ENGINEER.

SECTION 02202-EXCAVATION AND EMBANKMENT

- B. The underlying ground shall be properly prepared, graded, and compacted prior to placing embankment material. Clearing and grubbing in embankment areas must be completed prior to embankment operations. Debris shall be removed and surface depressions or holes shall be filled with suitable material to a level uniform surface and compacted before the embankment is constructed.
- C. When embankment is to be placed on hillsides steeper than a 4:1 slope, new embankment is to be placed alongside existing embankments, or embankments are to be built half width at a time the foundation shall first be prepared by constructing benches of sufficient width to accommodate placing and compacting equipment. Each bench shall begin at the intersection of the original ground and the vertical side of the previous cut. Material so excavated and suitable for embankment construction shall be incorporated into the new embankment. Benching is incidental to other items in the contract and no direct payment will be made therefore.
- D. Wherever an existing compacted roadway surface containing granular material lies within three feet of the new embankment surface, such existing roadway shall be scarified to a depth of six inches and incorporated into the first layer of embankment.
- E. Embankments over swampy ground may be constructed by end dumping an initial lift of depth approved by the ENGINEER to support hauling and spreading equipment.
- F. If continued hauling over a completed or partially completed embankment causes loss of stability as evidenced by pumping or rutting, or other damage, the CONTRACTOR shall repair the damaged embankment at its own expense and adjust its hauling equipment and procedures to avoid further damage.
- G. The finish subgrade surface shall not vary more than 0.1-foot when tested using a 10-foot straightedge, or more than 0.1-foot from established grade. Additionally, the algebraic average of all deviations from established finished subgrade elevations taken at 100-foot intervals shall be less than 0.05-foot.

3.4 EMBANKMENTS CONSTRUCTED WITH MOISTURE DENSITY CONTROL.

- A. Except for embankments constructed predominantly of rock fragments or boulders, all embankments shall be constructed with moisture density control. Embankments shall be placed in horizontal layers not to exceed eight inches in depth, loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Embankments shall be compacted at the approximate optimum moisture content to not less than 95% of the maximum density as determined by AASHTO T 180-D unless otherwise noted. Embankment materials may require drying or moistening to bring the moisture content near to optimum. In place field densities will be determined by ATM-213 or ATM-309 as required by the ENGINEER. Sufficient time shall be allowed between layers to allow for field density tests.

3.5 EMBANKMENTS CONSTRUCTED WITH SHOT ROCK BORROW

- A. When embankment material consists predominantly of rock fragments or boulders too large to be contained in the lift thickness specified without crushing or further fracturing, such material may be placed in lifts not exceeding in thickness the approximate average size of the larger rocks, or 18-inches, whichever is less.

SECTION 02202-EXCAVATION AND EMBANKMENT

- B. Shot Rock Borrow shall not be dumped in final position but shall be deposited on the fill and distributed by blading or dozing so that voids, packets and bridging will be reduced to a minimum. Intervening spaces and interstices shall be filled with smaller stones and earth to form a dense, well-compacted embankment. Hauling equipment shall be uniformly routed over the entire width of the embankment.

3.6 EMBANKMENTS CONSTRUCTED WITH CLASS A SHOT ROCK BORROW.

- A. Subgrades shall be constructed to the embankment tolerances described in paragraph 3.3 prior to placement of Class A Shot Rock Borrow. The CONTRACTOR shall place grade stakes at all changes in grade and at maximum 50-foot intervals prior to placing Class A Shot Rock Borrow.
- B. Embankments shall be placed in horizontal layers not to exceed nine inches in depth, loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Compaction of embankments constructed with Class A Shot Rock Borrow shall be achieved by performing a minimum level of compactive effort consisting of six complete coverage passes with a 15-ton vibratory steel drum roller over the complete coverage area of any given lift with equipment suitably equipped by the manufacturer for compacting shot rock material.

3.7 EMBANKMENTS CONSTRUCTED WITH CLASS B SHOT ROCK BORROW

- A. Embankments shall be placed in horizontal layers not to exceed 18-inches in depth, loose measurement, for the full width of the embankment, and shall be compacted before the next layer is placed. An initial lift of shot rock placed on existing intertidal ground may be increased in thickness as approved by the ENGINEER up to three feet in order to support haul and spread equipment.
- B. Compaction equipment shall be utilized above elevation zero-feet MLLW. Compaction of embankments constructed with Class B Shot Rock Borrow shall be achieved by performing a minimum level of compactive effort consisting of 6 complete coverage passes with a 15-ton vibratory steel drum roller over the complete coverage area of any given lift with equipment suitably equipped by the manufacturer for compacting shot rock material

3.8 EMBANKMENTS CONSTRUCTED FOR SOFT GROUND MODIFICATION

- A. The placement of Shot Rock Borrow within the soft ground modifications surcharge area shall comply with the specifications listed above. 18-inch lifts shall be placed to achieve the surcharge stage elevations as shown on the Plans. The CONTRACTOR may begin a subsequent surcharge stage on any portion of embankment that has reached its designated elevation only after instrumentation measurements have been taken, recorded, and submitted to the ENGINEER for approval. The CONTRACTOR may only commence with the next stage after the ENGINEER has provided approval in writing. Estimated wait periods between surcharge stages shall be as shown in the Plans. The surcharge stage thicknesses and wait periods may be adjusted by the ENGINEER based upon the field data collected by the CONTRACTOR and assessed by the ENGINEER.

END OF SECTION

SECTION 02203 – TRENCHING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. WORK under this section includes providing all labor, materials, tools and equipment necessary for the excavation and backfill required for installation of pipelines, manholes vaults, diversion structures and other appurtenances; and for ground surface restoration, including pavement.

PART 2 - PRODUCTS

2.1 TRENCH EXCAVATION

- A. Trench excavation shall consist of all material, of whatever nature, excavated from trenches or below structures within the limits described indicated in the Plans.

2.2 BEDDING

- A. Stone for this WORK shall be hard angular quarry stones, having a percentage of wear of not more than 50 at 500 revolutions as determined by AASHTO T-96 or ASTM C535.
- B. Bedding, Class A, shall be crushed rock material aggregate, free of muck, frozen material, lumps, organic material, trash, lumber or other debris, conforming to the following gradation:

SIEVE SIZE	% PASSING BY WEIGHT
1 1/2-Inch	100
3/8	35-65
No. 4	20-35
No. 200	0-6

- C. Bedding, Class B, shall be crushed rock material, free of muck, frozen material, lumps, organic material, trash, lumber or other debris, conforming to the following gradation:

SIEVE SIZE	% PASSING BY WEIGHT
3-Inch	100
1-Inch	35-65
No. 4	20-35
No. 200	0-6

- D. Crushed Aggregate Drain Rock shall be crushed stone or crushed gravel, consisting of sound, angular, tough, durable rock fragments of uniform quality, free from clay balls, vegetable matter, or other deleterious matters, and with no adherent films or coatings of dirt, clay, dust or other deleterious matter that could impede drainage. Wash the aggregate if necessary.

SECTION 02203 – TRENCHING

- 1. Crushed Aggregate Drain Rock shall meet the following requirements:
 - L.A. Wear,% AASHTO T 96 45, max.
 - Degradation Value ATM 313 50, min.
 - Sodium Sulfate loss,% AASHTO T 104 9, max. (5 cycles)
 - Fracture,% WAQTC FOP for AASHTO TP 61 90, min. (single face)

Drain Rock shall conform to the following gradation:

SIEVE SIZE	% PASSING BY WEIGHT
1-Inch	100
3/4-Inch	90-100
1/2-Inch	20-55
3/8-Inch	0-15
No. 200	0-1

2.3 BACKFILL

- A. Backfill is defined as material placed above the level of bedding material. Backfill material consists of native material excavated from the trench that is determined by the ENGINEER to be suitable as backfill. Backfill material used within road prisms shall be granular material, non-frost susceptible, and shall be free of rocks larger than six inches, muck, frozen material, lumps, organic material, trash, lumber, or other debris. All backfill material available from trench excavation shall be utilized prior to the use of imported backfill.

2.4 IMPORTED BACKFILL

- A. Imported Backfill shall consist of imported material and shall conform to the specifications for Class A Shot Rock Borrow Section 02202-Excavation and Embankment.
- B. Material and installation costs of imported backfill shall be incidental to trenching, however there shall be no deduction from the Class A Shot Rock Borrow Pay Item for trenched areas.

2.5 EXCAVATABLE CONCRETE ENCASEMENT

- A. Excavatable concrete encasement shall be a two-sack and sand per cubic yard mix with an 8” slump. Concrete materials shall conform to Section 03301-Structural Concrete.

PART 3 - EXECUTION

3.1 EXCAVATION

- A. Prior to excavating trenches, all necessary clearing and grubbing shall be completed in accordance with the provisions of Section 02201-Clearing and Grubbing.

SECTION 02203 – TRENCHING

- B. Excavation for trenches shall conform to the lines and grades shown on the Plans. The CONTRACTOR shall also do any grading or other measures necessary to prevent surface water from entering the trench.
- C. Excavation of any and all material more than two feet below the invert of a pipe or structure or as shown on the Plans shall be done only when ordered in writing by the ENGINEER. The material so excavated will be handled in the manner described below.
- D. All excavated material suitable for use as backfill shall be piled in an orderly manner separately from unsuitable material, at a sufficient distance from the edge to prevent material from sloughing or sliding back into the trench; except that when the trench is in a traveled roadway the ENGINEER may require removal and temporary storage of excavated material elsewhere.
- E. Material unsuitable for use as backfill shall be hauled to the overburden disposal site off the project, unless otherwise directed in writing by the ENGINEER. The CONTRACTOR is responsible for securing waste disposal sites if none are indicated on the plans. The CONTRACTOR shall obtain the written permission of the landowner for use of all disposal sites, and shall either obtain any required permits or assure that they have been obtained by others. If requested by the ENGINEER, the CONTRACTOR shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the CONTRACTOR.
- F. If the CONTRACTOR fails to comply with the provisions of any city ordinance or permit pertaining to waste disposal or disposal sites; the OWNER shall have the right, after giving 30 days written notice, to bring the disposal sites into compliance and collect the cost of the WORK from the CONTRACTOR, either directly or by withholding monies otherwise due under the Contract.
- G. No more than 150 feet of trench shall be open in advance of laying of pipe, and not more than ten feet of trench shall remain open at the end of each working period. When the trench is in a traveled roadway, it shall be completely backfilled, in accordance with the Specifications, and opened to traffic at the end of each working period.
- H. If explosives are used, the CONTRACTOR shall obtain all necessary permits and comply with all pertinent regulations. All utility companies shall be informed a minimum of 48 hours prior to the use of explosives in the vicinity of their facilities.
- I. The CONTRACTOR shall protect and preserve all existing pavement throughout the entire construction period. No tracked equipment may be operated on any pavement without first protecting the pavement with pavement pads approved by the ENGINEER. All pavement which is damaged in any manner by the CONTRACTOR's operations shall be restored to original or better condition at the CONTRACTOR's expense.
- J. Where required to prevent caving of the trench, or by any safety law or regulation, the CONTRACTOR shall furnish and install bracing and/or sheeting to protect the excavation. This bracing and/or sheeting shall be removed as trench backfill progresses.
- K. The CONTRACTOR shall remove and dispose of all water entering the excavation. Disposal of water shall be done in a manner to prevent damage or nuisance to adjacent property, and in accordance with all applicable laws and regulations. Pumps shall be adequate to maintain a dry trench during the bedding, pipe installation, and initial backfill to an elevation at least one foot above the top of pipe. No backfill may be placed in

SECTION 02203 – TRENCHING

standing water under any circumstance, except when the plans and/or Specifications specifically permit installation of pipe in a wet trench.

- L. Excavations for manholes and similar structures shall be per OSHA standards and large enough to provide proper working room. Any over depth excavation shall be backfilled with concrete or other approved material at the CONTRACTOR's expense.
- M. The CONTRACTOR shall provide temporary support of existing structures, as necessary to protect the structures from settlement or other disturbances caused by construction activities. All structures disturbed by the CONTRACTOR's activities shall be returned to original condition, or better.
- N. Trench excavation shall be completed above the tideline to the extent possible. In areas where the pipe vertical alignment calls for trench excavation below the high tide line the Contractor shall coordinate Work according to tidal schedules such that Work is not conducted within the water.

3.2 BEDDING

- A. Bedding shall be placed in conformance with the lines and grades shown on the Plans and to the limits depicted in the Standard Details. Before placing any bedding material, the bottom of the trench shall be hand-raked ahead of the pipe laying operation to remove stones and lumps which will interfere with smooth and complete bedding of the pipe. The specified bedding material shall then be placed in layer(s) the full width of the trench, each layer not exceeding eight inches in thickness loose measure, and compacted to 95% of maximum density or as specified in the Plans, as determined by AASHTO T 180 D, until the elevation of the plan grade for the pipe invert is attained. The pipe bed shall then be fine-graded by hand and compacted as above. Bell holes shall be hand dug at the location of the joints and shall be of sufficient size to allow proper making of the joint and to prevent the collar or bell of the pipe from bearing on the bottom of the trench.
- B. After the pipe has been laid and approved for covering, the specified bedding material shall be placed evenly on both sides of the pipe for the full width of the trench. Approval for covering does not imply final acceptance of the pipe, or relieve the CONTRACTOR in any way of responsibility to complete the project in conformance with the plans and Specifications. Bedding material shall be placed in layers. The thickness, loose measure, of the first layer shall be either one-half the outside diameter of the pipe plus two inches or eight inches, whichever is least. This layer shall be compacted as specified above to provide solid support to the underside of the pipe.
 - 1. For pipe ten inches and smaller nominal diameter, the next layer shall be of the thickness required to complete placement of the bedding to a plane six inches above the pipe, after compaction as specified above.
 - 2. For pipe twelve inches and larger, the bedding material shall be placed and compacted in layers not more than eight inches in thickness, loose measure, up to a plane six inches above the top of the pipe.
- C. Bedding material compaction shall be achieved by performing a minimum level of compactive effort over the complete coverage area with equipment provided by the CONTRACTOR suitably equipped by the manufacturer for compacting bedding materials.

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1. For each type of bedding material the minimum level of compactive effort shall be established by performing in place density tests in accordance with ATM 213-WAQC FOP for AASHTO 310.
- D. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.
1. If, in the opinion of the ENGINEER, an area appears to have sub-standard compaction or the minimum level of compactive effort requires re-evaluation due to changing site or material conditions additional density tests may be called for by the ENGINEER. The results of such tests shall reestablish the minimum level of compactive effort as determined by the ENGINEER.
- E. Bedding shall be considered incidental to all pipe, structures and utilities and shall be installed as shown in the Plans as part of other work.

3.3 BACKFILL

- A. The trench shall be backfilled above the bedding material, as shown on the Plans, or in the Standard Details, with approved material saved from trench excavation. If there is not sufficient approved material from the excavation, the backfilling of the trench shall be completed utilizing suitable material from roadway excavation, or imported backfill. The backfill and/or suitable material from roadway excavation shall be compacted to 95% of maximum density or as specified in the Plans, as determined by AASHTO T 180-D. Lifts shall not exceed the lift 8 inches in thickness in loose measure unless otherwise directed by the Engineer. After backfilling of the trench is completed, any excess material from trench excavation shall be hauled to a CONTRACTOR furnished disposal site off the project.
- B. Where trenches cross roadways, streets or driveways, backfilling shall be done immediately following excavation and laying of the pipe. All crossings shall be backfilled, compacted, and open to traffic at the end of each day's WORK. Major road crossings shall be excavated and backfilled in half widths of the traveled way so that at least one-half of the roadway is open to controlled traffic at all times during the WORK. All WORK performed within a right-of-way shall be done in conformance with the appropriate permits issued by the respective agency having jurisdiction over the right-of-way.
- C. At least 24 hours prior to commencing backfilling operations, the CONTRACTOR shall notify the ENGINEER of the proposed method of compaction. No method will be approved until the CONTRACTOR has demonstrated, under actual field conditions, that such method will produce the degree of compaction required.
- D. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.

SECTION 02203 – TRENCHING

3.4 EXCAVATABLE CONCRETE ENCASEMENT

- A. Excavatable Concrete Encasement shall be placed in accordance with Section 03301-Structural Concrete to the dimensions as specified in the Plans. Concrete shall be manually worked between conduits in a manner approved by the Engineer.

3.5 ASPHALT CONCRETE PAVEMENT

- A. Pavement to be removed shall be neatly saw cut full depth along straight lines. Only such pavement shall be removed as is necessary to excavate for the appurtenances unless otherwise indicated in the Plans or directed by the ENGINEER. The pavement shall be cut a sufficient distance outside the excavation to prevent damage to adjacent pavement by lifting or tearing the mat; minimum of 6 inches in all cases.
- B. After trench backfilling is complete, the edges of existing pavement shall be neatly saw cut vertically as shown on the Plans. All loose, cracked or undermined sections of existing pavement shall be removed. A tack coat shall be placed on the existing pavement edge just prior to placing new pavement.
- C. Pavement shall be replaced in accordance with Section 02801 - Asphalt Concrete Pavement, and as shown on the Plans and Standard Details. Pavement shall be placed in all streets and highways as soon as possible after completion of backfilling. All trenched highway crossings shall be patched within five days from the date each trench is first opened, unless otherwise shown in the Contract Documents, or approved by the ENGINEER. When weather conditions, unavailability of material, or time preclude placing permanent pavement within five days, temporary pavement shall be installed. Temporary paving will consist of at least a two inch thick layer of a pre-mixed, asphaltic surfacing material, and shall be installed and maintained flush with the existing surface until the permanent pavement is in place. Temporary pavement shall be removed prior to placing permanent pavement.
- D. There shall be zero grade change perpendicular to the trench.
- E. Permanently seal all asphalt to asphalt and asphalt to concrete joints with *Crafco Roadsaver 220* or approved equal after the permanent asphalt is in place. The CONTRACTOR shall repair all failed seals at joints during the 12 months after the date of final payment.

3.6 PORTLAND CEMENT CONCRETE

- A. Portland cement concrete shall be replaced in accordance with Section 03301 – Structural Concrete and the details shown on the Plans or in Standard Details.

END OF SECTION

SECTION 02204 - BASE COURSE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and placing one or more layers of aggregate base or leveling course on a prepared surface to the lines and grades shown on the Plans.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Aggregate base course shall consist of crushed gravel or crushed stone, conforming to the quality requirements of AASHTO M 147. The aggregate shall be free from lumps, balls of clay, or other objectionable matter, and shall be durable and sound.

1. Base course shall be sampled according to "WAQTC FOP for AASHTO T2 – Sampling Aggregates" as described in the *Alaska Test Methods Manual*, ATM 301 published by the Alaska Department of Transportation and Public Facilities.
2. Coarse aggregate (that material retained on the No. 4 sieve) shall be crushed stone and shall consist of sound, tough, durable rock of uniform quality. Rock shall be free of schist that cleaves along preferred foliation planes. Rock shall be free of platy mineral grains. Metamorphosed rock shall be free of slaty cleavage. All material shall be free from clay balls, vegetable matter or other deleterious matters. Coarse aggregate shall not be coated with dirt or other finely divided mineral matter. All aggregates shall be free of roots and wood. In addition, coarse aggregate shall meet the following requirements:

Property	Value	Test Method
L.A. Wear, %	25 max.	AASHTO T 96
Degradation Value	45 min.	ATM 313
Fracture, %	70 min.	WAQTC FOP for AASHTO TP 61
Plastic Index	6 max.	WAQTC FOP for AASHTO T 90
Sodium Sulfate Loss, %	9 max.	AASHTO T 104

3. Aggregate shall not exceed eight (8) percent thin -elongated pieces as determined by ATM 306.
 4. Fine Aggregate: Fine aggregate (passing the No. 4 sieve) shall meet the quality requirements of AASHTO M 29.
- B. Base course material shall conform to one of the following gradations as specified:

SECTION 02204 - BASE COURSE

BASE COURSE GRADATIONS
(Percent passing by weight)

<u>Sieve Designation</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>C-1</u>	<u>D</u>	<u>D-1</u>	<u>E</u>	<u>E-1</u>
4	100							
2		100						
1 1/2	70-100			100				
1	40-70		100	70-100		100		
3/4				60-90	100	70-100	100	
3/8	0-10			45-75		50-80		100
No. 4		30-70	40-75	30-60	45-80	35-50		45-80
No. 8				22-52		20-35		32-80
No. 10			25-55		30-65			
No. 40	0-2			8-30		8-30		
No. 200		3-10	4-10	0-6	4-12	0-6	0-6	0-6

- C. For gradations C, D, & E at least 50% by weight of the particles retained on the No. 4 sieve shall have at least one fractured face as determined by WAQTC FOP for AASHTO TP 61 as described in ATM 305.
- D. For gradations A, C-1, D-1 & E-1, at least 70% by weight of the particles retained on a No. 4 sieve shall have at least one fractured face as determined by WAQTC FOP for AASHTO TP 61 as described in ATM 305.
- E. Roadway Base Course shall meet the requirements listed above and consist of (2) layers of distinct material totaling 12-inches in compacted depth. The top 2-inches of material shall be Base Course Grading D-1 as specified above. The bottom 10-inches shall be a 2-inch minus shot rock and shall conform to the following:
 - 1. 2-Inch Minus Shot Rock shall contain no mulch, frozen material, roots sod or other deleterious matter, and shall be obtained from a rock quarry, unless approved otherwise by the ENGINEER.
 - 2. The shot rock shall meet the following gradation;

<u>Sieve Designation</u>	<u>% Passing</u>
2	100
1 1/2	
1	0-10
3/4	
3/8	
No. 4	0-5
No. 8	
No. 10	
No. 40	
No. 200	0-2

SECTION 02204 - BASE COURSE

3. At least 50% by weight of the particles retained on the 3/8-inch sieve shall have at least two fractured faces as determined by WAQTC FOP for AASHTO TP 61 as described in ATM 305.
4. At least 70% by weight of particles shall be retained on the 1-inch sieve and 100% shall pass the 2-inch sieve.
5. Elongation Specifications:
 - a. The length of the crushed stone backfill shall not be more than twice the designated screen dimensions.
6. 2-Inch Minus Shot Rock for shall have a maximum Nordic Abrasion value of 22. Test procedure for Nordic Abrasion is Alaska Test Method 312.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Prior to placement of the base course, the underlying surface shall be prepared by dressing, shaping, wetting or drying, and compacting of the underlying material to a minimum of 95% maximum density or as specified in the Plans as determined by AASHTO T 180-D or as specified under Section 02202 – Excavation and Embankment. Surfaces shall be cleaned of all foreign substances and debris.
- B. Any ruts or soft yielding spots that may appear shall be corrected by loosening and removing unsatisfactory material and adding approved material as required, reshaping, and recompacting the affected areas to the lines and grades indicated on the Plans. If required by the ENGINEER, the CONTRACTOR shall proof load questionable areas with a loaded truck or other piece of equipment approved by the ENGINEER.
- C. Blue tops shall be set to the top of base course. They shall be set by the CONTRACTOR at breaks in grade and on even grade at intervals not to exceed 50 feet.
- D. Base course material shall be deposited and spread in a uniform layer to the required grades, and to such loose depth that when compacted to the density required, the thickness will be as indicated on the plans. Portions of the layer which become segregated shall be removed and replaced with a satisfactory mixture, or shall be remixed to the required gradation.
- E. Base course material compaction shall be achieved by performing a minimum level of compactive effort over the complete coverage area with equipment provided by the CONTRACTOR suitably equipped by the manufacturer for compacting base course materials.
 1. For each type of material the minimum level of compactive effort shall be established by performing in place density tests in accordance with ATM 213-WAQTC FOP for AASHTO 310.
- F. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.

SECTION 02204 - BASE COURSE

1. If, in the opinion of the ENGINEER, an area appears to have sub-standard compaction or the minimum level of compactive effort requires re-evaluation due to changing site or material conditions additional density tests may be called for by the ENGINEER. The results of such tests shall reestablish the minimum level of compactive effort as determined by the ENGINEER.
- G. The maximum compacted thickness of any one layer shall not exceed six (6) inches. If the required compacted depth exceeds six (6) inches, the base shall be constructed in two (2) or more layers of approximately equal thickness. Each layer shall be shaped and compacted before the succeeding layer is placed.
- H. Base course shall be compacted to at least 95% of its maximum density or as specified in the Plans, as determined by AASHTO T 180-D.
- I. Blading, rolling, and tamping shall continue until the surface is smooth and free from waves and irregularities. If at any time the mixture is excessively moistened, it shall be aerated by means of blade graders, harrows, or other approved equipment, until the moisture content is such that the surface can be recompacted and finished as above.
- J. The finished surface of the base course, when tested using a 10-foot straightedge, shall not show any deviation in excess of 3/8-inch between two contact points. The finish surface shall not vary more than 1/2-inch from established grade. Additionally, the algebraic average of all deviations from established grade of the finish base course surface elevations taken at 50-foot intervals shall be less than 0.02-foot.

3.2 ROADWAY BASE COURSE

- A. The full depth of 2-inch minus shot rock shall be graded to a uniform surface and compacted with a vibratory roller prior to placing base course, Grading D-1. No base course, Grading D-1 shall be placed until the 2-inch minus shot rock layer has been approved by the ENGINEER.

END OF SECTION

SECTION 02205 – ARMOR ROCK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and placing armor rock and perimeter rocks, as shown in the Plans, and as directed by the ENGINEER.

PART 2 - PRODUCTS

2.1 ARMOR ROCK

- A. Stone for this WORK shall be hard angular quarry stones, having a percentage of wear of not more than 50 at 500 revolutions as determined by ASTM C535. The least dimension of any piece of stone shall be not less than 1/3 of its greatest dimension. Stones shall meet the following gradation based on the number of stones method of grading as described herein.
- B. Class I Armor Rock
 - 1. No more than 10% of the stones by total number shall weigh more than 50 pounds per piece and no more than 50% by total number of the stones shall weigh less than 25 pounds per piece. The stones shall be evenly graded.
- C. Class II Armor Rock
 - 1. No more than 10% of the stones by total number shall weigh more than 400 pounds per piece and no more than 15% by total number of the stones shall weigh less than 25 pounds per piece. The stones shall be evenly graded and a minimum of 50% by total number of the stones shall weigh 200 pounds or more per piece.
- D. Class III Armor Rock
 - 1. No more than 10% of the stones by total number shall weigh more than 1,400 pounds per piece and no more than 15% of the stones by total number shall weigh less than 25 pounds per piece. The stones shall be evenly graded and a minimum of 50% of the stones by total number shall weigh 700 pounds or more per piece.
- E. Class IV Armor Rock
 - 1. No more than 10% of the stones by total number shall weigh more than 5,400 pounds per piece and no more than 15% of the stones by total number shall weigh less than 400 pounds per piece. The stones shall be evenly graded and a minimum of 50% of the stones by total number shall weigh 2,000 pounds or more per piece.

2.2 GEOTEXTILE FABRIC

- A. Geotextile Fabric shall conform to the requirements of Section 02714 – Geotextile Fabric.

PART 3 - EXECUTION

3.1 ARMOR ROCK

SECTION 02205 – ARMOR ROCK

- A. Foundation or toe trenches and other necessary excavations shall be completed and approved by the ENGINEER prior to placing armor rock. Slopes to be protected with armor rock shall be free of brush, trees, stumps and other objectionable material and shall be dressed to a reasonably smooth surface.
- B. Unless otherwise noted or authorized by the ENGINEER, the armor rock protection shall be placed in conjunction with the construction of the embankment with only sufficient lag in construction of the armor rock protection as may be necessary to place geotextile fabric and to prevent mixture of embankment and armor rock material.
 - 1. Unprotected embankment and slopes are subject to erosion from wave and tidal action. Placement of armor rock shall be scheduled to provide protection against erosion of the underlying embankment and excavated slopes at all times.
- C. The CONTRACTOR shall provide a level, compact area of sufficient size to dump and sort typical loads of armor rock material for ENGINEER inspection and approval prior to placement.
 - 1. The CONTRACTOR shall provide assistance, including mechanical equipment and operators, to sort, measure, and otherwise aid the ENGINEER during inspection of individual stones as required to verify armor rock is within specifications.
- D. Geotextile Fabric shall be installed per Section 02714 – Geotextile Fabric.
- E. Armor rock shall be placed and distributed by mechanical means to provide a uniform mass of stones. All armor rock shall be placed and distributed such that there are no large accumulations or areas composed primarily of either larger or smaller stones. Such areas shall be adjusted and redistributed by mechanical means per ENGINEER direction.
 - 1. The stones shall be handled or placed with an excavator as to secure a stone mass of the thickness, height and length shown on the Plans, with a minimum of voids.
 - 2. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of an excavator, rock tongs, or other suitable equipment to secure a reasonably regular surface and mass stability.
- F. Armor rock shall be uniformly placed to its full course thickness in one operation on prepared slopes and in such a manner to avoid damaging geotextile fabric or displacing underlying material. Placement shall proceed up the slope from the toe. Placement by end dumping methods from the top of the slope will not be allowed.
- G. Final acceptance of armor rock materials shall be in final location following field sorting, inspections, mechanical manipulation and placement.

END OF SECTION

SECTION 02401 – WASTEWATER OUTFALL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section requires providing all labor, materials, tools and equipment necessary for the construction of the wastewater outfall in its entirety, including furnishing and installing; all pipe, couplings, fittings, fittings, flanges, diffuser, concrete pipe anchors, as well as performing all flushing, testing, and other associated items, complete as shown in the Plans to the satisfaction of the ENGINEER and in accordance with the requirements of the Contract Documents.
- B. The terms sanitary sewer and wastewater are used interchangeably throughout the plans and specifications.

1.2 GENERAL REQUIREMENTS

- A. The CONTRACTOR shall install the outfall pipe, fittings and diffuser to the horizontal and vertical alignment shown on the Plans and shall complete all associated WORK described in this Section.
- B. The CONTRACTOR is responsible for knowledge of all permits as well as local, state, and federal codes, standards, or statutes related to the WORK he performs. The CONTRACTOR shall install the system in compliance with such regulations and shall notify the ENGINEER immediately of any discrepancies.

1.3 SUBMITTALS

- A. The Contractor shall review the Specification in its entirety and provide all required submittals to the ENGINEER prior to performing the associated WORK.
- B. Submittals shall be compiled by the CONTRACTOR and submitted in accordance with Section 01300 Submittals.
- C. On catalogue sheets with more than one item, clearly indicate which item shall be utilized.
- D. Submittals for this Section shall include, but may not be limited to the following.
 - 1. Wastewater pipe and fittings: Submit material certifications and manufacturer's data sheets.
 - 2. HDPE pipe fusion technicians: Certificate of fitness issued in accordance with 49 CFR 192.285 by an appropriate agency.
 - 3. Flanges, backup rings and hardware: Material certifications and manufacturer's data sheets.
 - 4. Concrete Pipe Anchors: Mix Design, rebar material and coatings certification.
 - 5. Outfall Pipe Testing Plan.
 - 6. Pipe installation plan.
 - 7. Outfall pipe and diffuser location report.

PART 2 - PRODUCTS

2.1 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

- A. High Density Polyethylene Pipe (HDPE) and fittings shall be manufactured in accordance with AWWA C906. HDPE shall be manufactured from PE4710 polyethylene compounds that meet or exceed ASTM D3350 Cell Classification 445574. All HDPE pipe and fittings shall be certified by the NSF for potable water service. HDPE pipe and fitting material compound shall contain color and ultraviolet (UV) stabilizer meeting or exceeding the requirements of Code C per ASTM D3350.

SECTION 02401 – WASTEWATER OUTFALL

- B. HDPE outfall pipe shall be SDR 21 rated for a minimum of 100 psi unless otherwise noted.
1. HDPE diffuser pipe shall be SDR 17.
- C. HDPE fittings shall be PE4710 with the cell classification noted above. Fittings shall be molded unless otherwise approved by the engineer with pressure ratings at a minimum equal to that of the pipe. Fittings shall be butt fusion type unless otherwise noted on the Plans or approved by the ENGINEER. Electro-fusion connections are allowed where shown on the Plans and elsewhere on a limited basis upon Engineer approval. Fittings and connections shall conform to the following:
1. Butt fusion fittings shall meet ASTM D3261
 2. Electro-fusion fittings shall meet ASTM F1055
 3. Socket fittings are not permitted.
- D. Flanged pipe connections are allowed where shown on the Plans and elsewhere on a limited basis upon Engineer approval. Flanges shall be PE 4710, with a minimum Cell Classification as noted above. Flanges shall conform to ASTM D 3261 or ASTM F 2206 as applicable. Flanges shall have a pressure rating equal to the pipe unless otherwise specified on the plans. Markings for molded or machined flanges shall be per ASTM D 3261. Fabricated flange adapters shall be per ASTM F 2206.
1. Back-up rings, shall be 316 stainless steel or polypropylene encapsulated ductile iron where submerged and hot dip galvanized steel elsewhere unless otherwise noted in the Plans. Bolt-holes and bolt-circles shall conform to one of these standards: ASME B-16.5 Class 150, ASME B-16.47 Series A Class 150, ASME B-16.1 Class 125, or AWWA C207 Class 150 Series B, D, or E. The back-up ring shall provide a long-term pressure rating equal to the pressure class of the pipe or 250 psi, whichever is greater. The pressure rating shall be clearly marked on the back-up ring.
 2. Bolts and associated hardware shall be 316 stainless steel where submerged and hot dip galvanized elsewhere unless otherwise noted in the Plans and provided in accordance with Section 05120 Metal Fabrication.

2.2 INSULATION BOARD

- A. Insulation board shall be Dow Chemical Company, Styrofoam Highload 40, or approved equal.

2.3 UNDERGROUND MARKING TAPE

- A. Underground marking tape for HDPE pipe shall be green, six inch wide, four mil thick, polyethylene tape with black lettering with the following wording: "Caution: Sewer Pipe Buried Below." Marking tape shall be installed 12 inches above the top of all wastewater pipe above an elevation of -4 feet MLLW.

2.4 CONCRETE

- A. Concrete for pipe anchors shall conform to the following:

1.	Minimum Cement Content (94 lb.sacks/cy)	6
2.	Silica Fume in Lbs./cy	50
3.	Maximum Water Content Ratio in Gal./Sack cement	5.0
4.	Slump Range in Inches (before plasticizer)	4" max.
5.	Entrained Air Range in Percentage	4-7 %
6.	Coarse Aggregate (AASHTO Gradation)	No. 67
7.	Fine Aggregate (AASHTO Gradation)	M-6

SECTION 02401 – WASTEWATER OUTFALL

8. Minimum Design Strength, psi (f'c) 4,000
- B. Reinforcing steel shall be either hot dip galvanized or epoxy coated conforming to the following:
1. Galvanized Reinforcing Bars: A 706/A 706M, Grade 60 deformed for bent or welded bars, ASTM 615A/615M, Grade 60 for Strait Bars, ASTM A 767/A 767M, Class I galvanized after fabrication and bending.
 2. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, Grade 60 for strait bars, ASTM A 706/A 706M, for bent bars, deformed, ASTM A 775/A 775M or ASTM A 934/A 934M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- C. Steel hardware for anchors shall be 316L stainless steel and shall be provided in accordance with Section 05120-Metal Fabrication.

PART 3 - EXECUTION

3.1 GENERAL

- A. The CONTRACTOR shall develop and submit to the ENGINEER for review and approval prior to proceeding with any work described in this section an Outfall Pipe Installation Plan. The Plan shall address each pertinent task and describe the personnel and the equipment to be utilized to complete the task in accordance with these Specifications and applicable permits. At a minimum the Plan shall consider the following:
1. Staging.
 2. Fusing.
 3. Testing, (include the testing plan.)
 4. Upland pipe installation with tidal considerations.
 5. Pipe anchor installation.
 6. Marine pipe launching and towing to the site.
 7. Submarine trenching, stockpile, and backfill.
 8. Positioning the pipe including determining coordinates and clearances.
 9. Bending the pipe to alignment shown on the plans.
 10. Fill and sink installation of pipe observing bending radii of pipe.
 11. Locating existing diffuser.
 12. Diffuser positioning and installation.
 13. Outfall location reporting.
- B. The CONTRACTOR shall preserve and protect all existing utilities and other facilities including but not limited to: telephone, television, electrical, water and sewer utilities, surface or storm drainage, highway or street signs, mail boxes, and survey monuments.
- C. The CONTRACTOR shall immediately notify the Haines Borough of utilities or other facilities damaged during construction and shall immediately repair or replace that which was damaged. The CONTRACTOR shall support and protect any underground utility conduits, pipes, or service lines where they cross the trench.
- D. The CONTRACTOR shall give at least 48 hours notice to the Haines Borough Water and Wastewater Utility Divisions and the Haines Borough Harbors Department prior to:
1. Needing water or sewer line locates;
 2. Interruption of utility service in any area; or
 3. Use of water from any fire hydrant.

SECTION 02401 – WASTEWATER OUTFALL

- E. Any service disruption shall be restored as soon as possible. The CONTRACTOR shall notify all local radio stations and any major customers who will be affected of a planned service disruption.
- F. The CONTRACTOR shall review product cut sheets, installation instructions and confer with manufacturer's representatives as required for all pipe and products and shall handle, install, test and operate all products per the manufacturer's recommendations to the extent required to perform the WORK. Unless otherwise approved in writing by the ENGINEER the CONTRACTOR shall not deviate from manufacturer's instructions or recommendations.

3.2 GENERAL PIPE INSTALLATION

- A. All pipe and fittings shall be inspected for defects. Damaged pipe will be rejected and the CONTRACTOR shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours.
- B. Whenever it becomes necessary to cut a length of pipe, the cut shall be made by abrasive saw or by special pipe cutter.
- C. The pipe shall be laid to the horizontal and vertical alignment shown on the Plans. When buried the minimum cover as shown in the Plans shall be maintained from finish grade to top of pipe, unless otherwise noted. Fittings shall be installed at the location shown on the Plans and elsewhere upon ENGINEER approval.
- D. To prevent dirt, fluids, or other foreign material from entering the pipe and fittings during handling and installation, the open end of the pipe shall be protected by a water-tight plug at all times except when joining the next section of pipe.
- E. Under no circumstances shall pipe deflections, either horizontal or vertical, exceed the manufacturer's printed recommendations. Where deflections would exceed the manufacturer's recommendations, fittings shall be used.
- F. All trench excavation, bedding and backfill shall be performed in accordance with the provisions of Section 02203-Trenching.
- G. At crossings wastewater pipe shall be installed beneath potable water or storm water pipe with a minimum of eighteen inches of clearance between the pipes unless otherwise approved in writing by the ENGINEER.

3.3 HDPE PIPE INSTALLATION

- A. HDPE water pipe and fittings shall be joined using butt fusion unless otherwise specified in the Plans or approved by the ENGINEER. The pipe shall be joined by the butt fusion procedure described in ASTM F 2620. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations by certified technicians. The CONTRACTOR shall submit a certificate of fitness issued by an appropriate agency for each technician prior to beginning fusion operations.
- B. The fusion machine shall be equipped with a data-logger to record the fusion process including heater temperature and fusion pressure profile over time for each joint. Each joint shall be externally marked with a unique identifier that will allow the joint to be matched with its corresponding data. The CONTRACTOR shall maintain the data recorded by the data-logger throughout the warranty period of the WORK. This information shall be provided to the ENGINEER upon request.

SECTION 02401 – WASTEWATER OUTFALL

- C. For each day of fusing HDPE, cut out two eight inch by one inch strips of the pipe centered on the first butt-fused joint and deliver to the ENGINEER.
 - 1. One of the strips shall be tested by the ENGINEER for integrity upon delivery. If joint does not appear satisfactory the CONTRACTOR shall take immediate corrective action and provide new test strips to the ENGINEER until the problem is rectified.
- D. Electro-fusion joining shall be done in accordance with the manufacturer's recommended procedure and ASTM F 1290. The electro-fusion transformer unit shall be the type capable of reading the electronic barcode associated each fitting and storing the fuse input and result information electronically. The CONTRACTOR shall maintain the data recorded by the electro-fusion unit throughout the warranty period of the WORK. This information shall be provided to the ENGINEER upon request. Electro-fusion joints shall be made by a qualified technician.
- E. Flange installation shall follow the guidelines of Plastic Pipe Institute Technical Note # 38.
- F. Socket fusion joints are not permitted.
- G. Prior to making final connections to the existing HDPE outfall pipe designated to remain or any other modifications thereto, the contractor shall construct, and pressure test the new HDPE outfall pipe in its entirety. Final connection shall performed at a low flow period during an outgoing tide at an elevation of +2 feet MLLW or lower. Connection shall be coordinated with the ENGINEER, OWNER and Haines Borough Wastewater Department such that system down time is limited to 1 hour maximum.

3.4 INSULATION BOARD INSTALLATION

- A. A maximum of 8 inches of insulation board shall be required around buried wastewater pipe on three sides per ENGINEER direction where the depth of cover to top of pipe is less than that specified in the plans, at storm drain crossings, in the proximity of manholes, vaults, or similar structures and elsewhere as shown on the plans or per ENGINEER direction.
- B. Insulation board shall be staggered such that joints for respective layers are offset a minimum of 6".

3.5 OUTFALL LOCATION REPORTING

- A. The CONTRACTOR shall record latitude, longitude and depth of the outfall at the outfall layout points provided in the Plans and at 100-foot maximum intervals. Reporting shall be in decimal degrees to a minimum of 5 decimal places.
- B. The system used to track latitude and longitude shall account for range and bearing from the outfall pipe to the surface unit to provide the greatest degree of accuracy practicable.
 - 1. The CONTRACTOR shall submit an Outfall Location Reporting Plan as an attachment to the Outfall Pipe Installation Plan.

3.6 HDPE OUTFALL TESTING

- A. The CONTRACTOR shall hydrostatically test all newly installed HDPE outfall pipe.
- B. The ENGINEER shall be present for all hydrostatic and leakage tests. The CONTRACTOR shall notify the ENGINEER at least 24 hours prior to any test and shall notify the ENGINEER at least two hours in advance of the scheduled time if the test is to be cancelled or postponed.

SECTION 02401 – WASTEWATER OUTFALL

- C. Sections to be tested shall be limited to 2,000 feet, unless otherwise approved in writing by the ENGINEER.
 - 1. The CONTRACTOR shall provide a Hydrostatic Testing Plan to the ENGINEER which will allow the outfall pipe up to the diffuser to be tested in no more than four lengths.
 - 2. A maximum of 3 butt-fused joints shall be allowed to be visually inspected with no hydrostatic test. The ENGINEER shall be present for the fusing of these joints.
- D. The CONTRACTOR shall furnish all assistance, equipment, labor, materials, and supplies necessary to complete the test to the satisfaction of the ENGINEER.
- E. The CONTRACTOR shall install temporary blind flanges and taps as required to test the sections of pipe. Flanges and taps shall be cut out after testing to allow for the segments to be butt-fused together.
- F. Test connections shall be identified in the CONTRACTOR's Hydrostatic Testing Plan.
- G. Prior to testing, all air shall be expelled from the water pipe.
- H. Testing shall be performed with water only. Compressed gas will not be accepted as a suitable test medium.
- I. The hydrostatic test pressure shall be 100 psi unless otherwise directed by the ENGINEER.
- J. HDPE hydrostatic testing shall be performed using the "pressure drop" method. The "make up water" test method will not be accepted. Testing shall be performed in accordance with ASTM F-2164 and the procedure described herein:
 - 1. Fill the test section slowly with water ensuring all air is purged from the system. Filling should be performed from the point in the system lowest in elevation. If this point is inaccessible the CONTRACTOR shall take reasonable measures to ensure the system is purged of air prior to testing.
 - 2. Allow the test section temperature to equalize throughout.
 - 3. Slowly pressurize the test section to the test pressure as indicated in part B.
 - 4. Add make-up water as necessary to maintain the test pressure for a minimum of 4 hours.
 - 5. Reduce the pressure by 10 psi; this will be the test phase pressure.
 - 6. Without increasing the pressure or adding make-up water monitor the system and visually inspect for leakage. A passing test is indicated if no visual leakage is observed and the pressure remains within 5% of the test phase pressure for a minimum of 1 hour.
- K. If the test section fails, depressurize the system and repair defective areas. Defective materials or poor quality of WORK, discovered as a result of the hydrostatic tests, shall be replaced by the CONTRACTOR. Whenever it is necessary to replace defective material or correct the workmanship, the hydrostatic test shall be repeated until a satisfactory test is obtained.
- L. The system must be allowed to "relax" for a minimum of 8 hours prior to retesting.
- M. The connection to the existing HDPE outfall pipe shall not require hydrostatic testing, but shall be visually inspected by the ENGINEER under typical flow conditions prior to burial of the pipe.

SECTION 02401 – WASTEWATER OUTFALL

1. If leakage in this joint is detected, as determined by the ENGINEER the CONTRACTOR shall take immediate corrective action, observing requirements for system flow and downtime.

END OF SECTION

SECTION 02501 - STORM SEWER PIPE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing pipe culverts and insulation Board in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the plans or established by the ENGINEER.

1.2 SUBMITTALS

- A. Storm Sewer Pipe: Material certifications.

PART 2 - PRODUCTS

2.1 CORRUGATED POLYETHYLENE PIPE

- A. Corrugated polyethylene pipe (CPP) shall be high density corrugated polyethylene, smooth interior pipe, and shall be manufactured in conformity with the latest AASHTO M-252 or AASHTO M-294, Type S Specification, and shall meet the requirements of ASTM D3350 Cell Classification 324420C, or ASTM D1248 type III, Class C, Category 4, Grade P33.
- B. Pipe shall be joined with Hancor, Inc. Hi-Q Sure-Lok (bell-and-spigot) joint, or approved equal, meeting the requirements of AASHTO M294. The bell shall be an integral part of the pipe and provide a minimum pull-apart strength of 400 lbs.
- C. The bell-and-spigot joint shall incorporate a gasket making it silt-tight. Gaskets shall be installed in the bell by the pipe manufacturer.
- D. Fittings shall conform to AASHTO M252 or AASHTO M294. Fabricated fittings shall be welded on the interior and exterior at all junctions.

2.2 PVC PIPE CONDUIT

- A. PVC Pipe Conduit shall have a standard dimension ration (SDR) of 35 and conform to ASTM D 3034. Before any PVC pipe is used on this Project, the CONTRACTOR shall supply certifications, signed by an authorized agent of the seller or manufacturer, stating that the material has been sampled, tested, and inspected in accordance with ASTM D 3034.
- B. The pipe shall have integral wall bell and spigot joints conforming to ASTM D 3212. The bell shall consist of an integral wall section with a solid cross section elastomeric ring, factory assembled, securely locked in place to prevent displacement.
- C. Flexible watertight connections, approved by the ENGINEER, shall be used at PVC pipe connections to manholes and other rigid structures.

SECTION 02501 - STORM SEWER PIPE

2.3 INSULATION BOARD

- A. Insulation board shall be Dow Chemical Company, Styrofoam Highload 40, or approved equal.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Excavation, Bedding, and Backfill shall conform to the requirements of Section 02203 – Trenching. All pipe shall have a minimum cover of 12 inches, unless otherwise shown on the Drawings or directed by the ENGINEER.
- B. The pipe laying shall begin at the downstream end of the pipe. The lower segment of the pipe shall be in contact with the shaped bedding throughout its full length. Bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe shall be placed facing upstream.
- C. Paved or partially lined pipe shall be laid so that the longitudinal centerline of the paved segment coincides with the flow line. Elliptical and elliptically reinforced pipes shall be placed with the minor axis within five degrees of a vertical plane through the longitudinal axis of the pipe.
- D. If the spelter coat or galvanized metal pipe is damaged during installation, the CONTRACTOR shall make necessary repairs to the spelter in accordance with AASHTO M 36, or replace the damaged section of pipe, at no additional cost to the OWNER.
- E. Rigid conduits may be of bell and spigot or tongue and groove design unless one type is specified. Conduit sections shall be joined such that the inner surfaces are reasonably flush and even.
- F. Joints shall be made with portland cement mortar, portland cement grout, rubber gaskets, plastic sealing compound, or by any combination of these types, or any other approved type, as may be specified.
- G. Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the conduit and finished smooth on the inside. For grouted joints, molds or runners shall be used to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible, watertight seal. Joints in concrete pipe shall be thoroughly wetted before mortar or grout is applied.
- H. Where portland cement mixtures are used, the completed joints shall be protected against rapid drying by a suitable curing method.
- I. Flexible conduits shall be firmly joined by approved coupling bands.
- J. Conduit shall be inspected before any backfill is placed. Any pipe found to be substantially out of alignment, unduly settled, or damaged shall be taken up and relaid or replaced.

SECTION 02501 - STORM SEWER PIPE

- K. Installation of all pipes shall conform to the manufacturer's recommended procedures. These Specifications and the Drawings shall take precedence over the manufacturer's recommendations in the event of conflict, if more restrictive.
- L. Four and six inch pipe culvert shall be installed as shown on the Drawings, unless otherwise directed by the ENGINEER. Other service pipe connections may be necessary, depending on whether unknown existing drainage pipes or drainages are encountered. Additional saddle tees shall be provided, as necessary, for storm service piping required in addition to those services shown on the Drawings. All bends, couplings and other fittings as necessary to connect to existing pipes or flows and to maintain a minimum cover of 12 inches shall be provided.
- M. All storm service pipes to be stubbed out shall be capped and marked with a pressure treated two inch or four inch post extending from the cap to one inch above ground surface with the top six inches painted green.
- N. All cut corrugations on CPP pipe shall be cleared of all water and completely grouted to prevent the accumulation of water.
- O. Pipe Culvert w/Underdrain shall be constructed with two pipes as shown on the Drawings. The flowlines of the two pipes shall be along the same gradeline, unless otherwise shown on the Drawings or if pipe laterals connected to the storm drain pipe would conflict with the underdrain pipe. Where the lateral pipe would conflict with the underdrain pipe, the underdrain pipe shall be graded to pass beneath the lateral pipe along a length that will provide a minimum flow rate of 0.4%.
- P. Insulation Board shall be installed in accordance with CBJ Standard 412.

END OF SECTION

SECTION 02502 – STORM SEWER MANHOLES, INLETS, AND CATCH BASINS

- 3. Cold-Drawn Steel Wire AASHTO M 32 (ASTM A 82)
- 4. Fabricated Steel Bar or Rod Mats AASHTO M 54 (ASTM A 184)

2.4 CORRUGATED METAL UNITS

- A. Corrugated metal units shall conform to plan dimensions. Steel units shall conform to AASHTO M 36 and aluminum units shall conform to AASHTO M 196. Polymer precoating shall conform to AASHTO M 245 for the type specified.
- B. Branch stubs shall be corrugated pipe sections extending 12 inches from the inlet unit to match the connecting pipe size shown on the Drawings.

2.5 PRECAST CONCRETE UNITS

- A. Precast concrete units shall conform to the requirements of AASHTO M 199, except that the absorption test will not be required.
- B. Cracks in units will be cause for rejection. Honeycombed or patched areas in excess of 30 cumulative square inches will be cause for rejection.
- C. Concrete shall conform to Section 03302 – Concrete Structures.
- D. Manhole steps shall meet current state and federal safety standards.

2.6 CORRUGATED POLYETHYLENE PIPE UNITS

- A. The pipe used for these units shall conform to the requirements of Section 02501 – Storm Sewer Pipe.
- B. The bottom plate shall be factory sealed to the barrel section, per pipe manufacturer's recommendations.
- C. Branch stubs shall be corrugated polyethylene pipe sections extending 12 inches from the inlet unit to match the connecting pipe size shown on the Drawings and shall be factory connected to the barrel section.

2.7 WATER QUALITY UNIT

- A. The Water Quality Unit shall be a 40-foot, 48-inch diameter storm water quality unit with 24-inch CPP bypass pipe, model number *4840WQA24* as manufactured by *Advance drainage Systems Inc.*
- B. Bypass manholes shall be Type I manholes as specified herein.

2.8 INSULATION BOARD

- A. A maximum of 6 inches of insulation board shall be required around buried storm drain pipe on three sides per ENGINEER direction where the depth of cover between storm drain pipes or manholes and water or wastewater lines is less than 5-feet.
- B. Insulation board shall be *Dow Chemical Company, Styrofoam Highload 40*, or approved equal.

PART 3 - EXECUTION

3.1 GENERAL CONSTRUCTION

- A. Existing storm flow shall not be impeded during construction.

SECTION 02502 – STORM SEWER MANHOLES, INLETS, AND CATCH BASINS

- B. On resurfacing contracts, the metal frames and gratings shall be adjusted to grade prior to placing the surface course unless otherwise approved in writing by the ENGINEER.
- C. Excavation, bedding and backfilling shall conform to the requirements of Section 02203 – Trenching.
- D. Manhole pipe connections shall be made as shown on the Drawings and as required by the manufacturer's recommendations. A snug, watertight seal shall be provided for each pipe connection.
- E. All manholes shall be bedded in accordance with CBJ Standard Detail 303 – Storm Drain Manhole Types I & II.
- F. Welding shall be done in accordance with the best modern practice and the applicable requirements of AWS D1.1 except as modified by AASHTO "Standard Specifications for Welding of Structural Steel Highway Bridges."
- G. Metal frames shall be set over the cast-in-place concrete support structure with a maximum ¼-inch thick mortar bed.
- H. Manholes located in asphalt paved roadways shall have a concrete collar installed below the ACP in accordance with CBJ Standard 126.
- I. Manholes and catch basins shall be constructed in accordance with the Drawings and Standard Details. There shall be a minimum 16-inch catch constructed in the invert of the manholes or catch basins, unless otherwise specified. After the mortar is set, holding the pipe in place, the pipe shall be cut off evenly so that the pipe protrudes into the manhole or catch basin 1-inch minimum to 2-inches maximum.
- J. When a pipe enters the manhole through a wall of a precast unit, the CONTRACTOR shall perform the cutting of the concrete and steel reinforcement in a manner that will not loosen the reinforcement in the wall. The steel reinforcement shall be cut flush with the wall face. All joints and openings cut in the walls shall be grouted.
- K. Where indicated on the Drawings, a stub shall be provided for future connections to the manhole. The stub shall be sized and positioned as indicated. The end of the stub shall be capped or plugged in a manner approved by the ENGINEER to prevent water, earth, or other substances from entering pipe.
- L. In case of poured-in-place manhole construction, if the CONTRACTOR elects to accomplish the manhole construction utilizing more than one continuous concrete pour, a keyed construction joint shall be used. These manholes shall have poured-in-place bases.

3.2 EXISTING STRUCTURES

- A. Adjustment of Existing Frame Grates to Grade shall consist of raising or lowering the frame or ring casting one foot or less and providing the necessary adjusting rings, and mortar required to adjust the frame and grate to finish grade, as per CBJ Standard Detail 205 – Manhole Heights.
- B. Replacing Frame and Covers shall consist of removal and disposal of the existing frame, cover and adjustment bricks, blocks and mortar and replacing with a new frame and cover per the Drawings and CBJ Standard Details. The new frame and cover shall be adjusted to finish grade per CBJ Standard Detail 205 – Manhole Heights.

SECTION 02502 – STORM SEWER MANHOLES, INLETS, AND CATCH BASINS

- C. Reconstructing Manholes shall consist of one or more of the following:
1. The WORK necessary to bring the manhole frame and cover to grade when the cone and/or barrel section(s) must be removed for lowering.
 2. The WORK necessary to raise the manhole frame and cover more than one foot.
 3. The WORK necessary to reconstruct a portion of the manhole as specified with no change in line or grade.
 4. The WORK necessary to tap one or more additional pipes into an existing manhole.
 5. Manholes shall be reconstructed to the required elevation and shall conform to CBJ Standard 303 except as noted. This WORK shall conform to the requirements above specified for new construction except that material may be reused as approved by the ENGINEER.

3.3 WATER QUALITY UNIT

- A. The water quality unit shall be installed as shown in the plans and per the manufacturer's explicit written instructions.

END OF SECTION

SECTION 02702 - CONSTRUCTION SURVEYING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to perform all surveying and staking necessary for the completion of the Project in conformance with the Plans and Specifications, including all calculations required to accomplish the WORK.
- B. The WORK shall include the staking, referencing and all other actions as may be required to preserve or restore land monuments and property corners which are situated within the Project area, and to establish monuments as shown on the Plans.
- C. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to perform all surveying and staking necessary for the completion of Dredging in conformance with the Plans and Specifications, including all calculations required to accomplish the WORK.

1.2 SUBMITTALS

- A. Dredge Survey Plan, Equipment and Data: The CONTRACTOR shall provide information describing survey methods, personnel, equipment and data collection for approval prior to commencing with surveys. Submitted information shall demonstrate that it meets the requirements of the U.S. Army Corps of Engineers Hydrographic Surveying Manual, version EM 1110-2-1003, dated January 2002 as edited in April 2004 and EM 1110-11005 for upland topographic surveys version at the time of bid. In addition the CONTRACTOR shall provide information that a safe and suitable vessel will be utilized for all positioning of work and that qualified personnel will operate the vessel and the electronic positioning and depth finding equipment.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. All surveying involving property lines or monuments shall be done by, or under the direction of, a Registered Land Surveyor licensed to practice in the State of Alaska.
- B. The OWNER will supply information relative to the approximate locations of monuments and corners, but final responsibility for locations, referencing, and restoration shall rest with the CONTRACTOR.
- C. In the event the CONTRACTOR does not replace the survey monuments and property corners disturbed by the CONTRACTOR's operations, the OWNER may, after first notifying the CONTRACTOR, replace the monuments in question and the cost of such replacements shall be deducted from payments to the CONTRACTOR.
- D. The CONTRACTOR shall provide the OWNER with a copy of all surveyor's notes including, field book copies, and survey QC with each draft survey, if requested by the

SECTION 02702 - CONSTRUCTION SURVEYING

ENGINEER, prior to each Pay Request, which payment for Pay Item No. 2702.1, Construction Surveying, is increased from the previous Pay Request.

- E. The CONTRACTOR shall provide the OWNER with a copy of all surveyors' notes, prior to the request for final payment, and include the information on the record drawings.
- F. The CONTRACTOR shall obtain all information necessary for as-built plan production from actual measurements and observations made by the CONTRACTOR's own personnel, including Subcontractors, and submit this information to the ENGINEER.
- G. The CONTRACTOR shall use competent, qualified personnel and suitable equipment for the layout WORK required and shall furnish all stakes, templates, straightedges and other devices necessary for establishing, checking and maintaining the required points, lines and grades.
- H. The CONTRACTOR shall perform all staking necessary to delineate clearing and/or grubbing limits; all cross sections necessary for determination of excavation, embankment and dredging quantities, including preliminary, intermediate and/or re-measure cross sections as may be required; all slope staking; including the necessary checking to establish the proper location and grade to best fit the conditions on site; the setting of such finishing stakes as may be required; pre-dredge, progress and post-dredge surveys; the staking, referencing and other actions as may be required to preserve or restore land monuments and property corners; and all other staking necessary to complete the project.
- I. The CONTRACTOR's field books shall be available for inspection by the ENGINEER at any time.
- J. The ENGINEER may randomly spot-check the CONTRACTOR's surveys, staking, and computations at the ENGINEER's discretion. After the survey, or staking, has been completed, the CONTRACTOR shall provide the ENGINEER with a minimum of 72 hours notice prior to performing any WORK, and shall furnish the appropriate data as required to allow for such random spot-checking. The OWNER assumes no responsibility for the accuracy of the WORK.
- K. The ENGINEER may make minor adjustments in grades and locations of improvements based on the staking information provided by the CONTRACTOR. The CONTRACTOR shall adjust the grade stakes as required to accommodate minor changes at no additional cost to the OWNER.

3.2 SURVEYS OF DREDGING

- A. All surveying involving dredging, disposal and sand capping shall be performed by an independent hydrographic surveyor that is a Professional Land Surveyor (PLS) registered in the State of Alaska having current hydrographic certification from the American Congress for Surveying and Mapping (ACSM). The surveyor shall document at least 3 years of experience in hydrographic surveying of navigable channels
- B. Survey Equipment: The contractor shall submit for approval only multibeam survey equipment and methods which are in conformance with the methods required in U.S. Army Corps of Engineers Hydrographic Surveying Manual, version EM 1110-2-1003,

SECTION 02702 - CONSTRUCTION SURVEYING

dated January 2002 edited in April 2004. Submittal information shall include the name, model number, year of manufacture, frequencies of the positioning system, depth finders, manufactures accuracy, capabilities, written recommendations and qualified personnel operating the equipment and vessel information.

- C. Pre-Dredge Survey: The CONTRACTOR shall perform a multibeam pre-dredge survey covering the area to be dredged. The surveyor shall provide reports plotted on plan view drawings. The report shall be made available to the ENGINEER at least seven (7) days prior to commencing with the dredge operation. The CONTRACTOR shall place a visible tide board at the Project site prior to the pre-dredge survey verification. The tide board shall extend between the full range of the local extreme tidal conditions and shall be marked every foot with numerical increments indicated at least every even foot. The tide board shall be surveyed by field levels tied to the Project vertical control. It shall be observed and compared with the local extreme tidal conditions for seven (7) days prior to commencing dredging. Written results of the tidal observations shall be provided to the ENGINEER prior to commencing with the dredging.
- D. Dredge Progress Surveys: Perform depth soundings and cross sections of the immediate work areas each day as the work progresses. The sounding data shall include at a minimum time and date, maximum pay pay-line, water elevation, water depth and location. The sounding data will accompany the Daily Dredging Report submitted to the ENGINEER.

Sounding results may be used to adjust dredging procedures to assure that the configuration the dredging site conforms to the drawings and permit requirements. The ENGINEER may direct the CONTACTOR to adjust its dredging procedures to assure compliance with the drawings, permit requirements, and harbor operations at no additional expense to the OWNER.

For progress payments, at minimum perform single beam survey of the area dredged in conformance with the methods in U.S. Army Corps of Engineers Hydrographic Surveying Manual, listed above. Extend area of survey at least 30 feet beyond limits of dredging. Provide depth sounding cross-sections at a maximum 20-foot track line intervals perpendicular to shore and at least two (2) cross-lines parallel to shore using a survey grade depth sounder. The cross-sections shall include the pay depth, over-dredge limit and side slopes.

Provide calculation for each progress payment volume using a method approved by the ENGINEER given in cubic yards and including a completed contour map/drawing with 1-foot contour intervals, as well as survey point files to the ENGINEER within five (5) days of progress survey completion.

- E. Post Dredge Survey: The CONTRACTOR shall perform a multibeam post-dredge survey within two days following completion by the independent hydrographic surveyor. The independent surveyor shall reduce the survey depth soundings to the nearest one-tenth of a foot (0.1') and shall deliver the points file to the ENGINEER including C3D AutoCAD DWG. data, all supporting files, PDF files and quantity computations for review in a format approved by the ENGINEER.

Within ten (10) days after completion of any final survey, the survey drawings shall be

SECTION 02702 - CONSTRUCTION SURVEYING

stamped, signed and dated by the independent hydrographic surveyor. All AutoCAD shall be submitted on CD's in editable Civil 3D format for final review. The CD's shall also include final volume calculations, final Civil 3D data, PDF's of the surveys and all raw survey data.

The CONTRACTOR shall inform the ENGINEER at least seven (7) days prior to commencing with the post dredge survey. Prior to dredging equipment demobilization, the CONTRACTOR shall provide an independent hydrographic survey firm post dredge survey to verify that the dredge depth has been achieved. To prove that the required depth has been achieved over the entire project dredging area the CONTRACTOR shall provide an AutoCAD display of reduced data superimposed with the project limits.

If the post dredge survey indicates that the specified dredge depth has not been achieved for any part of the project, the contractor shall continue dredging and consecutive surveying until the required depth has been achieved at no additional cost to the OWNER.

END OF SECTION

SECTION 02714 – GEOTEXTILE FABRIC

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section includes providing all labor, material, tools, and equipment necessary for furnishing and installing geotextile fabric in locations indicated on the Plans and as directed by the ENGINEER.
- B. The materials provided and Work performed as a requirement of this Section shall be considered incidental to Water System and shall not be measured directly for payment.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Geotextile fabric shall be composed of plastic yarn fabricated into a pervious sheet with distinct pores or openings.
- B. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, or vinylidene-chloride and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The cloth shall be calendared or otherwise finished so that the yarns will retain their relative position with respect to each other. The edges of the cloth shall be selvaged or otherwise finished to prevent the outer yarn from pulling away from the cloth.
- C. Geotextile fabric shall meet the following requirements:
 - 1. Grab Tensile Strength (ASTM D 4632) 200 lbs. min.
 - 2. Grab Elongation (ASTM D 4632) 30% Max.
 - 3. Mullen Burst (ASTM D 3786) 500-psi min.
 - 4. Puncture Strength (ASTM D 4833) 100 lbs. min.
 - 5. Trapezoid Tear (ASTM D 4533) 75 lbs. min.
 - 6. Permittivity (ASTM D 4491) .05 Sec⁻¹

2.2 SEAMS

- A. Seams, when required, shall be sewn with thread of material meeting the chemical requirements given above for plastic yarn. The sheets for geotextile fabric shall be sewn together at the factory or another approved location to form sections not less than two feet wide. Seams shall be tested in accordance with ASTM D 4884, using one-inch square jaws and 12 inches per minute constant rate of traverse. The strengths shall be not less than 90 pounds in any principal direction.
- B. In lieu of seams, geotextile fabric may be joined with adjacent pieces by overlapping. The material shall be overlapped a minimum of 3 feet.

2.3 ACCEPTANCE REQUIREMENTS

- A. All brands of plastic geotextile fabric and all seams to be used will be accepted based on certification. The CONTRACTOR shall furnish the ENGINEER a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the cloth. The mill certificate or affidavit shall attest that the cloth meets the chemical, physical, and manufacturing requirements stated in this Section.

SECTION 02714 – GEOTEXTILE FABRIC

2.4 SHIPMENT AND STORAGE

- A. During all periods of shipment and storage, the cloth shall be protected from mud, dirt, dust, debris, direct sunlight, ultraviolet rays, and temperatures greater than 140 ° F. To the extent possible, the cloth shall be wrapped in a heavy-duty protective covering.

PART 3 - EXECUTION

3.1 CONSTRUCTION

- A. Geotextile fabric shall be placed in the manner and at the locations shown on the Drawings or as directed by the ENGINEER. At the time of installation, cloth shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.
- B. The surface upon which the geotextile fabric is to be placed shall be free of projections or depressions, and rocks, roots, and other sharp objects which may cause the geotextile fabric to be punctured. The geotextile fabric shall be placed without stretching and shall lie smoothly in contact with the soil or wall surface. When overlapping of strips is necessary, the joints shall be overlapped a minimum of two feet. End overlaps shall be made in the direction of flow.
- C. The cloth shall be protected at all times during construction from contamination or from damage during its installation or during placement of subsequent covering; contaminated or damaged cloth shall be replaced at the CONTRACTOR's expense, or if the ENGINEER permits, torn fabric may be patched. The aggregate material shall be cleaned from the fabric, and the torn area shall be overlain with fabric with a minimum three-foot overlap around the edges of the torn area. Care shall be taken that the patch remains in place when material is placed over the affected area.
- D. The WORK shall be scheduled so that not more than 30 Days elapse between the placement of the cloth and the time it is covered with specified material.
- E. In instances where bedding prisms for curbs, walls, structure bases, light pole bases, piping, manholes, catch basins or other items are designated to be installed below the elevation at which the geotextile fabric is to be installed as shown in the Plans, the geotextile fabric shall be lain at the limit of excavation and shall maintain continuity with the surrounding geotextile fabric by overlapping the material as shown in the Plans or specified herein. Extra Geotextile Fabric as required shall be considered incidental and shall not be measured directly for payment.
- F. Following placement of the fabric on the prepared surface, material of the type shown on the Drawings shall be back-dumped on the previously spread fabric or ground adjacent to the fabric and carefully pushed or spread onto the fabric by a dozer or other machinery. A minimum depth of one foot, or the depth shown on the Drawings, shall be maintained at all times between the fabric and the wheels or tracks of the construction equipment. At no time shall equipment operate on the unprotected fabric. The material shall be spread in the direction of the fabric overlap. Special care shall be taken to maintain a proper overlap and fabric continuity.

END OF SECTION

SECTION 02881 – DREDGING AND DISPOSAL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. WORK under this Section shall include all labor, materials, tools and equipment necessary for the dredging, transport and disposal of all material as indicated on the Plans.
- B. The CONTRACTOR shall become familiar with the site conditions and any available geotechnical information prior to bid and shall determine all necessary equipment to complete the WORK in accordance with the Plans and these Specifications.

1.2 SUBMITTALS

- A. Dredging and Disposal WORK Plan: The CONTRACTOR shall submit for approval a detailed plan indicating as a minimum the following items: pre-dredge activities including surveys, dredge equipment and methods, disposal equipment and methods, disposal site, transport operations and vessel navigational movements as well as a detailed schedule of all activities. The Plan shall include drawings and narratives as required to describe the complete operation in detail.
- B. Survey Plan, Equipment and Data per Section 02702 – Construction Surveying.
- A. Dredge Navigation Data: The CONTRACTOR shall submit for approval a detailed plan indicating as a minimum the following items: Install a GPS positioning device on board the dredge and transport equipment. Produce a product useable by the OWNER to monitor where the dredge equipment has worked and placed material for each scow/barge load. Include the GPS coordinates for dredge and transport equipment including the disposal area tracks, date, duration, and volume of each disposal event in a daily report to the OWNER. Real time data shall also be provided in a viewer accessible through the internet to the OWNER and other agencies.

PART 2 – PRODUCTS (Not Used)

PART 3 -- EXECUTION

3.1 SURVEYS

- A. All surveying involving dredging shall be per Section 02702 – Construction Surveying.

3.2 DREDGING

- A. Dredging shall be by mechanical clamshell or conventional excavator methods only. Hydraulic, dragline or suction dredge operations shall not be allowed.
- B. Portage Cove Harbor is an active public moorage facility. The CONTRACTOR shall keep the harbor entrance clear of construction equipment when not actively transporting dredged materials. The CONTRACTOR shall not destroy, remove, or damage any existing facilities not designated for demolition. Any damage to existing facilities shall

SECTION 02881 – DREDGING AND DISPOSAL

be repaired at the CONTRACTOR'S expense. Working in dredge areas within the existing moorage float area shall be coordinated in advance with the OWNER. Vessel aisle ways shall remain open at all times unless approved seven days in advance by the OWNER. Aisle ways approved for closure shall not be continuously closed for more than 48 hours in order to allow vessels to maneuver into or out of moorage stalls.

- C. Dredging shall be performed in accordance with the requirements of all permits, these Specifications and the Plans. Stockpiling of material within the water shall not be allowed.
- D. The CONTRACTOR shall establish an accurate method of horizontal and vertical control before dredging begins. The method shall be subject to approval by the ENGINEER and it shall be modified until satisfactory results are achieved, as determined by the ENGINEER.
- E. The CONTRACTOR shall excavate to the lines, grades, slopes and elevations shown on the Plans. Dredge tolerances shall be as follows:
 - 1. Allowable final grade above design harbor basin project depths: 0.0 feet
 - 2. Allowable final grade above or below design slope neat lines: 1.0 feet

3.3 DISPOSAL WITHIN CONTAINMENT DIKE ON SITE

- A. A portion of the dredge material shall be transported and placed on site within a containment dike as shown on the Plans. The containment dike and associated geotextile fabric shall be fully constructed prior to disposal of dredge materials at this disposal location.
- B. Dredge material for disposal within the containment dike shall consist predominantly of sand originating from a designated dredge area as shown on the Plans. Only dredged sand, silty sand and gravel materials shall be considered suitable to be placed within the containment dike disposal area. Sandy silt, clayey silt and clay materials shall not be considered suitable and shall not be placed within the containment dike even if encountered within the designated dredge area. The CONTRACTOR shall sort dredged materials as required for placement prior to disposing material within the containment dike.
- C. The area within the containment dike shall be completely filled with suitable dredged materials to the lines and grades shown on the Plans. The CONTRACTOR shall place Class A Shot Rock Borrow in any areas deemed insufficiently filled to top of dredged material final grade at no additional cost to the OWNER.

3.4 OCEAN DISPOSAL

- A. All dredged materials not placed within the onsite containment dike shall be transported and disposed at the offshore ocean disposal site shown on the Plans. Dredge material shall be transported by dump scow or other barge methods.
- B. The CONTRACTOR shall use GPS positioning for dumping dredged material offshore. All loads shall be dumped within 200 feet of the center coordinates provided on the Plans.

SECTION 02881 – DREDGING AND DISPOSAL

for the offshore disposal area. All dump locations shall be recorded in a daily report provided to the ENGINEER.

3.5 OTHER NON-MANDATORY DISPOSAL SITES

- A. A private intertidal property near the harbor may be made available by a private entity for disposing dredged materials designated for Ocean Disposal. The OWNER does not warrant the location, availability, condition, ownership, permits or any other factors concerning this non-mandatory site. Interested CONTRACTORS shall contact:

Greg Schlachter
Front Street LLC
PO Box 1129
Haines, AK 99827
(907) 766-3977

- B. The CONTRACTOR shall sign a Hold Harmless agreement with the OWNER absolving the Haines Borough from any legal or other actions associated with utilizing any Other Non-Mandatory Disposal Sites.

END OF SECTION

SECTION 02882 – SILT CONTAINMENT BOOM

PART 1 – GENERAL

1.1 DESCRIPTION

- A. WORK under this section shall include all labor, materials, tools and equipment necessary for the construction and implementation of a geosynthetic silt containment boom system as shown in the Plans.

1.2 SUBMITTALS

- A. The CONTRACTOR shall submit for approval a detailed plan addressing the phasing of applicable demolition and slope revetment work, containment boom placement & design, transport operations and vessel navigational movements as well as a detailed schedule and sequencing of all activities. The Plan shall include Drawings and narratives as required to describe the complete operation in detail.
- B. Containment Boom Anchoring Plan.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

- A. The CONTRACTOR shall design, fabricate and install a containment boom as shown in the Plans of sufficient length to encapsulate all WORK involving disturbance to the slope or basin bottom within the tidal range above 0' MLLW on a given day. Applicable WORK activities include but are not limited to the water system and placement of fill associated with slope revetment.
- B. Before starting slope revetment WORK, the CONTRACTOR shall install the containment boom such that all equipment and materials in the immediate WORK area are isolated from adjacent waters. The boom shall extend from the bank around the equipment and back to the bank or as otherwise required to completely contain all silt and other deleterious materials produced during WORK activities on any day.
- C. The position of the containment boom shall be maintained via daily inspection and adjustment. The CONTRACTOR shall maintain the boom 24 hours per day. Floating debris inside of and/or near the exterior of the boom shall be removed to avoid damage to the boom.
- D. The boom shall be sufficiently anchored to hold its position and shape while resisting wind and waves reasonably expected for the site. The boom anchoring system shall maintain effective containment of the boom through all tide cycles.
- E. The length of the containment boom shall be determined by the CONTRACTOR's chosen means and methods for completing the WORK. The boom shall surround the equipment completely or shall be extended to the adjacent shore and secured in a functional manner above the extreme high tide elevation.
- F. Lighted marker buoys shall be placed along the outside of the boom to sufficiently identify the boom position in the water at all times.
- G. The boom shall be employed until all water system and slope revetment WORK is complete and the ENGINEER has determined water quality to be acceptable. Upon removal of the boom system, the boom shall become property of the CONTRACTOR.

END OF SECTION

SECTION 02896 - STEEL PIPE PILES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK in this Section shall include all labor, materials, tools and equipment necessary to furnish and install all wave barrier and bearing piles associated with the wave barrier and all miscellaneous steel plates, appurtenances and hardware, and all other related WORK in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

- A. ASTM A252 - Welded and Seamless Steel Pipe Piles
- B. ASTM A139 – Electric-Fusion (Arc)-Welded Steel Pipe
- C. AWS D1.1 - Structural Welding Code - Steel

1.3 SUBMITTALS

The following is a partial list of required submittals for this project. The Engineer may require additional submittals.

- A. Manufacturer's Mill Certificate: Steel Certification including chemistry, yield strength, and mill numbers. CONTRACTOR is responsible for assuring all material certifications conform to these specifications.
- B. Shop Drawings for all fabricated items per Section 05120 – Metal Fabrication.
- C. Welding Procedures and Welder Certification per Section 05120 – Metal Fabrication.
- D. Pile Splice Design: Preapproved pile splices for ASTM A252, Grade 3 material (or approved equal) shall meet AWS D1.1 requirements and shall be submitted for ENGINEER review.
- E. Pile Installation Plans: Provide narrative and illustrations as necessary to fully describe complete pile installation plans including dynamic testing plan. The plans shall address, as a minimum, all equipment, labor, temporary pile support and template systems, methods/means to align and maintain pile alignment, survey control, work sequence, drilling, pile clean-out methods and drill discharge containment system, for each different pile anchoring system installation. The CONTRACTOR shall not mobilize hammers, drill equipment, or any other pile installation related equipment prior to receiving written approval, from the ENGINEER. All pile driving means and methods shall meet the requirements of the permits issued for this project.
- F. Manufacturer's information on all pile hammers intended for use, complete with satisfactory data to ensure properly suited for installation of pipe piles.
- G. Galvanizing certificates verifying that coated material conforms to Specifications.

SECTION 02896 - STEEL PIPE PILES

- H. Pile Driving Shoes: Submit manufacturer's published literature for specific product, including specifications, and installation requirements for driving shoe pile tips as shown on the Plans.
- I. Drill Discharge Containment System: Submit Drill Discharge Containment System to be used during all pile installation operations which may require drilling and discharge of soils and/or rock cuttings.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All materials shall conform to the Contract Documents and as shown on the Plans. Purchase orders shall contain all necessary information to ensure that materials purchased will comply with the Contract Documents. The fabricator shall inspect all materials, upon arrival, for conformance with the purchase orders, and the fabricator shall confirm that mill certificates and test reports are provided and that they correctly identify the materials delivered. If a supplier proposes a substitute for any material, the proposed substitution shall be submitted to the ENGINEER for approval prior to commencing any work involving use of the proposed substitute material. Supplier must be prepared to supply materials as identified in the Contract Documents if the proposal for a substitution is not approved by the ENGINEER.
- B. All materials incorporated into this project shall be new, unless otherwise noted on the Plans. Material not specifically noted in the Contract Documents or on the Plans shall be submitted by the CONTRACTOR for approval by the ENGINEER. Approval will be based on conformance to current standards utilized by the OWNER.
- C. All materials shall conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.2 PILES

- A. Unless otherwise noted herein, all piles shall conform to ASTM A252, Grade 3 with the additions and modifications as detailed within this specification.
 - a. Manufacturing
 - i. All weld seams made in manufacturing pipe shall be made using complete joint penetration welds per AWS D1.1 (A139, Section 5.2)
 - ii. All coils for fabrication shall be "pre-slit" prior to forming, unless otherwise approved by the ENGINEER.
 - b. Material
 - i. Minimum yield strength shall be 50ksi
 - ii. For the purposes of welding and prequalification of base metal, steel pipe pile designated as ASTM A252 may be treated as prequalified provided that the chemical composition conforms to a prequalified base metal classification listed in Table 3.1 of the AWS D1.1/D1.1M, latest edition, Structural Welding Code, and the grade of pipe piling meets or exceeds the grade specified in the plans
 - iii. The chemical composition for the carbon element shall be limited to 0.26% maximum

SECTION 02896 - STEEL PIPE PILES

- c. Dimensions
 - i. The outside diameter shall not vary more than $\pm 0.75\%$ from the outside diameter shown on the plans per Caltrans Standard Specifications 49-2.02B(1)(c).1
 - ii. The straightness of the pipe shall not vary more than $\pm 1.0\%$ over the length of the pipe per Caltrans Standard Specifications 49-2.02B(1)(c).3
- d. Welding
 - i. All groove welds shall conform to AWS D1.1.
 - ii. Skelp Splices – Skelp splices or coil butt splices shall be removed unless the fabricator develops a quality control plan which specifically addresses these splices. The quality control plan shall include ultrasonic testing with a final 100% pass rate on tested welds.
 - iii. Radial Offset - The radial offset of welded seams shall not exceed the limitations of AWS weld nor a maximum of 10% of the pipe wall thickness, nor 3/32 of an inch. The offset shall be transitioned with a taper weld and the slope shall be a 4 to 1 transition per AWS D1.1 Section 5.22.3.1
 - iv. Defects in welds shall be repaired or the piece rejected at the option of the manufacturer. Repairs of this nature shall be made by completely removing the defect, cleaning the cavity, and then re-welding.
- e. Ultrasonic Testing
 - i. Perform 25% ultrasonic testing per API 5L Section E5, AWS D1.1 Section 6, or ASTM A53 Section 9 on all coil welds and splices.
 - ii. When repairs are required on a portion of the tested weld: (Caltrans Standard Specifications 49-2.02A(4)(c).2)
 - 1. Perform UT on the repaired portion
 - 2. Perform additional UT on untested areas on each side of the repaired portion. The length of additional UT on each side of the repaired portion must equal 10% of the pipe's outside circumference
 - 3. After the additional 20% of UT is performed, and if additional repairs are required, determine and record the total cumulative repair lengths from all UT. If the cumulative weld repair length is equal to or more than 10% of the pipe's outside circumference, then perform UT on the entire weld.
 - iii. Carbon Equivalency shall not exceed 0.45 based on the following:

$$CE = C + \frac{(Mn+Si)}{6} + \frac{(Cr+Mo+V)}{5} + \frac{(Ni+Cu)}{15}$$

- B. All steel pipe piles shall be hot-dip galvanized in accordance with ASTM A123, unless otherwise noted on the Plans. Ends of piles may remain bare for lengths indicated in the pile schedule and detailed on the plans. Prior to coating, CONTRACTOR shall coordinate with ENGINEER on verifying heat numbers to submitted material certifications.
- C. All steel pipe piles shall be furnished, complete with pile tips, in the lengths indicated on the Plans. Piles shall be delivered full length or field spliced in accordance with approved welding and galvanizing repair procedures. Splices shall be a minimum of 40-ft apart, unless otherwise approved by the ENGINEER. No additional compensation

SECTION 02896 - STEEL PIPE PILES

shall be made for splicing piles to make up the pile lengths shown on the Plans.

- D. The Bid Schedule includes contingency unit price Pay Items for field pile splices of various diameter piles. The contingency splice Pay Items shall only be used for making up pile lengths that are longer than shown on the Plans due to field conditions encountered. No additional compensation shall be made for installing additional pile length. Additional pile installation shall be considered incidental to the pile splice Pay Item.

2.3 MISCELLANEOUS

- A. Barrier Piles – Flat Sheet Piles
- a. Flat web sheet piles shall conform to requirements in ASTM A328. Sheet piles shall be new PS31 section with a nominal web thickness no less than 0.50 inches as manufactured by Gedau (or approved equal), and shall be supplied and installed full length, as indicated on the plans, without splices.
 - b. Sheet pile material shall conform to ASTM A6 as well as A572 Grade 50 and standard manufacture's practice. Carbon equivalency (CE) shall not exceed 0.44, where

$$CE = C + \frac{(Mn+Si)}{6} + \frac{(Cr+Mo+V)}{5} + \frac{(Ni+Cu)}{15}$$

- B. Bearing Piles – SPIN FIN® Pile Tip
- a. Steel plate which makes up the Fins shall comply with Section 05120 – Metal Fabrication.
- C. Miscellaneous steel plates, shapes and fabricated weldments shall comply with Section 05120 – Metal Fabrication.

PART 3 - EXECUTION

3.1 PREPARATION AND PROTECTION OF COATINGS

- A. The CONTRACTOR is responsible to become familiar with the site conditions and any available geotechnical information, prior to bid, so as to make their own assessment of pile installation means and methods. It is recommended that the CONTRACTOR visit the site, prior to bid, to assess the site conditions, particularly during a minus tide.
- B. Galvanized coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired per Section 05120 – Metal Fabrication.

3.2 INSTALLATION

- A. Work Plan – The CONTRACTOR shall submit a detailed work plan including technical narrative and illustrations for installation of all piles. The plans shall be reviewed prior to mobilizing onto the site. At a minimum, the plan shall address the following:
- a. Means to establish and maintain project control
 - b. Quality Control procedures
 - c. Installation Equipment

SECTION 02896 - STEEL PIPE PILES

- d. Pile installation template details
- e. Pile Driving Analysis

- B. Equipment – Impact hammers shall be selected by the CONTRACTOR subject to review by the ENGINEER, prior to mobilizing to the project site. The impact hammer shall be single-acting, and adequately sized to achieve the ultimate bearing capacities and minimum tip elevations as identified on the Plans, or as determined acceptable by the ENGINEER.

The CONTRACTOR shall perform a drivability analysis based on the actual hammer that will be used for the project and shall be prepared to address the potential for overstressing the pile during driving. The CONTRACTOR shall submit the results of their drivability analysis for review and acceptance by the ENGINEER.

Pile ultimate bearing capacity installation requirements (i.e. blow count requirements) shall be based on a Dynamic Pile Test Program as determined by the ENGINEER (see Dynamic Pile Test Program).

Any hammer that causes damage to the piles during driving operations shall be substituted with an acceptable alternative hammer at no additional expense to the OWNER. Impact hammer shall be supplied with new cap block cushions, which shall be changed at the manufacturer's recommended interval. The CONTRACTOR's submitted driving plan shall include manufacturer's recommendations and information on hammer cushion.

- C. Acceptance Criteria – To establish installation acceptance criteria, the CONTRACTOR shall first install all piles indicated on the pile schedule as requiring dynamic pile testing (see Dynamic Pile Test Program).

Unless otherwise noted, all piles may initially be driven to refusal with a vibratory hammer. All piles shall then be driven with an impact hammer suitably sized for each pile size. Impact hammer driving shall continue until refusal occurs as determined by the ENGINEER.

EXCEPTION: All barrier piles shall be driven to and shall not exceed the pile tip elevations stated on the plans. Barrier piles do require impact proofing; however, CONTRACTOR may choose to impact piles at no additional cost to OWNER. Acceptance of the final installed condition subject to ENGINEER approval.

All piles shall be driven to adequately achieve both the stated ultimate compression/tension capacities and minimum tip elevation as specified on the pile schedule.

Pile acceptance shall be determined by ENGINEER. Acceptance criteria shall be based on the ultimate compression/tension capacity and minimum embedment requirements as stated on the pile schedule or as otherwise approved by ENGINEER.

The tension capacity will be verified by ENGINEER based on the last twenty feet of impact installation data (i.e. blow counts, energy, PDA data). The compressive capacity will be verified on-site by ENGINEER based on the results attained from the Dynamic

SECTION 02896 - STEEL PIPE PILES

Pile Test Program.

For all piles, the CONTRACTOR shall coordinate with the ENGINEER to verify acceptance prior to cutting off excess pile. Otherwise, the CONTRACTOR proceeds at own risk.

- D. Dynamic Pile Test Program – Piles that require dynamic testing (i.e. PDA/CAPWAP/Signal Matching/Restrike) are identified in the pile schedule.

The CONTRACTOR shall assist the ENGINEER with installation and monitoring of test equipment.

The following installation procedure should be anticipated by the CONTRACTOR for all test piles.

- a. Vibratory install test pile initially to specified minimum pile tip elevation minus twenty feet maximum. The intent is to measure the last twenty feet of impact data for the PDA analysis.
- b. Install PDA instruments per ENGINEER direction.
- c. Impact drive pile to specified tip elevation or until refusal occurs as determined by ENGINEER.
- d. Restrike pile after a minimum Forty-Eight hours has elapsed. If applicable, reinstall PDA instrumentation per ENGINEER direction prior to restrike.

CONTRACTOR shall coordinate with ENGINEER to establish order of installation and testing of all piles. For bidding purposes the CONTRACTOR should expect the following:

- a. Install all vertical bearing test piles prior to installing remaining vertical piles.
- b. Install all batter bearing test piles prior to installing remaining batter piles.

- E. Pile Installation Obstructions – Pile installation obstructions may be encountered below mudline during pile driving. Any pile installation obstructions encountered within five feet of the existing mudline shall be removed at no additional cost to the OWNER. The CONTRACTOR shall be prepared to immediately address pile installation obstructions within five feet of existing mudline in the event they are encountered, or shall alternatively move to other contract Work to prevent delays.

Pile installation obstructions extending below five feet from mudline elevation that require removal or drilling shall be addressed in accordance with Section 02882-Contingent Work – Pile Installation.

- F. Tolerances – All piles shall be installed within 1% of specified vertical alignment and within 2 inches of specified location at cutoff, unless otherwise noted.

Batter piles shall be driven using a fixed template, firmly secured to a substantial support. The template and suitable temporary bracing shall remain in place until the pile is welded into its final, permanent location. The design intent is for all batter piles to be driven at a two vertical to one horizontal ratio (2V:1H) as shown on the drawings. However, batter piles may be driven as much as one point seven five vertical to one horizontal (1.75V:1H) and as little as two point two five vertical to one horizontal (2.25V:1H). CONTRACTOR shall refer to Section 02900 – Contingent Work – Pile Installation, as necessary.

SECTION 02896 - STEEL PIPE PILES

Pile may be adjusted laterally after review and approval by ENGINEER at the direction of the ENGINEER and at no additional cost to the OWNER. If piles are out of tolerance and do not meet the requirements as stated above, possible repairs at no additional cost to the OWNER may include the following:

- a. Piles may be pulled and re-driven.
- b. Pile caps may be modified.
- c. Piles may be adjusted laterally by jacking or loading. This option is only available if it does not compromise the structure.

In all repair scenarios, the CONTRACTOR shall consult the ENGINEER.

- G. Coating Repairs – Damaged coatings shall be repaired in accordance with Section 05120-Metal Fabrication.
- H. Quality Assurance – All pile installations shall be conducted with the ENGINEER present. The CONTRACTOR shall assist the ENGINEER in monitoring the pile driving. The CONTRACTOR shall mark each pile with one-foot increments, with every five-foot increment numbered. The marks shall be visible and readable from all sides of the pile above local extreme low tide level. CONTRACTOR shall provide notification to ENGINEER a minimum of 24 hours prior to any pile installation.
- I. Pile Cutoff – During construction, pile cutoff material is property of the OWNER and may be used to splice additional length onto project piles in unforeseen circumstances. Reference pile acceptance criteria for maximum pile cutoff requirements. At the end of construction, all remaining pile cutoffs shall become property of the CONTRACTOR and shall be removed in their entirety from the project site.
- J. Miscellaneous – If applicable, a Drill Discharge Containment System shall be used during all pile installation operations when soil, rock and/or slurry from within the pile is removed (i.e. during rock anchor, pile socket and pin-pile installation). The containment system shall capture all drilled materials and fluids discharged from the pile. The Drill Discharge Containment System shall be of adequate dimensions and design to achieve complete containment of discharged materials, and shall comply with all environmental regulations.

Construction methods and products not specified in these Contract Documents shall be utilized using reasonable care and the highest quality industry standard construction practices. Final inspection and acceptance of all Work and products not specified in these Contract Documents shall be made by the ENGINEER. Approval shall be based upon conformance to the Contract Documents, quality of workmanship, applicable industry standards, and pertinent manufacturer's recommendations.

END OF SECTION

SECTION 02900 – CONTINGENT WORK –PILE INSTALLATION

PART 1- GENERAL

1.1 DESCRIPTION

- A. The WORK under this Section shall be performed on a contingency basis and shall be field directed by the ENGINEER during construction. The contingent work includes providing all labor, materials, tools, and equipment necessary to address obstructions below the seafloor surface that impede the installation of wave barrier steel pipe piles. All WORK shall be in accordance with the Contract Documents and field directives provided by the ENGINEER.

1.2 REFERENCES

- A. PND Engineers, Inc, “Haines Borough, South Portage Cove Harbor Expansion, Geotechnical Engineering Report”, March 2015.

1.3 SUBMITTALS

- A. The CONTRACTOR shall provide a written Work Plan for addressing pile installation obstructions encountered below the surface prior to mobilizing to the site. The plan shall describe labor, material and equipment anticipated for obstruction removal as well as logical sequencing and scheduling of temporary falsework and permanent piles to avoid impacts to production activities.
- B. The Work Plan shall be reviewed, revised as necessary and approved by the ENGINEER prior to mobilizing to the site.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL

- A. The geotechnical investigation performed for this project near the wave barrier generally encountered a top layer of sand and gravel with variable silt (five to ten feet), followed by a very soft cohesive clay deposit (fifty to seventy feet), followed by very dense soils, cobbles, boulders, and potentially bedrock (overall depth unknown). Reference geotechnical report.
- B. Cobbles and boulders are present throughout the site and should be anticipated during earthwork and construction activities
- C. Difficult pile driving conditions are anticipated due to very dense soils, cobbles, boulders, and potentially, bedrock. Although not anticipated, if in the even bedrock is encountered prior to reaching design tip elevation, CONTRACTOR shall immediately notify ENGINEER for further instruction.
- D. Very soft cohesive clay deposits are present within Portage Cove and are sloping offshore.

SECTION 02900 – CONTINGENT WORK –PILE INSTALLATION

3.2 INSTALLATION

- A. The CONTRACTOR shall first install all piles indicated on the pile schedule as requiring dynamic pile testing per Section 02896 – Steel Pipe Piles.
- B. The CONTRACTOR shall make a good faith effort to install all pile within the means and methods outline in Section 02896 – Steel Pipe Piles. If, however, while attempting to install the test piles, it is determined by ENGINEER and CONTRACTOR that contingent equipment is necessary to advance piles to the specified tip elevation, the CONTRACTOR shall be prepared to mobilize all suitable equipment necessary to address the obstruction(s) and/or hard layer(s) within thirty (30) calendar days upon receipt of ENGINEER’s field directive.
- C. To prevent delays and/or stand by time, the CONTRACTOR shall be prepared to move to other contract Work while waiting for contingency equipment
- D. All contingent equipment shall remain on-site for the duration of wave barrier pile installation or as determined necessary by ENGINEER and CONTRACTOR.
- E. The installation requirements outlined in Section 02896 – Steel Pipe Piles shall remain in effect for all contingent work outlined in this section.

3.3 CONTINGENCY EQUIPMENT

- A. The CONTRACTOR is responsible for determining suitability of contingency equipment and means and methods necessary to address obstruction(s) and/or hard layer(s). The CONTRACTOR shall submit contingency plan for ENGINEER review and approval.
- B. Contingency equipment may include, but is not limited to, the following:
 - a. Clamshell type dredging equipment capable of excavating marine soils, large boulders, timber remnants and natural organic debris to varying depths.
 - b. All equipment and personnel necessary to facilitate drilling operations through hard layer and advance pile(s) to design tip elevation.

3.4 COMPENSATION

- A. WORK to address pile installation obstructions under this Section shall be compensated as outlined under Section 00700 Article 11.3 COST OF WORK (BASED ON TIME AND MATERIALS).

3.5 MISCELLANEOUS

- A. Construction methods not specifically described shall be utilized using reasonable and prudent care and industry standard construction practices for heavy marine construction. Final inspection and acceptance of all WORK shall be made by the ENGINEER. Approval shall be based upon conformance to the Contract Documents including

SECTION 02900 – CONTINGENT WORK –PILE INSTALLATION

logistical planning efforts, quality of workmanship, industry standards and pertinent manufacturer's recommendations.

END OF SECTION

SECTION 02996 – PILE ANODES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK in this Section shall include all labor, materials, tools and equipment necessary to supply and install anodes on to steel piles and all other related WORK in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 DESIGN CRITERIA

- A. Anode Design Life: 15 Years

1.3 SUBMITTALS

- A. Manufacturer's Anode Specifications and details including physical and electrochemical properties.
- B. Anode Installation Plan including equipment and personnel.
- C. Weld Repair Product Data: Provide product data and/or technical specifications including manufacturer's instructions for surface preparation, required environmental conditions, etc., for anode-to-pile weld coating product.
- D. Welding-Diver Qualifications and Qualified Welding Procedures in accordance with AWS D3.6 for any welding performed under water.
- E. Documentation for proposed welder-diver personnel showing experience of similar underwater anode installation projects. Include current names and contact numbers of corresponding project owners.

PART 2 - PRODUCTS

2.1 ANODES

- A. Anodes shall be "*Harbalum*" aluminum, as manufactured by *Harbor Island Supply*, or "*MA-3 Alloy*", as manufactured by *M&M Industries, Inc.*, or approved equal. Anodes shall be of the specified weight and dimensions as indicated on the Plans and shall meet requirements of Military Specification MIL-A-24779.
- B. Offset mounting tabs shall be fabricated from weldable structural steel plate or flat bar (or rod for anode Type 4A only) that complies with ASTM A36.
- C. A single sample from each batch shall be taken for chemical analysis. The sample shall be taken in the beginning of the first batch and at the end of the second batch; then at the beginning of the third batch and so on. Samples shall be assayed to verify required chemical composition. All anodes from batches whose chemical composition do not meet the requirements above shall be rejected.
- D. Individual anodes shall have a weight within +/- 3% of the nominal weight for anodes. A minimum of 10% of the number of each anode type shall be weighed by the

SECTION 02996 – PILE ANODES

CONTRACTOR or anode manufacturer in the presence of the ENGINEER to confirm compliance.

PART 3 - EXECUTION

3.1 ANODE INSTALLATION

- A. All anodes shall be field welded to piles in vertical position, at both ends, as shown on the plans, per current AWS D3.6 Specification for Underwater Welding, by welder-diver certified in the particular position and process.
- B. Welding Process: Shield Metal Arc. Prior to anode welding, pile surface shall be cleaned to sound metal using grinders, wire brushes, or other suitable means. All contaminants, such as petroleum products and rust, must be removed from the area to be welded.
- C. Welding Position and Direction: Direction shall be down for vertical welding.
- D. Welding Consumables: 1/8", 5/32", or 3/16" BROCO "SofTouch" mild steel electrodes (CS-1, CS-2, or CS-3) shall be used. Care shall be taken to insure waterproof coating is not damaged.
- E. Electrical Characteristics: Welding shall be accomplished using direct current. The electrode shall be negative for mild steel electrodes.
- F. All anode-to-pile welds/weld area (damaged coatings from weld process) shall have "*Kop-Coat A788 Splash Zone Mastic*", or ENGINEER approved equal, applied per manufacturer's recommendations.

3.2 CONTINUITY TESTING AND POTENTIAL READINGS

- A. After installation of anodes, a random 10% of all anodes shall be digitally photographed and tested by the CONTRACTOR to verify electrical continuity. Using a Silver/Silver Chloride reference electrode and a high impedance voltmeter, measure the pile to electrolyte potential. Potential readings shall be measured with the probe in contact with the pile and not in contact with the anode mounting tab. Diver shall remove coatings, rust or marine growth as necessary from the test point before taking a reading to ensure good electrical contact. Anode installation is acceptable if the test reading is -0.80 volts or more negative. Readings of -0.79 or less negative indicate a deficient installation and shall be remedied as necessary to achieve acceptable test reading. Test readings and corresponding photographs shall be documented and submitted to ENGINEER for records. Each anode tested and photographed shall be uniquely numbered and identified on a plan drawing with corresponding test reading data.

END OF SECTION

SECTION 03301-STRUCTURAL CONCRETE

PART 1 - GENERAL

- 1.1 DESCRIPTION. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing Portland cement concrete for structures in conformance with the Drawings and Specifications.
- 1.2 SUBMITTALS
- A. The Contractor shall review the Specification in its entirety and provide all required submittals to the ENGINEER prior to performing the associated WORK.
 - B. Submittals shall be compiled by the CONTRACTOR and submitted in accordance with Section 01300 Submittals.
 - C. On catalogue sheets with more than one item, clearly indicate which item shall be utilized.
 - D. Submittals for this Section shall include, but may not be limited to the following.
 - 1. Product Data: For each type of product.
 - 2. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - a. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - 3. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
 - 4. Material Certificates: For each of the following, signed by manufacturers:
 - a. Cementitious materials.
 - b. Admixtures.
 - c. Form materials and form-release agents.
 - d. Steel reinforcement and accessories.
 - e. Fiber reinforcement.
 - f. Waterstops.
 - g. Curing compounds.
 - h. Floor and slab treatments.
 - i. Bonding agents.
 - j. Adhesives.
 - k. Epoxy
 - l. Vapor retarders.
 - m. Semirigid joint filler.
 - n. Joint-filler strips.
 - o. Repair materials.
 - 5. Aggregates Material Test Reports from a qualified testing agency:

SECTION 03301-STRUCTURAL CONCRETE

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT

- A. Portland cement shall conform to the requirements of AASHTO M 85.
- B. Unless otherwise permitted by the ENGINEER, the product of only one mill of any one brand and type of Portland cement shall be used on the Project.

2.2 FINE AGGREGATE. Fine aggregate for Portland cement concrete shall conform to the requirements of AASHTO M 6 with the following exceptions:

- A. Delete section on deleterious substances and substitute the following:
 - 1. The amount of deleterious substances shall not exceed the following limits:
 - a. Friable particles percent by weight 5 max.
 - b. Coal and Lignite, percent by weight 0.5 max.
using a liquid of 1.95 specific gravity. Only material that is brownish black shall be considered as coal or lignite
 - c. Material passing the No. 200 sieve, percent by weight 3.0 max.
 - B. Delete paragraph 4.2 of AASHTO M 6.

2.3 COARSE AGGREGATE. Coarse aggregate for Portland cement concrete shall conform to the requirements of AASHTO M 80, Class A, with the following exceptions:

- A. Delete section on deleterious substances and substitute the following:
 - 1. The amount of deleterious substances shall not exceed the following limits:
 - a. Coal and Lignite, percent by weight 1.0 max.
(only material that is brownish black or black shall be considered coal or lignite.)
 - b. Material passing the No. 200 sieve 1.0 max.
 - c. Thin elongated pieces, percent by weight.
 - d. (Length greater than 5 times average thickness) 15 max.
 - e. Sticks and roots, percent by weight 0.10 max.
 - f. Friable Particles, percent by weight 0.25 max.
 - g. Maximum loss from AASHTO T 96 shall be 50 percent.
 - h. Maximum loss from AASHTO T 104 shall be 12 percent.
 - B. Add the following: AASHTO T 104 shall be performed using sodium sulfate solution.

2.4 JOINT FILLERS. Joint filler, of the type designated in the contract, shall conform to the following:

- A. Poured filler shall conform to AASHTO M 173 or AASHTO M 282 as specified.

SECTION 03301-STRUCTURAL CONCRETE

- B. Preformed fillers shall conform to AASHTO M 33 for bituminous type; AASHTO M 153 for sponge rubber (type I), cork (type II), and self expanding cork (type III; AASHTO M 213 for non-extruding and resilient bituminous types and ASHTO M 220 for preformed elastomeric types as specified. The filler shall be punched to admit the dowels where called for on the plans. Joint filler shall be furnished in a single piece for the depth and width required for the joint unless otherwise authorized by the ENGINEER. When more than one piece is authorized for a joint, the abutting ends shall be fastened securely, and held accurately to shape, by stapling or other positive fastening satisfactory to the ENGINEER.
- C. Foam filler shall be expanded polystyrene filler having a compressive strength of not less than 10 p.s.i..
- D. Isolation joints shall be sealed using Craftco RoadSaver 222 joint sealant, or approve equal.

2.5 CURING MATERIAL

- A. Curing material shall conform to the following requirements as specified:
 - 1. Burlap Cloth made from Jute Kenaf AASHTO M 182
 - 2. Sheet Material for Curing Concrete AASHTO M 171
 - 3. Liquid Membrane Forming Compounds AASHTO M 148 for Curing Concrete, Type I
- B. The requirements specified in AASHTO M 148 covering "Liquid Membrane Forming Compounds for Curing Concrete" are modified by adding the following:
- C. Liquid membrane forming compounds utilizing linseed oil shall not be used.

2.6 AIR ENTRAINING AGENTS. Air entraining admixtures shall conform to the requirements of AASHTO M 154.

2.7 MIXING WATER. Unless otherwise permitted in writing by the ENGINEER, all water shall be obtained from the Borough's potable water system.

2.8 REINFORCING STEEL. Unless specified otherwise, reinforcing shall conform to AASHTO M 31, and be of the grade designated on the plans or in the Specifications. Welded wire fabric shall conform to AASHTO M 55. Epoxy coated reinforcing bars shall conform to AASHTO M 284. Submit material certifications for all reinforcing steel.

2.9 SHIPPING AND STORAGE OF CEMENT

- A. Cement may be shipped from pretested approved bins. The cement shall be well protected from rain and moisture, and any cement damaged by moisture or which fails to meet any of the specified requirements shall be rejected and removed from the WORK.
- B. Cement stored by the CONTRACTOR for a period longer than 60 days in other than sealed bins or silos shall be retested before being used. Cement of different brands, types, or from different mills shall be stored separately.

2.10 COMPOSITION OF CONCRETE

SECTION 03301-STRUCTURAL CONCRETE

- A. All Portland cement concrete shall be ready mix, provided by an approved plant regularly engaged in the production of concrete, unless otherwise authorized in writing by the ENGINEER. Ready mix concrete shall conform to the requirements of AASHTO M 157.
- B. The CONTRACTOR shall furnish the mix design to the ENGINEER for approval. The mix design shall be suitable for its intended use. Concrete shall be designed using an absolute volume analysis. The CONTRACTOR shall be responsible for having each mix laboratory tested. Prior to the start of production of any mix design, the CONTRACTOR shall submit test results and certifications for all materials, detailed mix design data and results of laboratory tests to the ENGINEER for approval. Approval by the ENGINEER will be based on apparent conformity to these specifications. It shall remain the CONTRACTOR's responsibility during production to produce concrete conforming to the mix design and the minimum acceptance criteria in the contract. When requested by the ENGINEER, the CONTRACTOR shall submit samples of all materials for verification testing. Production shall not commence until the mix design is approved by the ENGINEER.
- C. Unless otherwise specified the design mix shall meet the following:
 - 1. Minimum cement content 6 1/2 sacks (611 lb.) per C.Y.
 - 2. Maximum water/cement ratio 4.48 gal/sack (0.41 #/#)
 - 3. 28 day compressive strength (f'c) of 4000 psi.
 - 4. Slump 3" + 1"
 - 5. Entrained Air 4 to 7%
 - 6. Coarse Aggregate AASHTO M 43, Gradation No. 67
 - 7. Cement factors are based on 94 pound sacks
- D. The CONTRACTOR shall be responsible for producing and placing specification concrete with a cement content within a tolerance of 2%.
- E. The use of superplasticizers in the concrete mix to improve the workability of mixes with low water cement ratios will require prior written approval by the ENGINEER.
- F. The CONTRACTOR may, subject to prior approval in writing, use alternative sizes of coarse aggregate as shown in Table 1 of AASHTO M 43. If the use of an alternative size of coarse aggregate produces concrete which exceeds the permissible water cement ratio above, thereby requiring additional cement above that specified, no compensation will be made to the CONTRACTOR for the additional cement.

2.11 SAMPLING AND TESTING

- A. Field tests of all materials will be made by the ENGINEER when deemed necessary, in accordance with the applicable Specifications. When the results of the field tests indicate the material does not conform to the requirements of the Specifications, the re tests required by the ENGINEER shall be at the expense of the CONTRACTOR.
- B. Materials that fail to meet contract requirements, as indicated by laboratory tests, shall not be used in the WORK. The CONTRACTOR shall remove all defective materials from the site.

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- C. Types and sizes of concrete specimens shall be in accordance with ASTM C 31. Additional slump tests and/or test cylinders may be required at the discretion of the ENGINEER. Should the analysis of any test cylinder not meet the preceding requirements of Article 2.10, Composition of Concrete, its representative concrete shall be removed and replaced at the CONTRACTOR's expense.
- D. Three copies of all test reports shall be furnished to the ENGINEER.

2.12 COLD WEATHER CONCRETE

- A. Concrete shall not be placed when the descending air temperature in the shade, away from artificial heat, falls below 40°F nor resumed before the ascending air temperature reaches 35°F, without specific written authorization. When the air temperature falls below 40°F, or is, in the opinion of the ENGINEER, likely to do so within a 24 hour period after placing concrete, the CONTRACTOR shall have ready on the job materials and equipment required to heat mixing water and aggregate and to protect freshly placed concrete from freezing.
- B. Concrete placed at air temperatures below 40°F shall have a temperature not less than 50°F nor greater than 70°F when placed in the forms. These temperatures shall be obtained by heating the mixing water and/or aggregate. Mixing water shall not be heated to more than 160°F.
- C. Binned aggregates containing ice or in a frozen condition will not be permitted nor will aggregates which have been heated directly by gas or oil flame or heated on sheet metal over an open fire. When aggregates are heated in bins, only steam coil or water coil heating will be permitted, except that other methods, when approved, may be used. If live steam is used to thaw frozen aggregate piles, drainage times comparable to those applicable for washed aggregates shall apply.
- D. When the temperature of either the water or aggregate exceeds 100°F, they shall be mixed together so that the temperature of the mix does not exceed 80°F at the time the cement is added.
- E. Any additives must have prior approval of the ENGINEER before being used.
- F. The use of calcium chloride is prohibited.
- G. When placing concrete in cold weather, the following precautions shall be taken in addition to the above requirements:
 - 1. Heat shall be applied to forms and reinforcing steel before placing concrete as required to remove all frost, ice, and snow from all surfaces which will be in contact with fresh concrete.
 - 2. When fresh concrete is to be placed in contact with hardened concrete, the surface of the previous pour shall be warmed to at least 35°F, thoroughly wet, and free water removed before fresh concrete is placed.

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3. Freshly placed concrete shall be maintained at a temperature of not less than 70°F for 3 days or not less than 50°F for 5 days, when Type I or II cement is used, and not less than 70°F for 2 days or not less than 50°F for 3 days, when Type III cement is used. The above requirements are not intended to apply during the normal summer construction season when air temperatures of 40°F or higher can reasonably be anticipated during the two week period immediately following concrete placement, or until the concrete is no longer in danger from freezing.
- H. When temperatures below 20°F are not expected during the curing period and, in the opinion of the ENGINEER, no other adverse conditions, such as high winds, are expected, concrete temperatures may be maintained in thick concrete sections by retention of heat of hydration by means of adequately insulated forms.
- I. When, in the opinion of the ENGINEER, greater protection is required to maintain the specified temperature, the fresh concrete shall be completely enclosed and an adequate heat source provided. Such enclosure and heat source shall be so designed that evaporation of moisture from the concrete during curing is prevented. Precautions shall be taken to protect the structure from overheating and fire.
- J. At the end of the required curing period protection may be removed, but in such a manner that the drop in temperature of any portion of the concrete will be gradual and not exceed 30°F in the first 24 hours.
- K. For concrete placed within cofferdams and cured by flooding with water, the above conditions may be waived provided that the water in contact with the concrete is not permitted to freeze. Dewatering shall not be carried out until the ENGINEER determines that the concrete has cured sufficiently to withstand freezing temperatures and hydrostatic pressure.
- L. The CONTRACTOR shall be wholly responsible for the protection of the concrete during cold weather operations. Any concrete injured by frost action or overheating shall be removed and replaced at the CONTRACTOR's expense.

2.13 FORMS

- A. Forms shall be so designed and constructed that they may be removed without injuring the concrete.
- B. Unless otherwise specified, forms for exposed surfaces shall be made of plywood, hard pressed fiberboard, sized and dressed tongue and groove lumber, or metal in which all bolt and rivet holes are countersunk, so that a plane, smooth surface of the desired contour is obtained. Rough lumber may be used for surfaces that will not be exposed in the finished structure. All lumber shall be free from knotholes, loose knots, cracks, splits, warps, or other defects affecting the strength or appearance of the finished structure. All forms shall be mortar tight, free of bulge and warp, and shall be cleaned thoroughly before reuse.
- C. In designing forms and falsework, concrete shall be regarded as a liquid. In computing vertical loads a weight of 150 pounds per cubic foot shall be assumed. The lateral pressure for design of wall forms shall not be less than that given by the following formulas:

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1. For walls with R not exceeding 7 feet per hour:

$$P = 150 + \frac{9000R}{T}, \text{ but not more than}$$

2000 p.s.f. or 150 h, whichever is less.

2. For walls with R greater than 7 feet per hour:

$$P = 150 + \frac{43400}{T} + \frac{2800R}{T}, \text{ but not more}$$

than 2000 p.s.f. or 150 h, whichever is less.

Where:

- a. P = lateral pressure for design of wall forms, p.s.f.
 - b. R = rate of placement, feet per hour
 - c. T = temperature of concrete in forms, °F
 - d. h = maximum height of fresh concrete in form, feet
- D. The above formulas apply to internally vibrated concrete placed at 10 feet per hour or less, without the use of retarding agents, and where depth of vibration is limited to 4 feet below the top of the concrete surface. The CONTRACTOR shall state the placement rate and minimum concrete temperature on the working drawings for concrete form work. Deflection of plywood, studs, and walers shall not exceed 1/360 of the span between supports.
- E. Forms shall be so designed that placement and finishing of the concrete will not impose loads on the structure resulting in adverse deflections or distortions.
- F. The forms shall be so designed that portions covering concrete that is required to be finished may be removed without disturbing other portions that are to be removed later. As far as practicable, form marks shall conform to the general lines of the structure.
- G. When possible, forms shall be daylighted at intervals not greater than 10 feet vertically, the openings being sufficient to permit free access to the forms for the purpose of inspecting, and working.
- H. Metal ties or anchorages within the forms shall be so constructed as to permit their removal to a depth of at least 1 inch from the face without injury to the concrete. All fittings for metal ties shall be of such design that, upon their removal, the cavities which are left will be of the smallest possible size.
- I. All exposed edges 90° or sharper shall be chamfered 3/4 inch unless otherwise noted. Chamfering of forms for reentrant angles shall be required only when specifically indicated on the Plans.
- J. Forms shall be inspected immediately prior to the placing of concrete. Dimensions shall be checked carefully and any bulging or warping shall be remedied and all debris and standing water within the forms shall be removed. Special attention shall be paid to ties and bracing and where forms appear to be braced insufficiently or built unsatisfactorily, either before or during placing of the concrete, the ENGINEER shall order the WORK stopped until the defects have been corrected.

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- K. Forms shall be constructed true to line and grade. Clean out ports shall be provided at construction joints.
- L. The construction of concrete slabs with permanent steel forms shall conform to the requirements of this specification and as shown on the plans. Removable forms may be substituted for permanent metal forms with no adjustment in prices.
- M. All forms shall be installed in accordance with approved fabrication and erection plans.
- N. Form sheets shall not be permitted to rest directly on the top of the stringer or floor beam flanges. Sheets shall be securely fastened to form supports and shall have a minimum bearing one inch in length at each end. Form supports shall be placed in direct contact with the flange or stringer or floor beam. All attachments shall be made by permissible welds, bolts, clips or other approved means.
- O. All porous forms shall be treated with non-staining form oil or saturated with water immediately before placing concrete.
- P. Falsework shall be built to carry the loads without appreciable settlement. Falsework that cannot be founded on solid footings must be supported by ample falsework piling. Falsework shall be designed to sustain all imposed loads.
- Q. Detail drawings of the falsework shall be submitted for review, but such review shall not relieve the CONTRACTOR of any responsibility under the contract for the successful completion of the structure.
- R. Forms and falsework shall not be removed without the consent of the ENGINEER. The ENGINEER's consent shall not relieve the CONTRACTOR of responsibility for the safety of the WORK. Blocks and bracing shall be removed at the time the forms are removed and in no case shall any portion of the wood forms be left in the concrete.
- S. To facilitate finishing, forms used on ornamental work, railings, parapets, and exposed vertical surfaces shall be removed in not less than 12 nor more than 48 hours, depending upon weather conditions. The side forms for arch rings, columns, and piers shall be removed before the members of the structure which they support are placed, so that the quality of the concrete may be inspected. All such side forms shall be removed before the removal of shoring from beneath beams and girders.
- T. In warm weather, falsework and forms shall remain in place under slabs, beams, girders and arches for 14 days after the day of last pour when Type I or Type II cement is used, or for 7 days when Type III cement is used. Forms for slabs having clear spans or cantilever spans of less than 10 feet may be removed after 7 days when Type I or Type II cement is used, or after 4 days when Type III cement is used. In cold weather, the length of time that forms and falsework are to remain in place shall be as approved.
- U. Falsework supporting the deck of rigid frame structures shall not be removed until fills have been placed behind the vertical legs.
- V. No superstructure load shall be placed upon finished concrete until the ENGINEER so directs, but the minimum time allowed for the curing of structural concrete in the substructure before any load of the superstructure is placed thereon shall be 7 days when Type I or Type II cement is used and 2 days when Type III cement is used.

2.14 FORM LINERS

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- A. Unless otherwise noted form liners for exposed surfaces shall be made of plywood, hard-pressed fiberboard, sized and dressed tongue-and-groove lumber, or metal in which all bolt and rivet holes are countersunk, so that a plane, smooth surface of the desired contour is obtained.
- B. Where noted in plans form liners shall be constructed of elastomeric urethane.
1. Manufacturer: Scott System, Inc., 10777 East 45th Ave., Denver. CO 80239, 303-373-2500 or approved equal.
 2. Pattern and texture: Scott Systems Pattern Series: Custom pattern as indicated on drawing.
 3. Physical characteristics:
 - a. Hardness - D2240 - Shore A: 70.
 - b. Tensile Properties PSI - D412 565.0 S100%.
 - c. Elongation D412 - percent: 294.3% ELONG.
 - d. Tear Strength D624 & D3489 die C: 168.9 PLI.
 - e. Tensile Strength (Ultimate) D412: 1569.3 PSI.
 - f. Abrasion - Taber H22: .0698 WTLOS.
 - i. Taber Abrasion D3489 MG/1000 cycles: .25636% by weight.
 - g. Color: Gray.
 - h. TCLP - Hg Test for Disposal: Passes. .0698 WTLOS.
 - i. Taber Abrasion D3489 MG/1000 cycles: .25636% by weight.
 4. Form Release Agents: Scott Lease 440. Cressett 880.
 5. Submit elastomeric cast in place form liner: Installation instructions and Product data verifying compliance with specifications.
 6. Submit shop drawings indicating form liner layout and termination details. Indicate backup, rustication, reveal, and chamfer strip locations. Include jointing, form tie location and pattern placement.
 7. Submit samples: 24 inch by 24 inch of each pattern scheduled or required.
 8. Manufacturer Qualifications: A minimum of 3 years manufacturing experience with form liners similar to those required for this Project.
 9. Installer Qualifications: A minimum of 3 years experience
 10. Architect's review for aesthetic criteria. Contractor responsible for design of formwork and back-up of form liner for structural stability and sufficiency.
 11. Delivery, Storage, and Handling: Cover form liners to protect from oil, dirt and UV exposure. Do not use damaged products. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
 12. Project Conditions: Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

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2.15 CONCRETE SEALER

- A. Concrete sealer shall be a penetrating sealer containing a silane or siloxane compound. The Sealer shall be water based and chemically react with the concrete surface. "CureCrete" Ashford Formula, or approved equal shall be used to seal concrete surfaces.

PART 3 - EXECUTION

3.1 GENERAL

- A. All concrete shall be placed before it has taken its initial set and, in any case, within 60 minutes after mixing. Concrete shall be placed in such manner as to avoid segregation of coarse or fine portions of the mixture, and shall be spread in horizontal layers when practicable. Special care shall be exercised in the bottom of slabs and girders to assure the working of the concrete around nests of reinforcing steel, so as to eliminate rock pockets or air bubbles. Enough rods, spades, tampers and vibrators shall be provided to compact each batch before the succeeding one is dumped and to prevent the formation of joints between batches.
 - 1. Extra vibrating shall be done along all faces to obtain smooth surfaces. Care shall be taken to prevent mortar from splattering on forms and reinforcing steel and from drying ahead of the final covering with concrete. Existing completed structures shall be protected from concrete overspray and any overspray shall be cleaned immediately.
- B. Concrete shall not be placed in slabs or other sections requiring finishing on the top surface when precipitation is occurring or when in the opinion of the ENGINEER precipitation is likely before completion of the finishing, unless the CONTRACTOR shall have ready on the job all materials and equipment necessary to protect the concrete and allow finishing operations to be completed.
- C. Troughs, pipes, or short chutes used as aids in placing concrete shall be arranged and used in such a manner that the ingredients of the concrete do not become separated. Where steep slopes are required, troughs and chutes shall be equipped with baffle boards or shall be in short lengths that reverse the direction of movement. All chutes, troughs, and pipe shall be kept clean and free of hardened concrete by flushing thoroughly with water after each run. Water used for flushing shall be discharged clear of the concrete in place. Troughs and chutes shall be of steel or plastic or shall be lined with steel or plastic and shall extend as nearly as possible to the point of deposit. The use of aluminum for pipes, chutes or tremies is prohibited. When discharge must be intermittent, a hopper or other device for regulating the discharge shall be provided.
- D. Dropping the concrete a distance of more than 5-feet or depositing a large quantity at any point and running or working it along the forms will not be permitted. The placing of concrete shall be so regulated that the pressures caused by wet concrete shall not exceed those used in the design of the forms.

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- E. High frequency internal vibrators of either the pneumatic, electrical, or hydraulic type shall be used for compacting concrete in all structures. The number of vibrators used shall be ample to consolidate the fresh concrete within 15 minutes of placing in the forms. In all cases, the CONTRACTOR shall provide at least two concrete vibrators for each individual placement operation (one may be a standby), which shall conform to the requirements of these specifications. Prior to the placement of any concrete, the CONTRACTOR shall demonstrate that the 2 vibrators are in good working order and repair and ready for use.
- F. The vibrators shall be an approved type, with a minimum frequency of 5,000 cycles per minute and shall be capable of visibly affecting a properly designed mixture with a 1-inch slump for a distance of at least 18-inches from the vibrator.
- G. Vibrators shall not be held against forms or reinforcing steel nor shall they be used for flowing the concrete or spreading it into place. Vibrators shall be so manipulated as to produce concrete that is free of voids, is of proper texture on exposed faces, and of maximum consolidation. Vibrators shall not be held so long in one place as to result in segregation of concrete or formation of laitance on the surface.
- H. Concrete shall be placed continuously throughout each section of the structure or between indicated joints. If, in an emergency, it is necessary to stop placing concrete before a section is completed, bulkheads shall be placed as the ENGINEER may direct and the resulting joint shall be treated as a construction joint.
- I. The presence of areas of excessive honeycomb may be considered sufficient cause for rejection of a structure. Upon written notice that a given structure has been rejected, the rejected WORK shall be removed and rebuilt, in part or wholly as specified, at the CONTRACTOR's expense.

3.2 PUMPING CONCRETE

- A. Concrete may be placed by pumping if the CONTRACTOR demonstrates that the pumping equipment to be used will effectively handle the particular class of concrete with the slump and air content specified and that it is so arranged that no vibrations result that might damage freshly placed concrete. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced.
- B. When pumping is completed, the concrete remaining in the pipeline, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned. Slump tests shall be taken at the discharge end of the pipe.

3.3 COLUMNS. Concrete in columns shall be placed in one continuous operation unless otherwise permitted. The concrete shall be allowed to set at least 12 hours before caps are placed.

3.4 SLAB AND GIRDER SPANS

- A. Slabs and girders having spans of 30 feet or less shall be cast in one continuous operation.

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- B. Girders spanning more than 30 feet may be cast in 2 operations, the first operation being the casting of the girder stems to the bottom of the slab haunches. Shear keys shall be provided for by inserting oiled timber blocks to a depth of at least 1 1/2 inches in the fresh concrete at the top of each girder stem. A sufficient number of blocks shall be used to cover uniformly about 1/2 the top surface of the girder stem and the blocks shall be removed as soon as the concrete has set sufficiently to retain their shape. The period between the first or girder casting and the second or slab casting shall be at least 24 hours. Immediately before the second casting, the CONTRACTOR shall check all falsework for shrinkage and settlement and shall tighten all wedges to insure minimum deflection of the stems due to the added weight of the slab.

3.5 SLABS ON STEEL BEAMS

- A. A concrete slab on simple steel girder spans may be placed in not more than three sections with the first section centered on the span.
- B. On truss spans or continuous girders, the concrete slab shall be placed as shown on the Plans or as directed by the ENGINEER.

3.6 CONCRETE DEPOSITED UNDER WATER

- A. If conditions render it impossible or inadvisable in the opinion of the ENGINEER to dewater excavations before placing concrete, the CONTRACTOR shall deposit under water, by means of a tremie or pump, a seal course of concrete of sufficient thickness to thoroughly seal the cofferdam. The concrete shall be carefully placed in a compact mass and shall not be disturbed after being deposited. Still water shall be maintained at the point of deposit.
- B. A tremie shall consist of a watertight tube having a diameter of not less than 10-inches with a hopper at the top. When a batch is dumped into the hopper, the flow of concrete shall be induced by slightly raising the discharge end, always keeping it in the deposited concrete.
- C. Tremie tubes or pump discharge tubes used to deposit concrete under water shall be equipped with a device that will prevent water from entering the tube while charging the tube with concrete. Such tubes shall be supported so as to permit free movements of the discharge end over the entire top surface of the work and to permit rapid lowering, when necessary to retard or stop the flow of concrete. The tubes shall be filled by a method that will prevent washing of the concrete. The discharge end shall be completely submerged in concrete at all times and the tube shall contain sufficient concrete to prevent any water entry. The flow shall be continuous until the WORK is completed and the resulting concrete seal shall be monolithic and homogeneous.
- D. The exact thickness of the seal will depend upon the hydrostatic head, bond and spacing of piles, size of cofferdam, and other related factors, but in no case shall the seal be less than 2 feet in thickness, unless otherwise shown on the plans. Before dewatering, the concrete in the seal shall be allowed to cure for not less than five days after placing, or until the seal concrete has achieved a minimum compressive strength of 2,500 p.s.i. based on test cylinders cured under the same conditions as the in situ concrete, whichever occurs first.
- E. If a seal which is to withstand hydrostatic pressure is placed in water having a temperature below 45°F, the curing time before dewatering shall be increased as directed.

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- F. Periods of time during which the temperature of the water has been continuously below 38°F shall not be considered as curing time.
- G. After sufficient time has elapsed to insure adequate strength in the concrete seal, the cofferdam shall be dewatered and the top of the concrete cleaned of all scum, laitance and sediment. Before fresh concrete is deposited, local high spots shall be removed as necessary to provide proper clearance for reinforcing steel.

3.7 CONSTRUCTION JOINTS

- A. Construction joints shall be located where shown on the plans or as permitted by the ENGINEER. Construction joints shall be perpendicular to the principal lines of stress and in general shall be located at points of minimum shear.
- B. At horizontal construction joints, gage strips 1 1/2 inches thick shall be placed inside the forms along all exposed faces to give the joints straight lines. Before placing fresh concrete, the surfaces of construction joints shall be washed and scrubbed with a wire broom, drenched with water until saturated, and kept saturated until the new concrete is placed.
- C. Immediately prior to placing new concrete the forms shall be drawn tight against the concrete already in place. Concrete in substructures shall be placed in such manner that all horizontal construction joints will be truly horizontal and, if possible, in locations such that they will not be exposed to view in the finished structure. Where vertical construction joints are necessary, reinforcing bars shall extend across the joint in such a manner as to make the structure monolithic. Special care shall be taken to avoid construction joints through large surfaces which are to be treated architecturally.
- D. All construction joints shall be provided with concrete shear keys at least 1 1/2 inches deep and 1/3 of the concrete thickness in width, unless otherwise shown on the Plans.

3.8 ISOLATION JOINTS

- A. Isolation joints shall be located and formed as required on the plans.
- B. Open Joints. Open joints shall be placed in the location shown on the plans and shall be formed. The form shall be removed without chipping or breaking the corners of the concrete. Reinforcement shall not extend across an open joint, unless so specified on the plans.
- C. Filled Joints. Unless otherwise shown on the plans, isolation joints shall be constructed with pre-molded isolation joint filler with a thickness equal to the width of the joint.
- D. The joint filler shall be cut to the same shape and size as the adjoining surfaces. It shall be fixed firmly against the surface of the concrete already in place in such manner that it will not be displaced when concrete is deposited against it.
- E. Immediately after the forms are removed, the isolation joints shall be inspected carefully. Any concrete or mortar that has sealed across the joint shall be removed.
- F. Joint sealer for use in deck joints shall be of the type shown on the plans conforming to the requirements of Article 2.4 – Joint Fillers, of this Section. The faces of all joints to be sealed shall be free of foreign matter, paint, curing compound, oils, greases, dirt, free water, and laitance.

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- G. Elastomeric Compression Seals. The joint seal shall be shaped as shown on the plans. It shall be installed by suitable hand or machine tools and thoroughly secured in place with a lubricant adhesive recommended by the seal manufacturer. The lubricant adhesive shall cover both sides of the seal over the full area in contact with the sides of the joint.
- H. The seal shall be in one piece for the full width of the joint. Any joints at curbs shall be sealed adequately with additional adhesive.
- I. The seal may be installed immediately after the curing period of the concrete. Temperature limitations of the lubricant adhesive as guaranteed by the manufacturer shall be observed.
- J. Strip Seals. Isolation joint strip seals shall be as shown on the plans, and composed of a steel extrusion and an extruded strip seal. The steel shall conform to ASTM A242 or A588. The seal shall be manufactured of material conforming to the requirements of PART 2 of this Section. Strip seals shall be one piece for the length of the joint.
- K. Installation of the isolation joints shall be in accordance with the manufacturer's recommendations, except that the joint opening shall be adjusted for the dimensions indicated on the Plans.
- L. Steel Joints. The plates, angles, or other structural shapes shall be accurately shaped at the shop to conform to the section of the concrete slab. The fabrication and painting shall conform to the requirements of the specifications covering those items. Care shall be taken to insure that the surface in the finished plane is true and free of warping. Positive methods shall be employed in placing the joints to keep them in correct position during the placing of the concrete. The opening at isolation joints shall be that designated on the plans at normal temperature.

3.9 ANCHOR BOLTS

- A. Anchor bolt assemblies conforming to the details shown shall be accurately secured in the forms in the positions shown on the plans, before any concrete is placed in the forms. The positions shall be checked and any adjustments made as soon as the concrete has been placed.
- B. When pipe sleeves or pre cast holes are provided, no water shall be allowed to freeze in the cavity. If frost causes cracks in the concrete, the entire placement shall be removed and replaced at the CONTRACTOR's expense. When anchor bolts are installed in pipe sleeves or pre cast holes, the cavity shall be completely filled with grout at the time the grout pads are constructed or at the time the bearing assemblies or masonry plates are placed.

3.10 DRAINAGE AND WEEP HOLES

- A. Drainage holes and weep holes shall be constructed as indicated on the plans or as required.
- B. Weep holes through concrete shall be formed. If wooden forms are used, they shall be removed after the concrete is cured. If subsurface drainage is not shown on the plans, weep holes shall be provided in retaining walls and abutment walls where the height of the wall is over 5-feet measured from the top of the footing. Weep holes shall be 4 inches in diameter and shall be spaced not more than 15-feet apart. The outlet end of weep holes shall be placed just above the finish ground line at the face of wall, or as directed.

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- 3.11 PIPES, CONDUITS, AND DUCTS. Pipes, conduits, and ducts that are to be encased in concrete shall be installed in the forms by the CONTRACTOR before the concrete is placed. Unless otherwise indicated, they shall be standard, lightweight cast iron water pipe or wrought iron. They shall be held rigidly so they will not be displaced during concrete placement.
- 3.12 FINISHING CONCRETE SURFACES. All concrete surfaces exposed in the completed WORK shall receive an Ordinary Finish, as described below, unless otherwise noted on the Plans or in other Specification sections.
- 3.13 ORDINARY FINISH
- A. An Ordinary Finish is defined as the finish left on a surface after the removal of the forms, the filling of all holes left by form ties, and the repairing of all defects. The surface shall be true and even, free from stone pockets and depressions or projections. All surfaces that cannot be satisfactorily repaired shall be given a Rubbed Finish.
 - B. The concrete in caps and tops of walls shall be struck off with a straightedge and floated to true grade. The use of mortar topping for concrete surfaces shall in no case be permitted.
 - C. As soon as the forms are removed, metal devices that have been used for holding the forms in place, and which pass through the body of the concrete, shall be removed or cut back at least 1 inch beneath the surface of the concrete. Fins of mortar and all irregularities caused by form joints shall be removed.
 - D. All small holes, depressions, and voids, that show upon the removal of forms, shall be filled with cement mortar mixed in the same proportions as that used in the body of the WORK. In patching larger holes and honeycombs, all coarse or broken material shall be chipped away until a dense uniform surface of concrete exposing solid coarse aggregate is obtained. Feathered edges shall be cut away to form faces perpendicular to the surface. All surfaces of the cavity shall be saturated thoroughly with water, after which a thin layer of neat cement mortar shall be applied. The cavity shall then be filled with stiff mortar composed of 1 part of Portland cement to two parts of sand, which shall be thoroughly tamped into place. The mortar shall be pre shrunk by mixing it approximately 20 minutes before using. The length of time may be varied in accordance with brand of cement used, temperature, humidity, and other local conditions. The surface of this mortar shall be floated with a wooden float before initial set takes place and shall be neat in appearance. The patch shall be kept wet for a period of five days.
 - E. For patching large or deep areas, coarse aggregate shall be added to the patching material. All mortar for patching on surfaces which will be exposed to view in the completed structure shall be color matched to the concrete. Test patches for color matching shall be conducted on concrete that will be hidden from view in the completed WORK and shall be subject to approval.
- 3.14 RUBBED FINISH
- A. When forms can be removed while the concrete is still green, the surface shall be pointed and wetted and then rubbed with a wooden float until all irregularities and form marks are removed and the surface is covered with a lather composed of cement and water. If permitted, a thin grout composed of one part cement and one part fine sand may be used in the rubbing. This lather shall be allowed to set for at least five days. The surface shall then be smoothed by being rubbed lightly with a fine Carborundum stone.

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- B. If the concrete has hardened before being rubbed, a medium coarse Carborundum stone shall be used to finish the surface. Such WORK shall not be done until at least 4 days after placing and it shall be done in the following manner. A thin grout composed of 1 part cement and 1 part fine sand shall be spread over a small area of the surface and rubbed immediately with the stone until all form marks and irregularities are removed and the surface is covered with a lather, after which the surface shall be finished as described above for green concrete.
- C. The surface shall be smooth in texture and uniform in appearance. The building up of depressions will not be permitted.
- D. If, through the use of first class form materials and the exercise of special care, concrete surfaces are obtained that are satisfactory, the CONTRACTOR may be relieved entirely or in part from the requirement for rubbing.

3.15 CONCRETE DECKS

- A. A smooth riding surface of uniform texture, true to the required grade and cross section, shall be obtained on all bridge roadway decks. The CONTRACTOR may use hand tools or finishing machines, or a combination of both, conforming to the requirements specified herein for finishing bridge roadway deck concrete.
- B. Finishing of concrete placed in bridge decks shall consist essentially of striking off the surface of the concrete as placed and floating with longitudinal floats the surface so struck off.
- C. The placing of concrete in bridge roadway decks will not be permitted until the ENGINEER is satisfied that the rate of producing and placing concrete will be sufficient to complete the proposed placing and finishing operations within the scheduled time, that experienced finishing machine operators and concrete finishers are employed to finish the deck, and all necessary finishing tools and equipment are on hand at the site of the WORK and in satisfactory condition for use.
- D. Finishing machines shall be set up sufficiently in advance of use to permit inspection during the daylight hours before each placement. Before any fresh concrete is deposited on the deck, the finishing machine shall be moved on its rails across the length of the scheduled placement and the clearance between the strike off and deck reinforcing steel shall be checked to ensure that the required minimum concrete cover will be maintained with due consideration for deflections.
- E. Unless adequate lighting facilities are provided by the CONTRACTOR, the placing of concrete in bridge decks shall cease at such time that finishing operations can be completed during daylight hours.
- F. Rails for support and operation of finishing machines and headers for hand operated strike off devices shall be completely in place and firmly secured for the scheduled length of concrete placement before placing of concrete will be permitted. Rails for finishing machines shall extend beyond both ends of the scheduled length of concrete placement a sufficient distance that will permit the float of the finishing machine to fully clear the concrete to be placed. Rails or headers shall be adjustable for elevation and shall be set to elevations with allowance for anticipated settlement, camber, and deflection of falsework, as required to obtain a bridge roadway deck true to the required grade and cross section.

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- G. Rails or headers shall be of a type and shall be so installed that no springing or deflection will occur under the weight of the finishing equipment, and shall be so located that finishing equipment may operate without interruption over the entire bridge roadway deck being finished.
- H. Details for supporting finishing machine rails shall be submitted and must be approved before any deck slab concrete is placed.
- I. The rate of placing concrete shall be limited to that which can be finished before the beginning of initial set, except that concrete for the deck surface shall not be placed more than 10 feet ahead of strike off.
- J. After the concrete has been placed and consolidated, the surface of the concrete shall be carefully struck off by means of a hand operated strike board, operating on headers, or by a finishing machine operating on rails. A uniform deck surface true to the required grade and cross section shall be obtained.
- K. Following strike off, the surface of the concrete shall be floated longitudinally. In the event strike off is performed by means of a hand operated strike board, two separate hand operated float boards for longitudinal floating shall be provided. The first float shall be placed in operation as soon as the condition of the concrete will permit and the second float shall be operated as far back of the first float as the workability of the concrete will permit.
- L. In the event the strike off is performed with a finishing machine, longitudinal floating of the concrete shall be performed by means of a hand operated float board or a finishing machine equipped with a longitudinal float. The longitudinal float on the finishing machine shall have a length of not less than 8 feet nor more than 12 feet.
- M. Any finishing machine having a wheel base six feet or less used for strike off shall be followed by two separate hand operated float boards for longitudinal floating. All the provisions in this section pertaining to hand operated float boards shall apply to the two separate float boards for longitudinal floating.
- N. Longitudinal floats, either hand operated or machine operated, shall be used with the long axis of the float parallel to the centerline of the bridge roadway. The float shall be operated with a combined longitudinal and transverse motion planing off the high areas and floating the material removed into the low areas. Each pass of the float shall lap the previous pass by 1/2 the length of the float. Floating shall be continued until a smooth riding surface is obtained. The driving surface of the concrete shall have a heavy broom finish. Decks to receive waterproof membranes shall be float finished.
- O. Hand operated float boards shall be from 12 feet to 16 feet long, ribbed and trussed as necessary to provide a rigid float, and shall be equipped with adjustable handles at each end. The float shall be wood, not less than 1 inch thick and from 4-inches to 8-inches wide. Adjusting screws spaced at not to exceed 24-inches on centers shall be provided between the float and the rib. The float board shall be true and free of twist.

SECTION 03301-STRUCTURAL CONCRETE

- P. Hand operated float boards shall be operated from transverse finishing bridges. The finishing bridges shall span completely the roadway area being floated and a sufficient number of finishing bridges shall be provided to permit operation of the floats without undue delay. Not less than two transverse finishing bridges shall be provided when hand operated float boards are used. When a finishing machine is used for longitudinal floating one finishing bridge equivalent to the transverse finishing bridge specified herein shall be furnished for use by the ENGINEER.
- Q. All finishing bridges shall be of rigid construction.
- R. Immediately following completion of the deck finishing operations, the concrete in the deck shall be cured as specified in Article 3.17, Curing Concrete, of this Section.
- S. The finished surface of the concrete shall be tested by means of a straightedge 10 feet long. The surface shall not vary more than 0.01 foot from the lower edge of the straightedge, except bridge decks receiving asphalt wearing courses shall not vary more than 0.02 foot from the lower edge of the straightedge. All high areas in the hardened surface in excess of 0.01 foot as indicated by testing shall be removed by abrasive means. After grinding by abrasive means has been performed, the surface of the concrete shall not be smooth or polished. Ground areas shall be of uniform texture and shall present neat and approximately rectangular patterns.
- T. Devices for supporting finishing machine rails shall be of such design that those portions which are to remain embedded in the concrete deck will be covered by a minimum of two inches of concrete when finishing is completed.

3.16 CURB AND SIDEWALK SURFACES.

- A. Exposed faces of curbs and sidewalks shall be finished to true surfaces and conform to Section 3303 – Seawalk, Curb and Gutter. Concrete shall be worked until coarse aggregate is forced down into the body of the concrete and a layer of mortar approximately 1/4 inch thick is flushed on the top. The surface shall then be floated and a moderate broom finish applied.

3.17 CURING CONCRETE

- A. Water Curing
 - 1. All concrete surfaces shall be kept wet for at least seven days after placing if Type I or II cement has been used or for three days if Type III cement has been used. Concrete shall be covered with wet burlap, cotton mats, or other materials meeting the requirements of AASHTO M 171 immediately after final finishing of the surface. Materials shall be kept thoroughly wet for the entire curing period. All surfaces, if not protected by forms, shall be kept thoroughly wet, either by a continuous application of water sprinkling over the concrete surface or by the use of wet burlap, cotton mats, or other suitable fabric, until the end of the curing period. Water shall be applied a minimum of twice daily to maintain curing material in a saturated state. If wood forms are allowed to remain in place during the curing period, they shall be kept moist at all times to prevent opening at joints.
- B. Membrane Curing.

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1. Liquid membrane curing compound meeting the requirements of AASHTO M 148, Type I, may be permitted, subject to approval by the ENGINEER, except compounds utilizing linseed oil shall not be used. All finishing of concrete surfaces shall be performed to the satisfaction of the ENGINEER prior to applying the impervious membrane curing compound. The concrete surfaces must be kept wet with water continuously until the membrane has been applied. The manufacturer's instructions shall be carefully followed in applying the membrane, and in all cases the membrane curing compound must always be thoroughly mixed immediately before application. In case the membrane becomes marred, worn, or in any way damaged, it must immediately be repaired by wetting the damaged area thoroughly and applying a new coat of the impervious membrane curing compound. Membrane curing will not be permitted for concrete slabs that are to be covered with waterproof membranes, polymer modified concrete or at isolation joints.
2. All curing compounds must be fully removed from the concrete surface prior to applying the final concrete sealer.

3.18 CONCRETE SEALER

- A. The concrete sealer shall be used to seal and waterproof all exposed concrete surfaces. The sealer shall be applied as stated below or per the manufactures recommendations.
 1. The curing compound shall be sprayed on the surface with a low-pressure sprayer as soon as the surface is firm enough to walk on immediately following the finishing operation.
 2. The entire surface shall be kept wet for 30 minutes by brooming excess material onto the dry spots or by re-spraying them immediately. No areas on the concrete surface shall be allowed to dry during the initial 30 minute period.
 3. As the curing compound begins to dry into the surface and becomes slippery, lightly sprinkle the surface with water to aid the penetration of the curing compound and to bring any alkali to the surface.
 4. After 30 to 40 minutes, squeegee or broom the surface to remove any excess curing compound and alkali or other impurities brought to the surface. All WORK required for the application of the curing compound shall conform to the manufacturer's recommendations.

3.19 BACKFILLING AND OPENING TO TRAFFIC

- A. Unbalanced backfilling against concrete structures will not be permitted until the concrete has attained a compressive strength of not less than 80% of the ultimate strength (f 'c) shown on the Plans.
- B. Concrete culverts and bridges with concrete decks shall remain closed to traffic until permission to open them is granted. No vehicle will be allowed on any span until the concrete in the span has attained a compressive strength of not less than 80% of the ultimate strength (f 'c) shown on the plans, and loads of any character having a total weight in excess of 4,000 pounds will not be permitted on any span until the concrete in the span has attained a compressive strength of not less than the ultimate strength (f 'c) shown on the Plans.

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- C. The compressive strength shall be determined from informational test cylinders cured on the site under similar conditions of temperature and moisture as the concrete in the structure.

3.20 CLEANING UP

- A. Upon completion of the structure and before final acceptance, the CONTRACTOR shall remove all falsework. Falsework piling shall be removed or cut off at least 2 feet below the finished ground line.

END OF SECTION

SECTION 05120 – METAL FABRICATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK in this Section shall include all labor, materials, tools and equipment necessary for fabrication, handling, transport and installation of all structural steel and aluminum items in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

- A. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD).
- B. ASTM (American Society of Testing Materials) Specifications
- C. ASTM A36/A36M - Structural Steel.
- D. ASTM A6 – General Requirements for Rolled Steel Plates, Shapes, Sheet piling, and Bars for Structural Use.
- E. ASTM A108 – Steel Bars, Carbon Cold-Finished, Standard Quality.
- F. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
- G. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- H. ASTM A325 - High Strength Bolts for Structural Steel Joints.
- I. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- J. ASTM A53 – Steel Pipe.
- K. ASTM F593 – Stainless Steel Bolts, Hex Cap Screws, and Studs.
- L. ASTM F594 – Stainless Steel Nuts.
- M. AWS D1.1 - Structural Welding Code - Steel.
- N. The Aluminum Association – Aluminum Design Manual: Specifications and Guidelines for Aluminum Structures.
- O. ASTM B209 – Standard Specifications for Aluminum and Aluminum-Alloy Sheet and Plate.
- P. ASTM B210 – Standard Specifications for Aluminum and Aluminum-Alloy Drawn Seamless Tube.
- Q. ASTM B221 – Standard Specifications for Aluminum and Aluminum-Alloy Bar, Rod, Wire, Profiles and Tubes.

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- R. ASTM B241 – Standard Specifications for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Tube.
- S. ASTM B308 – Standard Specifications for Aluminum and Aluminum-Alloy 6061-T6 Standard Structural Profiles.
- T. AWS D1.2 - Structural Welding Code - Aluminum.

1.3 SUBMITTALS

- A. Fabrication Shop Drawings of all fabricated steel and aluminum items prior to fabrication.
 - 1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length and type of each weld. All welds on shop drawing shall note an approved Weld Procedure Specification (WPS).
 - 2. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 3. Indicate type, size and length of bolts, distinguishing between shop and field bolts. Identify high-strength bolted slip-critical, direct-tension, or tensioned shear/bearing connections.
- B. Manufacturer's Mill Certificate: Steel certification for all steel used shall include chemistry, yield strength, and mill numbers.
- C. Galvanizing Certifications
- D. Galvanizing Repair Method and Materials
- E. Weld Procedure Specifications for all welding
- F. Welders Certificates: Certify welders employed in the work, verifying AWS qualification.
- G. Product data, samples, preparation, application, QA/QC Plan, and field repair of metal coatings per Section 09900 – Coatings.
- H. Provide fabrication shop QA/QC Plan for review by ENGINEER. Provide qualification data for firms and/or persons to demonstrate their capabilities and experience. Include lists of projects with project names and addresses, and names and addresses of engineers, architects and owners.

1.4 QUALITY ASSURANCE

- A. Fabricate and install structural steel in accordance with AISC Code of Standard Practice.
- B. Fabricate and install aluminum in accordance with Aluminum Association Aluminum Design Manual.
- C. Quality Assurance. The metal fabricator must have an ongoing quality assurance program approved by a qualified, independent source. At the option of the ENGINEER,

SECTION 05120 – METAL FABRICATION

the fabricator shall submit a copy of their operational quality assurance program, and shall not begin fabrication until the ENGINEER has approved this quality assurance program. The objectives of the quality assurance program are as follows:

1. Completed products shall conform completely to all governing codes and specifications stipulated in the Design Contract Documents, and Plans.
2. Quality Assurance Program is an integral part of the ongoing manufacturing activities of the Fabricator.

Although periodic inspections will be carried out by the ENGINEER, the purpose of these inspections is to note general conformance to the design documents. It is still the responsibility of the fabricator to produce a quality product, in complete conformance with the design documents, and to document and correct any non-conformance. All documentation, including that submitted, shall be kept on file by the fabricator, for review, if requested by the OWNER or ENGINEER.

- D. Fabrication Facility. The fabrication facility shall provide the proper environment and physical conditions necessary for welding, cutting, and general metal fabrication. The facility shall provide adequate work space, equipment, level surfaces, and protection from wind, moisture and freezing. The fabricator shall have the capability to carry out the following work in-house or on a contract basis:

- Design of lifting and erection devices not shown on the drawings.
- Preparation of shop fabrication drawings.
- Receiving, checking and storing of materials for metal fabrication.
- Dimensional checking and verification.
- Resolution of non-conformities.
- Documentation of all stages of work with capability of tracing all major components.
- Finishing, repairing, storing and shipping.

- E. Fabricator Qualifications: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to fabricate structural steel without delaying the WORK. Fabricator shall be an ICBO “Approved Fabricator” as defined in Section 1701.7 of the 1997 Edition of the Uniform Building Code or an AISC Certified Fabricator, unless otherwise noted in specific sections of Contract Documents. Shop welding procedures and qualifications shall be submitted for review by the ENGINEER. The independent inspector shall provide weekly inspection reports to the ENGINEER.

- F. Welding Standards: Comply with applicable provisions of AWS D1.1 Structural Welding Code - Steel, current edition, and AWS D1.2 Structural Welding Code – Aluminum, current edition.

1. Present evidence that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
2. Submit welding procedures in accordance with AWS Structural Welding Codes.

1.5 DELIVERY, STORAGE AND HANDLING

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- A. Deliver materials to Fabricator's shop in such quantities and at such times to ensure continuity of installation.
- B. Store materials to permit easy access for inspection and identification. Materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports. Materials shall be kept clean and properly drained. Girders and beams shall be placed upright and shored. Long members shall be adequately supported on skids to prevent damage from deflection.
- C. Store fasteners in a protected place. Clean and re-lubricate bolts and nuts that become dry or rusty before use.
- D. Do not store materials or assembled structures in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 MATERIALS - All materials for metal fabrication shall conform to the Design Contract Documents and as shown on the Design Plans. Purchase orders shall contain all necessary information to verify that materials purchased comply with the fore mentioned documents. The Fabricator shall inspect all materials, upon arrival, for conformance with the purchase orders. The Fabricator shall confirm that mill certificates and test reports are provided and that they correctly identify the materials delivered. If a supplier proposes a substitute for any material, the proposed substitution shall be submitted to the ENGINEER for approval prior to commencing any WORK involving use of the proposed substitute material. Supplier must be prepared to supply materials as identified on the design documents if the proposal for a substitution is not approved by the ENGINEER.

- A. Miscellaneous steel shapes and all plate steel shall conform to ASTM A572, Grade 50, hot-dip galvanized, unless otherwise noted.
- B. Square and rectangular HSS shall conform to ASTM A500, Grade B, hot-dip galvanized, unless otherwise noted.
- C. Pipe less than 12-inch diameter shall conform to ASTM A53, Grade B, Type E or S, hot-dip galvanized, unless otherwise noted. Pipe greater than 12-inch diameter shall conform to Section 02896 - Steel Pipe Piles.
- D. Bolts and Miscellaneous Hardware: Unless otherwise noted, all bolts shall conform to ASTM A307, hot-dip galvanized, with threads excluded from the shear plane. Washers are required under both the head and nut of all bolts, unless otherwise noted. All nuts and washers shall be hot-dip galvanized. Plate washers, with a diameter equivalent to a malleable iron washer, shall be used in all areas where the bolt head or nut bear against wood, except under economy head bolts. All bolts called out as ASTM A325 shall be hot-dip galvanized. A325 bolts shall be installed per AISC turn-of-nut method, or other ENGINEER approved method, unless otherwise indicated on the Plans.

All bolts, nuts, washers, screws, and miscellaneous hardware called out as Stainless Steel shall be Type 316 Stainless Steel conforming to ASTM F593 and F594 as applicable.

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All nails shall be hot-dip galvanized.

- E. Aluminum shall conform to 6061-T6, unless otherwise noted. Aluminum pipe and round bar shall be 6063-T6.

2.2 METAL COATINGS

- A. Unless otherwise noted, all steel shall be hot-dip galvanized in accordance with ASTM A123 or A153 as appropriate.
- B. All other metal coatings, shall be per Section 09900 – Coatings.

PART 3 - EXECUTION

3.1 METAL FABRICATION

- A. Shop Inspection: The CONTRACTOR shall furnish the ENGINEER with 30 days notice of the beginning of WORK at the mill or in the shop so that special fabrication inspections may be scheduled by the ENGINEER.
- B. Fabricate and assemble components in a shop, to greatest extent possible. Workmanship and finish shall be equal to the best industry standards and in accordance with the requirements of AWS, AISC, and The Aluminum Association, as applicable.
 - 1. Mark and match-mark materials for field assembly.
 - 2. Fabricate for delivery in a sequence that will expedite erection and minimize field handling.
 - 3. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 4. Holes: Drill holes perpendicular to metal surfaces; do not flame-cut holes or enlarge holes by burning.
 - 5. Aluminum Fabrication: Edges shall be cut true, smooth and free of burrs. Flame cutting is not permitted. Corner edges shall be ground smooth. Holes shall be drilled or punched. Weld spatter and flash marks shall be removed and ground smooth. Mill stamps and markings shall be removed from all exposed surfaces.
- C. Structural material, either plain or fabricated, shall be stored at the fabricating shop above ground, on platforms, skids or other supports. It shall be kept free from dirt, grease or other foreign matter, and shall be protected, as far as practical, from corrosion.
- D. All holes required for steel hot-dip galvanizing shall be clearly identified on the Shop Fabrication Drawings for ENGINEER review and approval. Fabricator shall coordinate with Galvanizer to determine size and quantity of holes required. Some, or all of the holes, may be required to be fully repaired per AWS D 1.1, at the discretion of the ENGINEER.

3.2 METAL ERECTION

SECTION 05120 – METAL FABRICATION

- A. General: The CONTRACTOR shall provide and later remove all falsework, temporary shoring, and bracing necessary for erection and to complete assembly. All such devices shall be properly designed and constructed by the CONTRACTOR to meet anticipated construction and handling loads.
- B. Handling and Storing of Materials: Material to be stored shall be placed on skids above the ground. It shall be kept clean and properly drained. Girders and beams shall be placed upright and shored. Handling and erection procedures shall be conducted in a manner to avoid over stressing any structural element. Stress and deflection calculations shall be provided by the CONTRACTOR, as deemed necessary by the ENGINEER, for any erection procedure.
- C. Method and Equipment: Before starting the WORK of erection, the CONTRACTOR shall inform the ENGINEER fully as to the method of erection proposed, and the amount and character of equipment proposed to be used. Approval by the ENGINEER shall not be considered as relieving the CONTRACTOR of the responsibility for the safety of his method and equipment, or from carrying out the WORK in full accordance with the Plans and Specifications.
- D. Assembling: Metal parts shall be accurately assembled as shown on the Plans, following applicable Industry Standards, Codes, erection drawings and fabricators' match-marks. Excessive force or manipulation of parts shall not be allowed as determined by the ENGINEER. The material shall be carefully handled so that no parts will be bent, broken, or otherwise damaged. Hammering, which will injure or distort the members will not be permitted. Bearing surfaces shall be cleaned before the members are assembled.
- E. Bolt Holes and Bolting: Bolt holes and bolting shall follow the requirements as stated on the Plans and as indicated by applicable Industry Standards and Codes. Any steel to steel connections noted to be considered "slip-critical" shall be installed by the "turn-of-nut" tightening method per AISC. In addition to the requirements of AISC, bolting of slip-critical joints shall proceed in the following manner:
1. The joint shall be fitted up and aligned with drift pins.
 2. Sufficient force shall be applied so as to bring the faying surfaces of steel into close contact. If high strength bolts are used for this purpose (i.e. used to pull steel into position), they shall be clearly marked for identification, and not used in the final connection.
 3. High strength bolts shall be installed and brought up to snug-tight condition, such as can be produced by a few blows of an impact wrench, or by an ordinary spud wrench.
 4. High strength bolts shall then be tightened by turn-of-nut method, progressing from the most rigid part of the joint toward the free edges.
 5. Bolts used to pull steel into position (mentioned above) shall then be removed, replaced with high strength bolts, and tightened as described above.
 6. The impact wrench used for bolt tightening shall be of adequate capacity so as to provide the required tightening in approximately 10 seconds.
 7. Bolt lengths shall be such that 0" to ¼" of the bolt shall extend past the end of the nut after tightening.

SECTION 05120 – METAL FABRICATION

- F. Welding: All welding shall be in accordance with AWS D1.1 or AWS D1.2, current edition, as applicable.

Welding personnel shall be qualified per AWS to weld procedures and weld positions necessary for the joint details specified on the drawings. All steel fabrication shop drawings shall reference the weld procedure specification for each weld detailed. Weld procedure specifications shall be submitted with the shop drawings. Submittals verifying welder qualifications must be transmitted to the ENGINEER for approval prior to any welding.

Welds will be spot tested by the ENGINEER by VT, MT, or UT and any welds which fail shall be repaired at the CONTRACTOR's expense, which will also include all costs for retesting.

No welding through galvanized coatings will be permitted. The galvanizing within one inch of the weld shall be removed and repaired, after welding, according to these Specifications.

All weld filler metal shall have chemistry similar to the base metal and shall have a minimum Charpy Impact Test Value of 20 ft-lbs. at -20 degrees F and have chemistry similar to the base metal. Filler metals shall only be used in welding positions recommended by the manufacturer. Welding materials shall be stored, and the condition maintained, according to AWS.

Pre-heat shall be based on material grade and thickness shown on drawings per AWS tables. Uniformity of pre-heat shall conform to AWS stipulations.

- G. Galvanize Repair: Galvanized coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired per Section 09900 – Coatings.
- H. Thermal Spray Metalizing (TSM) Repair: TSM coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired with thermal spray metalizing per Section 09900 – Coatings.

END OF SECTION

SECTION 09900 - COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The WORK in this section shall include all labor, materials, tools and equipment necessary for handling, transport, surface preparation and application of all metal coatings, and all other miscellaneous associated work, in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

- A. ASTM (American Society of Testing Materials) Specifications
- B. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
- C. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- D. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
- E. SSPC Guide No. 23 for Thermal Spray Metallic Coating.
- F. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

1.3 SUBMITTALS

- A. Product Data: Provide product data and/or technical specifications including manufacturer's instructions for surface preparation, required environmental conditions, etc., for all metal coating products.
- B. Samples: Submit (2) samples demonstrating color and texture for each proposed metal coating product.
- C. Coating Repair Methods and Materials: CONTRACTOR'S proposed repair methods, procedures and materials for all metal coatings damaged as a result of shipping, handling, welding or by other means.
- D. CONTRACTOR shall submit a Quality Plan for preparation and application of all metal coatings. Quality Plan shall address solvent cleaning, blasting, surface profile standards, stripe coat and primer coat application, finish coat applications, coating thickness measurement and documentation, adhesion pull test procedures, independent inspection and documentation, as well as handling and transport methods.
- E. CONTRACTOR shall submit surface preparation and application procedures of Thermal Arc-Sprayed Non-Skid surfaces for ENGINEER approval. Samples of Non-Skid coating must be submitted to ENGINEER and approved by the ENGINEER prior to commencing with Non-Skid coating application.
- F. The CONTRACTOR shall submit surface preparation and application procedures for Thermal Spray Metallic Coatings. Procedures shall conform to Section 5 (Surface

SECTION 09900 - COATINGS

Preparation), Section 7 (TSC Application), and Section 9 (Sealer) of SSPC-CS 23.00. The procedures shall detail the equipment application process, in-process quality control, Job Reference Standard (JRS) and the Job Control Record (JCR). The JRS shall comply with SSPC-CS 23.00 requirements. The JCR shall be similar to the Model Job Control Record included in Appendix B of SSPC-CS 23.00.

1.4 QUALIFICATIONS

- A. Shop Application: Thermal sprayed and painted coatings applied in the shop shall be applied by an experienced firm that has knowledge, procedures and equipment necessary to provide surface preparation and application of complex protective coating systems. Thermal sprayed and painted coatings shall be applied by a firm possessing SSPC-QP 6 certification.
- B. Field Application: Thermal sprayed and painted coatings applied in the field shall be applied by an experienced contractor that has knowledge, procedures and equipment necessary to provide surface preparation and application of complex protective coating systems. Thermal sprayed and painted coatings shall be applied by a contractor possessing SSPC-QP6 certification.

PART 2 - PRODUCTS

2.1 GALVANIZING

- A. Prior to coating structural steel members, CONTRACTOR shall coordinate with ENGINEER on verifying heat numbers to submitted material certifications.
- B. Contractor shall mask off all areas that will be field welded.
- C. Hot-dipped galvanizing shall be per ASTM A123 or A153, as appropriate.

2.2 THERMAL SPRAY METALLIC COATING

- A. Prior to coating structural steel members, CONTRACTOR shall coordinate with ENGINEER on verifying heat numbers to submitted material certifications.
- B. Contractor shall mask off all areas that will be field welded.
- C. Thermal Spray Metallic Coating shall conform to SSPC Guide No. 23.
- D. Thermal Spray Metallic Coating as the final coating shall be top coated with clear sealer, PRO-LINE 4800/4801 PROTHANE H.S. as manufactured by *Sherwin-Williams*, or approved equal.
- E. Thermal Spray Metallic Coating shall be applied to a minimum dry coating thickness of 15 mils, and shall be top coated with a clear sealer to a dry film thickness (DFT) of 2-3 mils.
- F. Any fully sealed hollow box type member's interior is not required to be spray metalized.

SECTION 09900 - COATINGS

2.3 NON-SKID COATING

- A. Metal surfaces designated to have Non-Skid or Non-Slip coating shall be initially thermal arc-sprayed with zinc only to a minimum dry coating thickness of 6 mils, followed by a thermal arc-sprayed top coat of TH 605, as manufactured by Thermion, or an approved equivalent product, to achieve an aggressive surface profile.
- B. Approved non-skid coating shall be applied to a minimum dry coating thickness of 12 mils, and shall be top coated with clear sealer PRO-LINE 4800/4801 PROTHANE H.S. as manufactured by *Sherwin-Williams*, or approved equal, to a minimum dry film thickness (DFT) of 2-3 mils.
- C. Surface preparation and Non-Skid coating application shall be conducted as recommended by Thermion, or other approved manufacturer.
- D. Fabricator shall coordinate with manufacturer prior to Non-Skid coating application, and submit surface preparation and application procedures for ENGINEER approval. Samples of Non-Skid coating must be submitted to ENGINEER and approved by the ENGINEER prior to commencing with Non-Skid coating application.

PART 3 - EXECUTION

3.1 PREPARATION AND APPLICATION

- A. Galvanizing – Galvanizing shall be performed after fabrication, and all holes required for galvanizing shall be repaired per AWS D1.1, and in accordance with Sub-Section 3.2, unless otherwise approved by the ENGINEER.
- B. Thermal Spray Metallic Coating - Preparation and application of Thermal Spray Metallic Coatings shall conform to SSPC Guide No. 23, to the minimum dry film coating thickness specified in these specifications. Thermal Spray Metallic Coating damaged from shipping, handling, welding or by other means shall be repaired in accordance with SSPC Guide No. 23, Section 8.7.
 - a. Cleaning and Preparation – Prepare all surfaces to be spray metalized per SSPC CS-Guide 23.00, Current Edition. Perform a power washing pre-cleaning in accordance with SSPC-SP 12 to remove organic growth, dirt, grease, soluble salts and other contaminants. Prior to blast cleaning, surface imperfections such as sharp fins, sharp edges, weld spatter, etc. shall be removed from the surface. Following the power washing, blast clean the surfaces to be spray metalized to a near white metal finish in accordance with SSPC-SP 10/NACE No. 2. The steel substrate shall have a minimum angular profile depth of 2.5 mils.

During cleaning and preparation, loose rust, organics, blast medium and other debris shall be contained for disposal in accordance with the contract provisions. Prior to application of the spray metalized coating, the steel substrate shall be heated to 250°F to remove moisture from the steel. A minimum surface temperature shall be maintained during application of the spray metalized coating to prevent condensation

SECTION 09900 - COATINGS

of moisture on the substrate. Time between the completion of the final blasting and the completion of the thermal spraying should be no greater than six hours. If rust blooms, blistering or degraded coating appears at any time during application of the coating system, repair the unsatisfactory portions per the specifications.

- b. Application – Following cleaning and preparation, spray metalize with a pure zinc coating per SSPC CS-Guide 23.00, current edition. The coating thickness shall be measured per SSPC-PA 2 with the following modification: no single measurement, including those that create a spot measurement, shall be less than 70% of the minimum required dry film thickness. The specified coating thickness shall be applied in several crossing passes laying down approximately 3 to 4 mils for each pass. The deposited coating system shall be uniform without blisters, cracks, loose particles, or exposed steel as examined with 10x magnification.

The CONTRACTOR shall perform one portable tension-bond measurement for every 500 sq. ft of surface coated or as determined necessary by ENGINEER.

The CONTRACTOR shall conduct a bend test at the beginning of each work shift or crew change:

1. Use carbon steel coupons of approximate dimension 2 in. x 4 in. x 8 in. x 0.050 in.
2. Surface preparation according to these specifications.
3. Bend coupons 180 degrees around a 0.5 in. diameter mandrel.
 - a. Bend test passes if there is no cracking or only minor cracking with no spalling or lifting (by a knife blade) from the substrate.
 - b. Bend test fails if the coating cracks with lifting (by a knife blade) from the substrate.

Thermal spraying in low-temperature environments, less than 40 degrees F shall comply with SSPC-CS 23.00 requirements.

The CONTRACTOR shall protect the surrounding structures, utilities, etc. by means of shielding, taping, or similar. Any damage to the surrounding components shall be repaired by the CONTRACTOR at no cost to the OWNER.

- C. Non-Skid – Metal surfaces specified to be Non-Skid shall be prepared per coating manufacture's recommendations and submitted Quality Plan.
- D. Miscellaneous - Surface preparation will be monitored and dry film thickness testing will be performed by OWNER representative for Quality Assurance on the coating application; however, this does not relieve the CONTRACTOR from implementing their own Quality Control procedures on the process. If coating thickness is insufficient, the CONTRACTOR is responsible for and shall be prepared to apply more layers as necessary to obtain the required minimum thickness specified in the Contract Documents.

3.2 COATING REPAIRS

- A. Galvanizing and Thermal Spray Metalizing Repairs – For small areas damaged due to fabrication, welding, material handling or occurring during installation which are less than or equal to (1) one square foot per (20) twenty square foot area, it is permitted to repair

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galvanized coatings by using the following hot-applied repair stick method (reference ASTM A780):

- a. Repair sticks shall be zinc-cadmium alloys (melting point 518° - 527°F) such as “Rev-Galv”, or zinc-tin-lead alloys (melting point 446° - 500°F) such as “Galv-Weld”, “Zilt”, and “Galv-over”. The zinc-tin -lead alloys shall comply with U.S. Federal Specification O-G-93 and contain fluxing agents.
- b. Remove welding slag by chipping hammer and clean weld or damaged area by vigorous wire brushing.
- c. Preheat the region to be repaired by means of an oxyacetylene torch or other convenient method to between 600°F and 750°F. The alloys do not spread well at temperatures lower than 600°F. Also as temperatures rise above 600°F increasing amounts of dross form.
- d. Wire brush surface again.
- e. Apply coating by rubbing bar of the alloy over the heated surface while it is hot enough to melt the alloy.
- f. Spread the molten alloy by briskly wire brushing or rubbing with a flat edge strip of steel or palette knife. Minimum thickness of applied zinc stick material shall be 12 mils.
- g. Remove flux residues by wiping with a damp cloth or rinsing with water.
- h. Brush apply two top coats of zinc rich paint, ZRC or equal (cold galvanize repair).

All other areas exceeding the fore mentioned limitations shall be repaired by Thermal Spray Metalizing as described in the SSPC Guide No. 23.

END OF SECTION