HAINES BOROUGH

PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

PROJECT MANUAL

Contract Documents and Specifications

Volume 1 of 2

STATE OF ALASKA
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REGISTERED PROFESSIONAL ENGINEER

3/3/13

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HAINES BOROUGH
PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS
INVITATION TO BID

Notice is hereby given that the Haines Borough, Alaska will receive sealed bids for the construction of Port Chilkoot Dock and Letnikof Cove Harbor Renovations. The project generally consists of the following Work:

The Project includes a Base Bid that will be performed at the Port Chilkoot Dock and generally consists of various items including demolition of an existing timber approach trestle and main dock, uplands and retaining wall modifications, concrete abutment, aluminum gangway, timber trestle, queuing deck and approach dock, re-grade of existing approach dock, moorage float modifications, steel pipe piles, water system and electrical improvements.

The project includes three Additive Alternates: Additive Alternate A work will be performed at Letnikof Cove and generally consists of renovating the Letnikof Harbor, which includes partial demolition of the existing timber trestle, new approach dock addition, gangway replacement, existing pipe float system maintenance, anchor chain replacement, seasonal timber floats, gangway landing float, and socketed steel piles. Additive Alternates B and C work will be performed at the Port Chilkoot Dock. Additive Alternate B consists of a mooring dolphin. Additive Alternate C consists of lighting and electrical power to the moorage float.

The Engineer's Estimate for all work is approximately $6 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, April 2, 2013** 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Bids, Port Chilkoot Dock and Letnikof Cove Harbor Renovations**, **Opening Date April 2, 2013".** Proposals may not be withdrawn for thirty days following date of opening.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 Thursday, March 14, 2013 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 Carlos Jimenez, 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 award to the lowest responsive, responsible bidder as it may best serve the interest of the Borough.

Authorized by: Mark Earnest, Borough Manager

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 planholders 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.

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,
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 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 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 and ENGINEER do 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 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.

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 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 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 pay 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.

D. Low Bidder will be determined on the basis of the lowest total of the base bid plus combinations of additive alternatives in order of priority as listed below within the limits of available funding.

Priority No.	Bid Combination
1	Base Bid
2	Base Bid plus Add. Alt. A
3	Base Bid plus Add. Alt. A and Add. Alt. B
4	Base Bid plus Add. Alt. A, Add. Alt. B and Add. Alt. C

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 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

PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

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

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

Dated:	_____	Bidder:	_____ (Company Name)
Contractor's License No.:	_____	By:	_____ (Signature in Ink)
Telephone No.:	_____	Printed Name:	_____
		Title:	_____
Facsimile No.:	_____	Address:	_____ (Street or P.O. Box)
			_____ (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 Contractor Insurance, Section 00700 and 00800

12. The successful Bidder will be required to submit, within ten Days after the date stated in the "Notice to Proceed", the following executed documents:

    - Certificates of Subcontractor Insurance, 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 - PORT CHILKOOT DOCK RENOVATION

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1	Mobilization	LS	All Reqd				
2060.1	Demolition, Salvage and Disposal	LS	All Reqd				
2601.1	Water System	LS	All Reqd				
2702.1	Construction Survey Measurement	LS	All Reqd				
2726.1	Retaining Wall and Upland Modifications	LS	All Reqd				
2727.1	Trestle, Queuing Deck and Approach Dock	LS	All Reqd				
2727.2	Re-grade Existing Approach Dock	LS	All Reqd				
2810.1	Moorage Float Modifications	LS	All Reqd				
2894.1	Covered Aluminum Gangway	LS	All Reqd				
2896.1	Furnish Steel Pipe Pile, 24” Dia. x 0.500” Thick	LF	5,670				
2896.2	Install 24” Dia. Vertical Pile	EA	28				
2896.3	Install 24” Dia. Batter Pile	EA	17				
2896.4	Spin Fin Pile Tip	EA	6				
2896.5	Furnish and Install Float Mooring Pile, 16” Dia. x 0.500” Thick	EA	3				
2896.6	Gangway Support Pile Frame	LS	All Reqd				
2896.7	Pile Splice	EA	5				
3304.1	Concrete Abutment	LS	All Reqd				
16000.1	Electrical Power to Existing Cruise Ship Dock Lights	LS	All Reqd				
16000.2	Install (8) All-Weather 120V Duplex Power Receptacles	LS	All Reqd				

TOTAL BASE BID AMOUNT IN FIGURES: $ _____

TOTAL BASE BID AMOUNT IN WORDS: _____

COMPANY NAME: _____

ADDITIVE ALTERNATE A – LETNIKOF COVE HARBOR RENOVATION

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1A	Mobilization	LS	All Req'd				
2060.1A	Demolition, Salvage and Disposal	LS	All Req'd				
2702.1A	Construction Survey Measurement	LS	All Req'd				
2727.3A	Approach Dock Addition	LS	All Req'd				
2885.1A	Replace Float Grating	LS	All Req'd				
2885.2A	Replace Float Rubboard	LS	All Req'd				
2885.3A	Replace Broken Cleats	LS	All Req'd				
2885.4A	Replace Anchor Chains	LS	All Req'd				
2894.2A	Modify & Install Salvaged Gangway	LS	All Req'd				
2895.1A	16'x20' Gangway Landing Float	LS	All Req'd				
2895.2A	8'x100' Segmental Float	LS	All Req'd				
2896.5A	Furnish and Install Float Mooring Pile, 16" Dia. x 0.500" Thick	EA	6				
2896.8A	Furnish and Install Dock Support Pile, 16" Dia. x 0.500" Thick	EA	4				
2896.9A	Steel Pipe Pile Cross Beam	LS	All Req'd				
2896.10A	Pile Socket	EA	10				
2897.1A	Float Transition Plates	LS	All Req'd				
2996.1A	Anode	LS	All Req'd				

TOTAL ADDITIVE ALTERNATE A AMOUNT IN FIGURES: $_____

TOTAL ADDITIVE ALTERNATE A AMOUNT IN WORDS: _____

COMPANY NAME: _____

ADDITIVE ALTERNATE B – MOORING DOLPHIN AT PORT CHILKOOT DOCK

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
2896.11B	Furnish and Install Mooring Dolphin Batter Pile, 20” Dia. x 0.500” Thick With Spin Fin Tip	EA	3				
2896.12B	Mooring Dolphin Pile Cap & Bollard	LS	All Reqd				

TOTAL ADDITIVE ALTERNATE B AMOUNT IN FIGURES: $_____

TOTAL ADDITIVE ALTERNATE B AMOUNT IN WORDS: _____

COMPANY NAME: _____

ADDITIVE ALTERNATE C – ELECTRICAL AND LIGHTING AT PORT CHILKOOT DOCK

Pay Item No.	Pay Item Description	Pay Unit	Approximate Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
16000.3C	Dock Lighting	LS	All Reqd				
16000.4C	Electrical Power to Float and Gangway Lighting	LS	All Reqd				

TOTAL ADDITIVE ALTERNATE C AMOUNT IN FIGURES: $_____

TOTAL ADDITIVE ALTERNATE C AMOUNT IN WORDS: _____

COMPANY 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

PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

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 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.***

	SUBCONTRACTOR ADDRESS	[1] AK Contractor License No. [2] AK Business License No.	[1] Contact Name [2] Phone No.	Type of Work	Contract Amount	✓ if DBE
1.	_____	[1] _____ [2] _____	_____ _____	_____	$ _____	☐
2.	_____	[1] _____ [2] _____	_____ _____	_____	$ _____	☐
3.	_____	[1] _____ [2] _____	_____ _____	_____	$ _____	☐
4.	_____	[1] _____ [2] _____	_____ _____	_____	$ _____	☐

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:

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.

END OF SECTION

SECTION 00500 - AGREEMENT

THIS AGREEMENT is between THE 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 **PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS.**

The WORK at Port Chilkoot Dock generally consists of demolishing an existing timber approach trestle and main dock, uplands modifications, retaining wall, concrete abutment, aluminum gangway, timber trestle, queuing decks and approach dock, moorage float modifications, steel pipe piles, power and lighting, and a water system. Additive alternates include a mooring dolphin and additional power and lighting improvements.

The WORK at Letnikof Cove is included as an additive alternate and generally consists of partial demolition of the existing timber trestle, approach dock addition, gangway replacement, moorage float system maintenance, anchor chain replacement, seasonal timber floats, gangway landing float, and rock-socketed steel piles.

ARTICLE 2. CONTRACT COMPLETION TIME.

PORT CHILKOOT DOCK RENOVATION
Earliest Field Start shall be August 16, 2013.
Substantial Completion for all WORK of this Project shall be June 2, 2014.
Final completion for all WORK of this Project shall be July 1, 2014.

LETNIKOF COVE HARBOR RENOVATION
Earliest Field Start shall be October 1, 2013.
Substantial Completion for all WORK of this Project shall be May 1, 2014.
Final completion for all WORK of this Project shall be May 15, 2014.

ARTICLE 3. DATE OF AGREEMENT

The date of this Agreement will be the date of the Borough Manager 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 preceding the actual damages suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of 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 dates 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: **PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS** 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_____, except 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 00100-7, inclusive).
- Bid (pages 00300-1 to 00300-2, inclusive).
- Bid Schedule (pages 00310-1 to 00310-3, 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 00700-47, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-3, inclusive).
- Alaska Labor Standards, Reporting, and Prevailing Wage Determination (page 00830-1).
- Federal Labor Standards, Reporting, and Prevailing Wage Rate Determination (page 00840-1)
- Permits, (page 00852-1).
- Standard Details (page 00853-1).
- Technical Specifications as listed in the Table of Contents.
- Port Chilkoot Dock Renovation Drawings consisting of 62 sheets, as listed in the Table of Contents.
- Letnikof Cove Harbor Renovation Drawings consisting of 24 sheets, as listed in the Table of Contents.
- 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:

Haines Borough

(Signature)

By: Mark Earnest, Borough Manager
(Printed Name)

Date:

OWNER's address for giving notices:

P.O. Box 1209

Haines, Alaska

907-766-2231 907-766-2716
(Telephone) (Fax)

CONTRACTOR:

(Company Name)

(Signature)

By:
(Printed Name, Authority or Title)

Date:

CONTRACTOR's address for giving notices:

(Telephone) (Fax)

(E-mail address)

Contractor License No.

CERTIFICATE
(if Corporation)

STATE OF)
) SS:
COUNTY OF)

I HEREBY CERTIFY that a meeting of the Board of Directors of the

_____a corporation existing under the laws of

the State of_____, held on _____, 20____, the following resolution was duly passed and adopted:

"RESOLVED, that _____, as _____ President of the Corporation, be and is hereby authorized to **execute the Agreement** with the HAINES BOROUGH and this corporation and that the execution thereof, attested by the Secretary of the Corporation, and with the Corporate Seal affixed, shall be the official act and deed of this Corporation."

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

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the

Corporation this _____ day of _____, 20____.

_____
Secretary

(SEAL)

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)

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)

END OF SECTION

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, 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:

PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

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.

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.0. Box)

_____
(City, State, Zip Code)

SURETY:

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

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.O. Box)

_____
(City, State, Zip Code)

(Affix SURETY'S SEAL)

NOTE: If CONTRACTOR is Partnership, <u>all</u> Partners must execute bond.

END OF SECTION

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, 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:

PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

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.

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: _____ Date Issued:_____
(Signature of Attorney-in-Fact)

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.O. Box)

_____
(City, State, Zip Code)

(Affix SURETY'S SEAL)

NOTE: If CONTRACTOR is Partnership, <u>all</u> Partners must execute bond.

SECTION 00700 - GENERAL CONDITIONS

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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.

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. Wrangell 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.

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.

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.

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.

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
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 contained in

such reports shall be verified by the CONTRACTOR prior to bid. 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 shall be verified by the CONTRACTOR prior to bid. 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 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 BOROUGH 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 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 Borough Manager 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, 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.

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.

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 property 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.

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 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. 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 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 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;
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.

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 Borough water system. The request must be submitted at least 24-hours prior to operating any valves. 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 Borough or any other party, caused by unauthorized operation of any valve of the 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 Saturday, or before 9:00 a.m. or after 10:00 p.m., Sunday, unless a permit shall first be obtained from the Borough. Such permit shall be issued by the Borough 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 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 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.
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.
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 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.

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.

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 approved by the Borough Assembly. 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.
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 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.

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.

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 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 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 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 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.

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. Forty days after presentation of the Application for Payment with the ENGINEER's 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, contract releases, 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 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 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 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.

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 BOROUGH 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 BOROUGH from arranging with the CONTRACTOR to produce material over and above the contract needs, payment for which shall be by written agreement between the BOROUGH 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.

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.

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.

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 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 6 copies of the Contract Documents consisting of bound reduced Drawings, if any, together with 3 sets of full-scale Drawings. 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. Field measurements and visual inspection of the existing structures and surface conditions.
    b. April 2012 GEOTECHNICAL REPORT prepared by PND Engineers, Inc.

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
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. 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.

F. 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.

G. The Haines Borough and the ENGINEER shall be named as an "Additional Insured" under all liability coverages listed in this Section, except for workers' compensation insurance.

SCG 14.3 APPLICATION FOR PROGRESS PAYMENT. Paragraph D.

D. The Value of materials stored at the site shall be an amount equal to 85%.

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 provided 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.

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

From: _____

Subject: PORT CHILKOOT DOCK AND LETNIKOF COVE HARBOR RENOVATIONS

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:

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

( ) 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:

Wage and Hour Section
Labor Law Compliance Division
Alaska Department of Labor
P.O. Box 020630
Juneau, AK 99802-0630
(907) 465-4842

and

Borough Manager
Haines Borough
P.O. Box 1209
Haines, Alaska 99827
(907) 766-2231

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:

Mark Earnest, *Borough Manager*
Haines Borough
P.O. Box 1209
Haines, Alaska 99827
(907) 766-2231

and

Wage and Hour Section
Labor Law Compliance Division
Alaska Department of Labor
P.O. Box 020630
Juneau, AK 99802-0630
(907) 465-4839/4842

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 00840 - FEDERAL LABOR STANDARDS, REPORTING, AND PREVAILING WAGE RATE DETERMINATION
Reporting During Contract

A. **Within 15 Days after Notice of Intent to Award,** the CONTRACTOR must compile and submit a list of all Subcontractors and material suppliers, showing all tiers. For each company listed include name, address, phone, employer tax number; DBE status if any; estimated subcontract amount; estimated start and finish dates; and copies of bid tabulations with firm name and number. Send the list to *Addresses B and C.*

B. **Within 30 Days of final award**, the CONTRACTOR and each Subcontractor, who are required to file EEO-1 reports (Standard Form 100 [SF-100]), must send it to the Office of Federal Contract Compliance Programs (OFCCP) Area Office - Address C.

C. Before each Friday, the CONTRACTOR and each Subcontractor must file:

1. Certified Payrolls with Statements of Compliance for the previous week. If there was no activity for that week, indicate "No Activity." Indicate "Start" on your first payroll, and "Final" on your last payroll for this project. Send the original to *Address B* and a complete copy to *Address A.*

2. Weekly Employment Opportunity (EEO) Reports (page 00440-12) for the previous week to *Address A.* If the information requested (race and gender) is indicated on the copy of the payroll, then this Weekly EEO Report is hereby waived.

D. By the 5th of each month, each CONTRACTOR and Subcontractor must complete the Monthly Employment Utilization Report (CC257) for the previous month for its aggregate workforce in Alaska (for federal and non-federal projects). Make a list of all projects (federal and non-federal) in Alaska over $10,000. Include the firm name, name and location of project, project #, % complete, contract amount, and established date of completion. Send both the CC257 and the list of projects to Addresses A and C.

E. Preparing the final payment request, the CONTRACTOR must verify that the subcontractor list is up-to-date and includes all parties submitting certified payrolls (i.e., equipment rental with operator companies, trucking services providing imported materials, surveying firms, etc.). Send a copy of amended lists to Addresses A and B. Submit completed Compliance Certification and Release (provided at the pre-construction conference) for the Prime Contractor and each Subcontractor to Address A.

Address A	***Address B***	***Address C***
Mark Earnest, *Borough Manager*	**Wage and Hour Section**	**OFCCP**
Haines Borough	Labor Standards &	Area Office
P.O. Box 1209	Alaska Dept. of Labor	605 W. 4th Ave., Room G68
Haines, Alaska 99827	P.O. Box 020630	Anchorage, AK 99501
(907) 766-2231	Juneau, AK 99802-0630	(907)271-2864
	(907)465-4839/4842	

END OF SECTION

SECTION 00852 – PERMITS

PART 1 – GENERAL

INDEX OF PERMITS

1. U.S. Army Corps of Engineers, Department of the Army Permit No. POA-2011-1095 Portage Cove. Nationwide Permit 3(a) Maintenance for work associated with the Port Chilkoot Dock, Dated November 01, 2012.

2. U.S. Army Corps of Engineers, Department of the Army Permit No. POA-2011-1095 Portage Cove. Nationwide Permit 3(a) Maintenance for work associated with the Port Chilkoot Dock, Dated January 08, 2013.

3. U.S. Army Corps of Engineers, Department of the Army Permit No. POA-2008-1553 Letnikof Cove, Nationwide Permit 3(a) Maintenance for work associated with the Letnikof Cove Harbor, Dated February 15, 2013.

4. U.S. Army Corps of Engineers, Nationwide Permit 3 – Maintenance.

5. U.S. Army Corps of Engineers, Nationwide Permit General Conditions for 2012 Nationwide Permits.

6. U.S. Army Corps of Engineers, Alaska District Regional Conditions for 2012 Nationwide Permits.

7. State of Alaska, Department of Environmental Conservation, Division of Water, Wastewater Discharge Authorization Program, Section 401 of the Federal Clean Water Act of 1977 and Alaska Water Quality Standards, Certificate of Reasonable Assurance for U.S. Army Corps of Engineers Nationwide Permits.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
JUNEAU REGULATORY FIELD OFFICE
8800 GLACIER HIGHWAY, SUITE 106
JUNEAU, ALASKA 99801-8079

Regulatory Division
POA-2011-1095

NOV 01 2012

Mr. Mark Earnest
Haines Borough
Post Office Box 1209
Haines, Alaska 99827-1209

Dear Mr. Earnest:

This is in response to your September 13, 2012, application for a Department of the Army (DA) permit to demolish and replace a portion of the Port Chilkoot approach dock, reducing the size from 24,830 square feet to 11,000 square feet, and replacing 300 timber piles and 6 galvanized steel piles with 30 galvanized steel piles, which would occur in and over Portage Cove a navigable water of the United States (U.S.). It has been assigned file number POA-2011-1095, Portage Cove which should be referred to in all future correspondence with this office. The project site is located within Section 35, T. 30 S., R. 59 E., Copper River Meridian; USGS Quad Map Skagway A-2; Latitude 59.229° N., Longitude 135.437° W.; Port Chilkoot Dock, NHN Beach Road, in Haines, Alaska.

Based on our review of the information you furnished and available to us, we have determined the above project area contains waters of the U.S. under the Corps' regulatory jurisdiction (A copy of the Approved Jurisdictional Determination form is available at: www.poa.usace.army.mil/Missions/Regulatory/JurisdictionalDeterminations.aspx under the above file number).

This approved jurisdictional determination is valid for five (5) years from the date of this letter, unless new information supporting a revision is provided to us before the expiration date. Enclosed is a Notification of Administrative Appeal Options and Process and Request for Appeal form regarding this approved jurisdictional determination (see section titled "Approved Jurisdictional Determination").

DA permit authorization is necessary because your project would involve work in and placement of structures into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan (sheets 1-5), dated Sept. 2012, is authorized by Nationwide Permit (NWP) No. 3(a), Maintenance. NWP No. 3(a) and its associated General Conditions can be accessed at our website at: www.poa.usace.army.mil/Missions/Regulatory/Permits.aspx. You must comply with all terms and conditions associated with NWP No. 3(a).

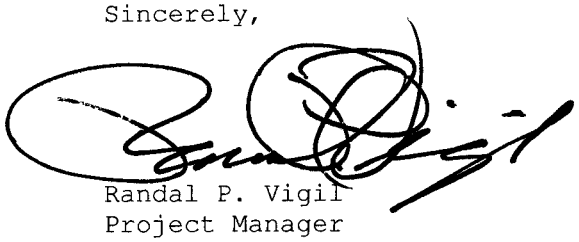
Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to us.

This verification is valid for two years from the date of this letter, unless the NWP is modified, reissued, or revoked. It is incumbent upon you to remain informed of changes to the NWPs.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at Randal.P.Vigil@usace.army.mil, by mail at the address above, by phone at (907)790-4491, if you have questions or to request paper copies of the jurisdictional determination, regional and/or general conditions.

Sincerely,



Randal P. Vigil
Project Manager

Enclosures

CF:

KMickelson@pndengineers.com

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Haines Borough		File Number: POA-2011-1095	Date: November 1, 2012
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)		A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)		B
	PERMIT DENIAL		C
X	**APPROVED JURISDICTIONAL DETERMINATION**		**D**
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

THIS REQUEST FOR APPEAL FORM MUST BE RECEIVED BY: December 31, 2012

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer. Your objections must be received by the District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or, (c) not modify the permit, having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION (JD): You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the Preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

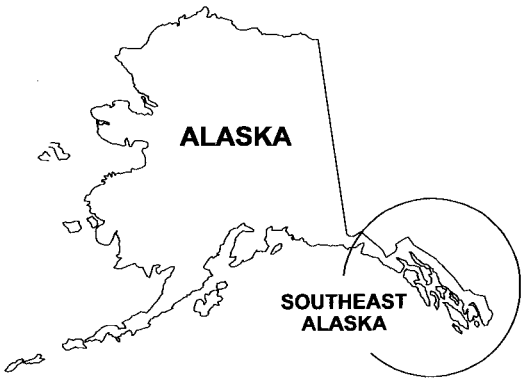
In order for a Request For Appeal to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the Notice of Appeal Process. It is not necessary to submit a Request For Appeal form to the Division office if you do not object to the decision.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Randal P. Vigil Alaska District Corps of Engineers Juneau Regulatory Field Office (CEPOA-E-J) 8800 Glacier Highway, Suite 106 Juneau, Alaska 99801-8079 (907) 790-4491	Commander USAED, Pacific Ocean Division ATTN: CEPOD-PDC/Thom Litche Building 525 Fort Shafter, HI 96858-5440 **To submit this form, mail to the address above**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

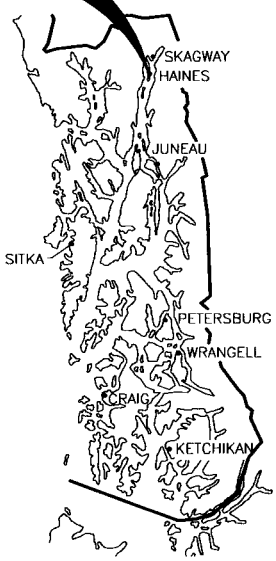
	Date:	Telephone number:
_____ Signature of appellant or agent.		



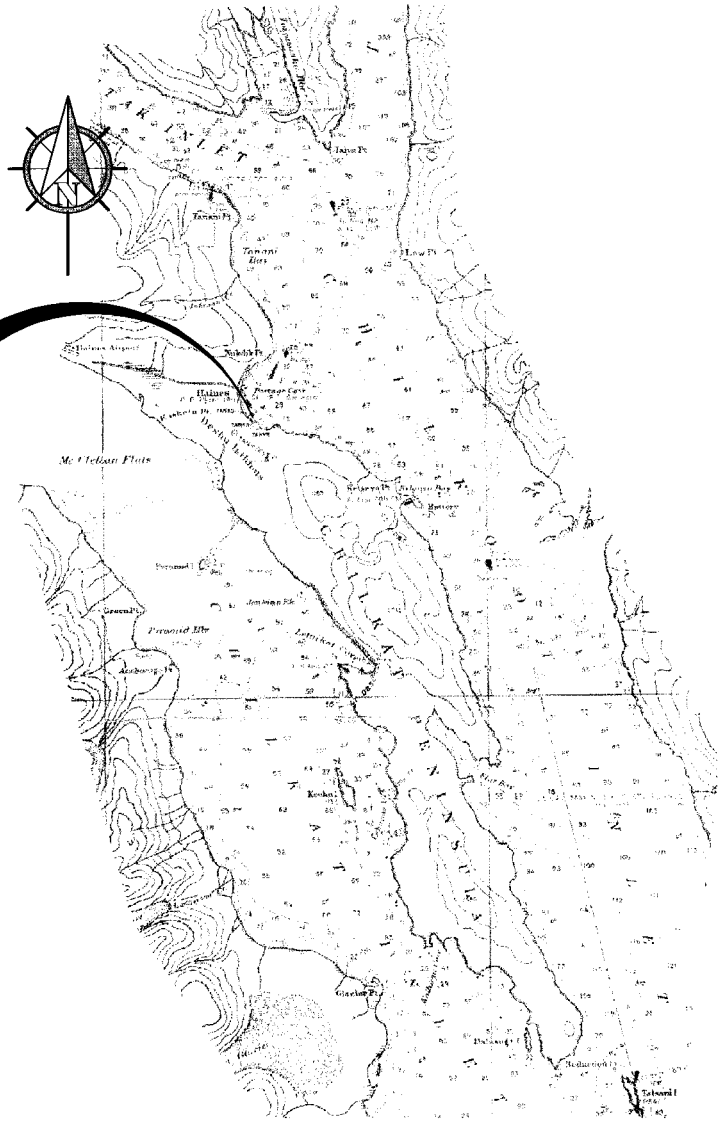
LOCATION MAP

PROJECT LOCATION

HAINES



SOUTHEAST ALASKA



FROM NOAA 17317 – LYNN CANAL, POINT SHERMAN TO SKAGWAY

VICINITY MAP

SCALE IN MILES

0 2 4

PURPOSE:

TO REPAIR AND UPGRADE THE EXISTING PORT CHILKOOT DOCK IN ORDER TO IMPROVE ACCESSIBILITY AND SAFETY.

DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

HAINES BOROUGH
P.O. BOX 1209
HAINES, AK 99827

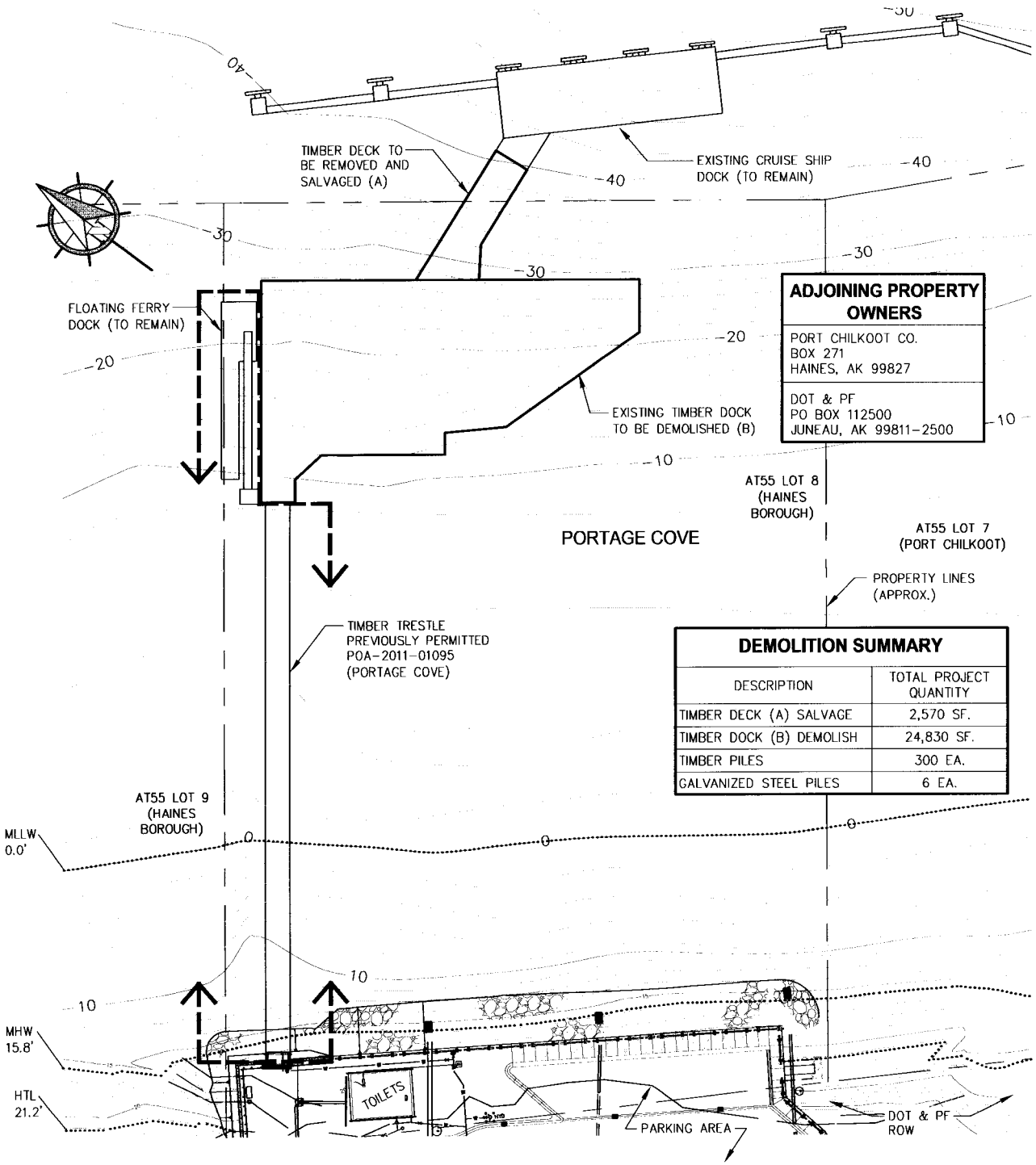
PND PROJECT NO. 112048.05

PORT CHILKOOT DOCK IMPROVEMENTS

IN: PORTAGE COVE
NEAR: HAINES, AK
AT: PORT CHILKOOT

APPLICATION BY HAINES BOROUGH

DATE: SEPT. 2012 SHEET **1** of **5**



DEMOLITION SUMMARY	
DESCRIPTION	TOTAL PROJECT QUANTITY
TIMBER DECK (A) SALVAGE	2,570 SF.
TIMBER DOCK (B) DEMOLISH	24,830 SF.
TIMBER PILES	300 EA.
GALVANIZED STEEL PILES	6 EA.

EXISTING CONDITIONS

SCALE IN FEET
0 50 100

PURPOSE:

TO REPAIR AND UPGRADE THE EXISTING PORT CHILKOOT DOCK IN ORDER TO IMPROVE ACCESSIBILITY AND SAFETY.

DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

EXISTING CONDITIONS AND DEMOLITION SUMMARY

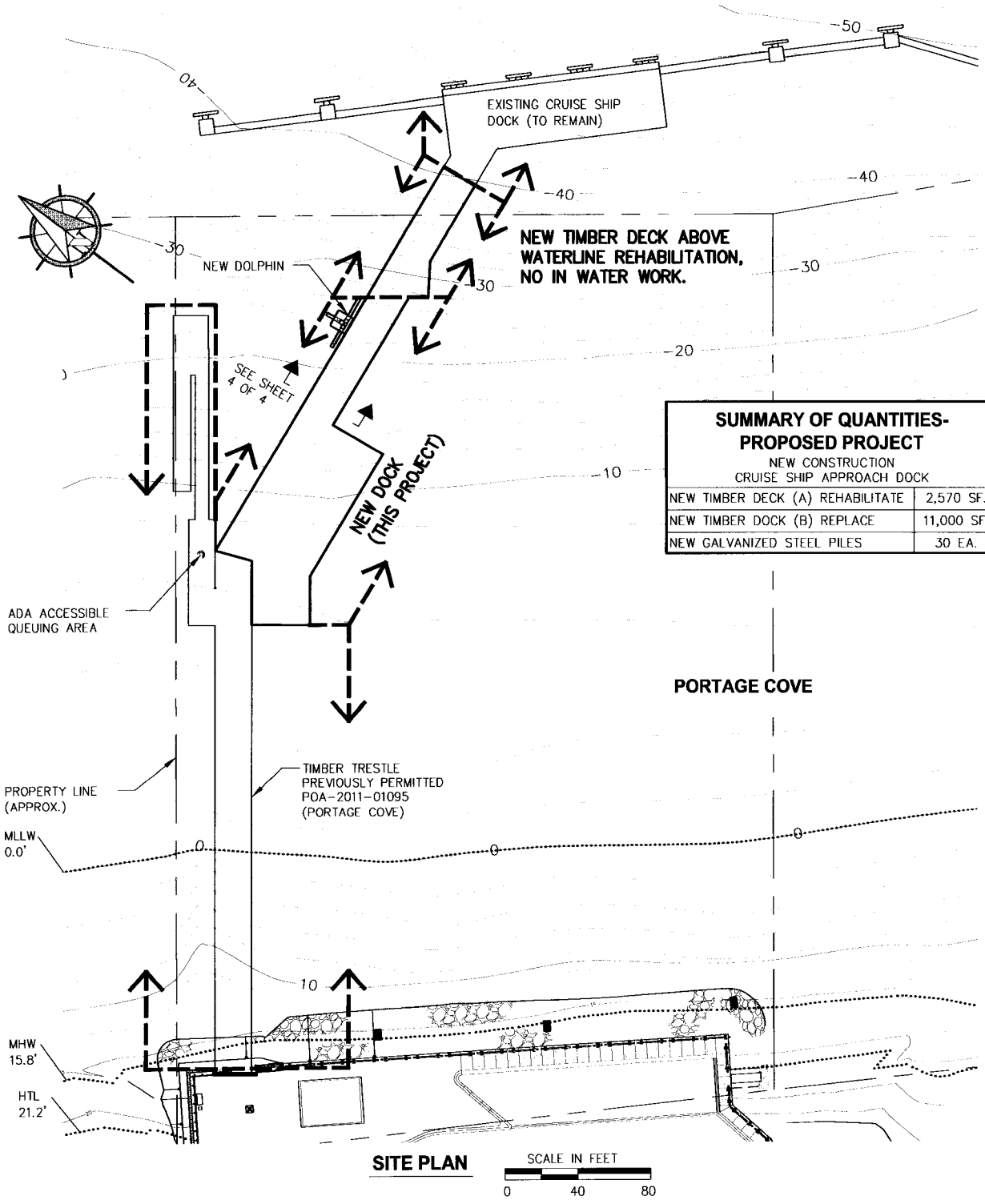
HAINES BOROUGH
P.O. BOX 1209
HAINES, AK 99827

PND PROJECT NO. 112048.05

PORT CHILKOOT DOCK IMPROVEMENTS

IN: PORTAGE COVE
NEAR: HAINES, AK
AT: PORT CHILKOOT

APPLICATION BY HAINES BOROUGH



SUMMARY OF QUANTITIES- PROPOSED PROJECT NEW CONSTRUCTION CRUISE SHIP APPROACH DOCK	
NEW TIMBER DECK (A) REHABILITATE	2,570 SF.
NEW TIMBER DOCK (B) REPLACE	11,000 SF.
NEW GALVANIZED STEEL PILES	30 EA.

PURPOSE:

TO REPAIR AND UPGRADE THE EXISTING PORT CHILKOOT DOCK IN ORDER TO IMPROVE ACCESSIBILITY AND SAFETY.

DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

SITE PLAN

HAINES BOROUGH
P.O. BOX 1209
HAINES, AK 99827

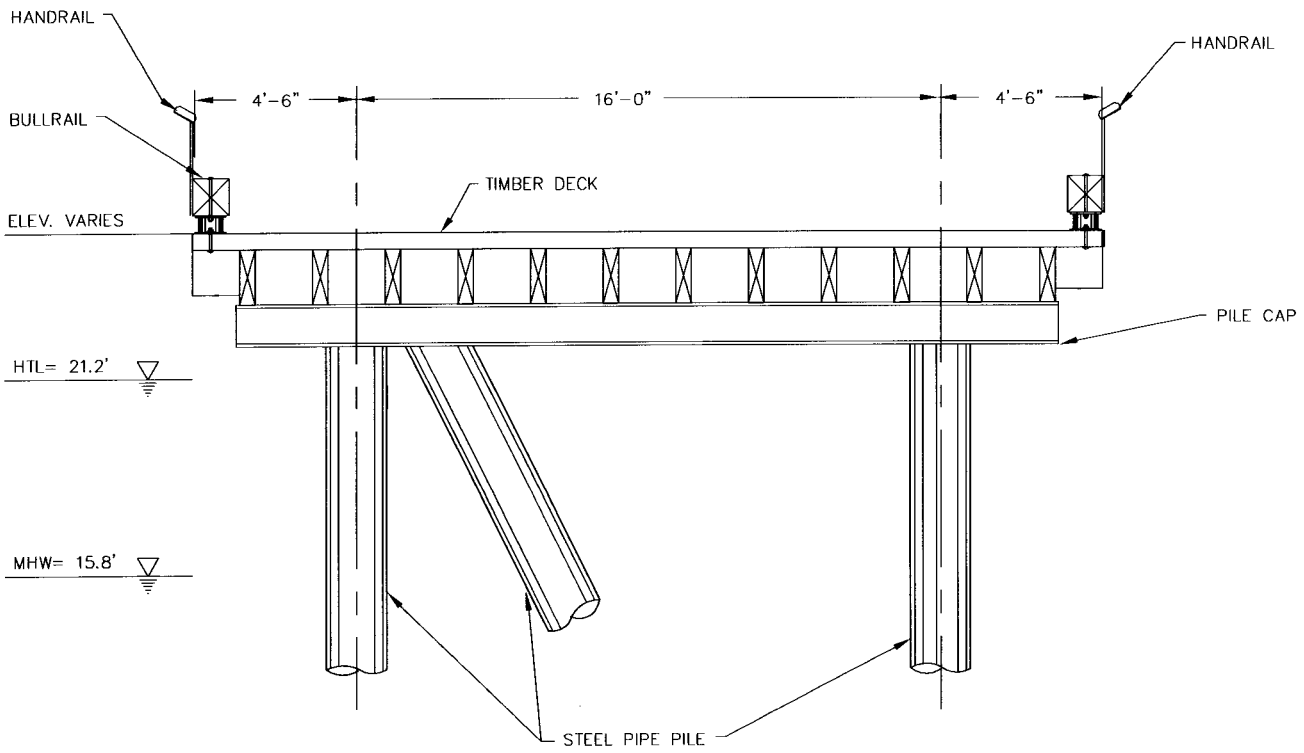
PND PROJECT NO. 112048.05

PORT CHILKOOT DOCK IMPROVEMENTS

IN: PORTAGE COVE
NEAR: HAINES, AK
AT: PORT CHILKOOT

APPLICATION BY HAINES BOROUGH

DATE: SEPT. 2012 SHEET **3** of **5**



A **TYPICAL SECTION**
NTS

PURPOSE:

TO REPAIR AND UPGRADE THE EXISTING PORT CHILKOOT DOCK IN ORDER TO IMPROVE ACCESSIBILITY AND SAFETY.

DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

TYPICAL SECTION

HAINES BOROUGH
P.O. BOX 1209
HAINES, AK 99827

PND PROJECT NO. 112048.05

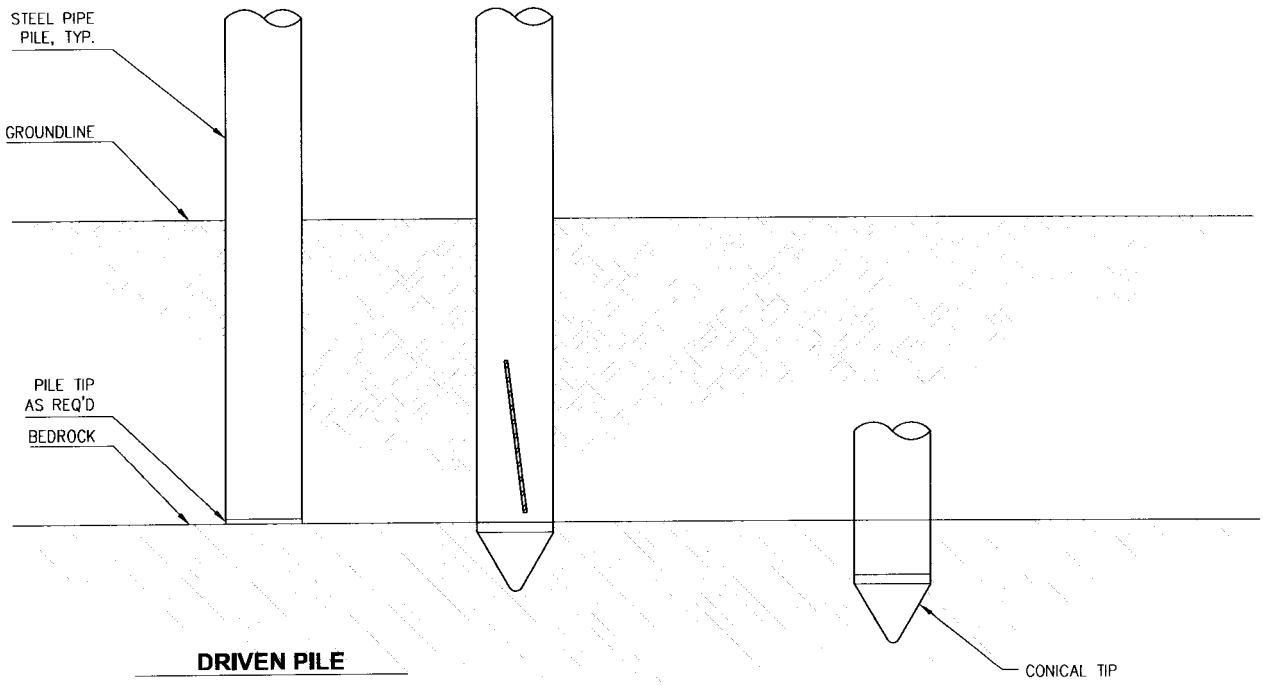
PORT CHILKOOT DOCK IMPROVEMENTS

IN: PORTAGE COVE
NEAR: HAINES, AK
AT: PORT CHILKOOT

APPLICATION BY HAINES BOROUGH

DATE: SEPT. 2012 SHEET **4** of **5**

TYPICAL SPIN FIN PILE SECTION



DRIVEN PILE

SPIN FIN PILE

CONICAL TIP

PURPOSE:

TO REPAIR AND UPGRADE THE EXISTING PORT CHILKOOT DOCK IN ORDER TO IMPROVE ACCESSIBILITY AND SAFETY.

DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

PILE DETAILS

HAINES BOROUGH
P.O. BOX 1209
HAINES, AK 99827

PND PROJECT NO. 112048.05

PORT CHILKOOT DOCK IMPROVEMENTS

IN: PORTAGE COVE
NEAR: HAINES, AK
AT: PORT CHILKOOT

APPLICATION BY HAINES BOROUGH

DATE: SEPT. 2012 SHEET **5** of **5**

Enclosure

US Army Corps of Engineers
Alaska District

Permit Number: POA-2011-1095

Name of Permittee: Haines Borough

Date of Issuance: NOV 01 2012

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to Randal Vigil at the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Division
8800 Glacier Highway, Suite 106
Juneau, Alaska 99801-8079

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____

Signature of Permittee Date

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
JUNEAU REGULATORY FIELD OFFICE
8800 GLACIER HIGHWAY, SUITE 106
JUNEAU, ALASKA 99801-8079

REPLY TO
ATTENTION OF:

JAN 08 2013

Regulatory Division
POA-2011-1095

Ms. Kate Mickelson
PND Engineers, Inc.
9360 Glacier Highway, Suite 100
Juneau, Alaska 99801

Dear Ms. Mickelson:

This is in response to your November 6, 2012, letter, on behalf of the Haines Borough, requesting authorization to reconfigure the Port Chilkoot Dock to include a 78 feet long by 28 feet wide ambulance turnaround. The proposed work would occur over Portage Cove, which is a navigable water of the United States. On November 1, 2012, the Corps authorized the project with a Nationwide Permit (NWP) 3(a) - Maintenance verification. The project is located located within Section 35, T. 30 S., R. 59 E., Copper River Meridian; USGS Quad Map Skagway A-2; Latitude 59.229° N., Longitude 135.437° W.; Port Chilkoot Dock, NHN Beach Road, in Haines, Alaska.

The November 1, 2012, NWP verification authorizes the demolition and replacement of a portion of the Port Chilkoot approach dock, reducing the size from 24,830 square feet to 11,000 square feet, and replacing 300 timber piles and 6 galvanized steel piles with 30 galvanized steel piles.

For our purposes, the information you provided does not substantially alter your project. Consequently, no additional authorization is required from us. Your overall activity must still comply with all applicable terms and conditions of Permit NWP 3(a) - Maintenance.

Nothing in this letter shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations that may affect this work. For informational purposes, a copy of this letter is being sent to the agencies and individuals listed below

Please contact me via email at Randal.P.Vigil@usace.army.mil, by mail at the address above, by phone at (907)790-4491, if you have questions or to request paper copies of the jurisdictional determination, regional and/or general conditions.

Sincerely,

Randal P. Vigil
Project Manager

CF:

Mr. Mark Earnest
Haines Borough
Post Office Box 1209
Haines, Alaska 99827-1209

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
JUNEAU REGULATORY FIELD OFFICE
8800 GLACIER HIGHWAY, SUITE 106
JUNEAU, ALASKA 99801-8079

REPLY TO
ATTENTION OF:

Regulatory Division
POA-2008-1553

FEB 15 2013

Mr. Phil Benner
Haines Borough
Post Office Box 1209
Haines, Alaska 99827

Dear Mr. Benner:

This is in response to your January 3, 2013, application for a Department of the Army (DA) permit to demolish, replace and rehabilitate of an existing currently serviceable and previously authorized dock. The work would occur in and over Letnikof Cove which is a navigable water of the United States (U.S.). It has been assigned file number POA-2008-1553, Letnikof Cove which should be referred to in all future correspondence with this office.

The project site is located within Section 24, T. 31 S., R. 59 E., Copper River Meridian; USGS Quad Map Skagway A-2; Latitude 59.175° N., Longitude 135.390° W.; Haines Borough, Letnikof Cove, near Haines, Alaska.

DA permit authorization is necessary because your project would involve work in and/or placement of structures into waters of the U.S. under our regulatory jurisdiction.

Based upon the information and plans you provided, we hereby verify that the work described above, which would be performed in accordance with the enclosed plan (sheets 1-6), dated Jan. 2013, is authorized by Nationwide Permit (NWP) No. 3(a), Maintenance. NWP No. 3(a) and its associated General Conditions can be accessed at our website at: www.poa.usace.army.mil/Missions/Regulatory/Permits.aspx. You must comply with all terms and conditions associated with NWP No. 3(a).

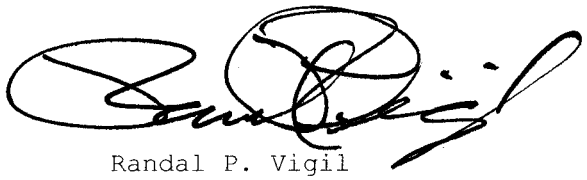
Further, please note General Condition 30 requires that you submit a signed certification to us once any work and required mitigation are completed. Enclosed is the form for you to complete and return to us.

This verification is valid for two years from the date of this letter, unless the NWP is modified, reissued, or revoked. However, on February 27, 2013 a change in the NWP regulations will take effect allowing NWP verifications to remain valid until the expiration of the NWPs, which is currently March 18, 2017. No action is needed on your part for the change to apply to your verification. It is incumbent upon you to remain informed of changes to the NWPs.

Nothing in this letter excuses you from compliance with other Federal, State, or local statutes, ordinances, or regulations.

Please contact me via email at Randal.P.Vigil@usace.army.mil, by mail at the address above, or by phone at (907) 790-4491, if you have questions or to request paper copies of the jurisdictional determination, regional and/or general conditions.

Sincerely,



Randal P. Vigil
Project Manager

Enclosures

Enclosure

US Army Corps of Engineers
Alaska District

Permit Number: POA-2008-1553

Name of Permittee: Haines Borough

Date of Verification: FEB 15 2013

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to Randal Vigil at the following address:

U.S. Army Corps of Engineers
Alaska District
Regulatory Division
8800 Glacier Highway, Suite 106
Juneau, Alaska 99801-8079

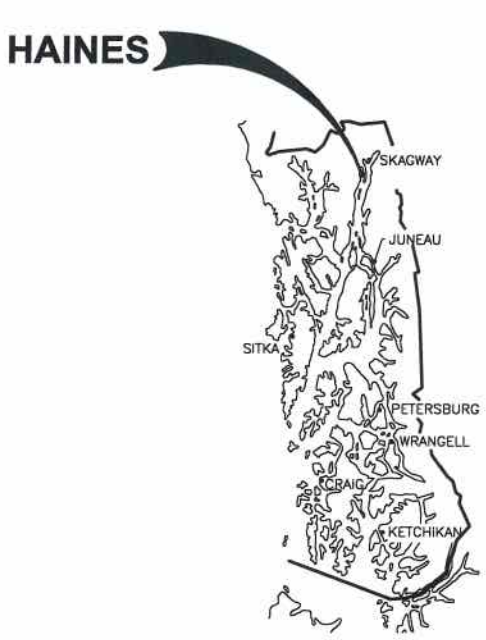
Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

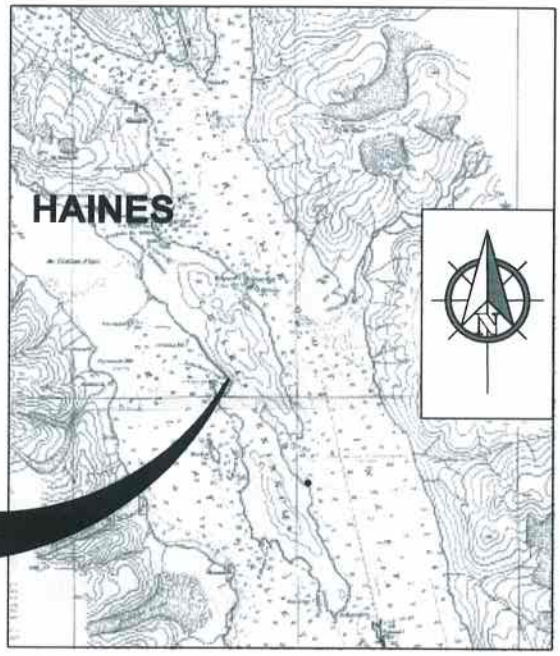
_____ _____

Signature of Permittee Date

LOCATION MAP



SOUTHEAST ALASKA



VICINITY MAP

PURPOSE: TO REFURBISH AN EXISTING HARBOR TO IMPROVE ACCESS INCREASE PUBLIC SAFETY EXTEND THE LIFE OF THE FACILITY

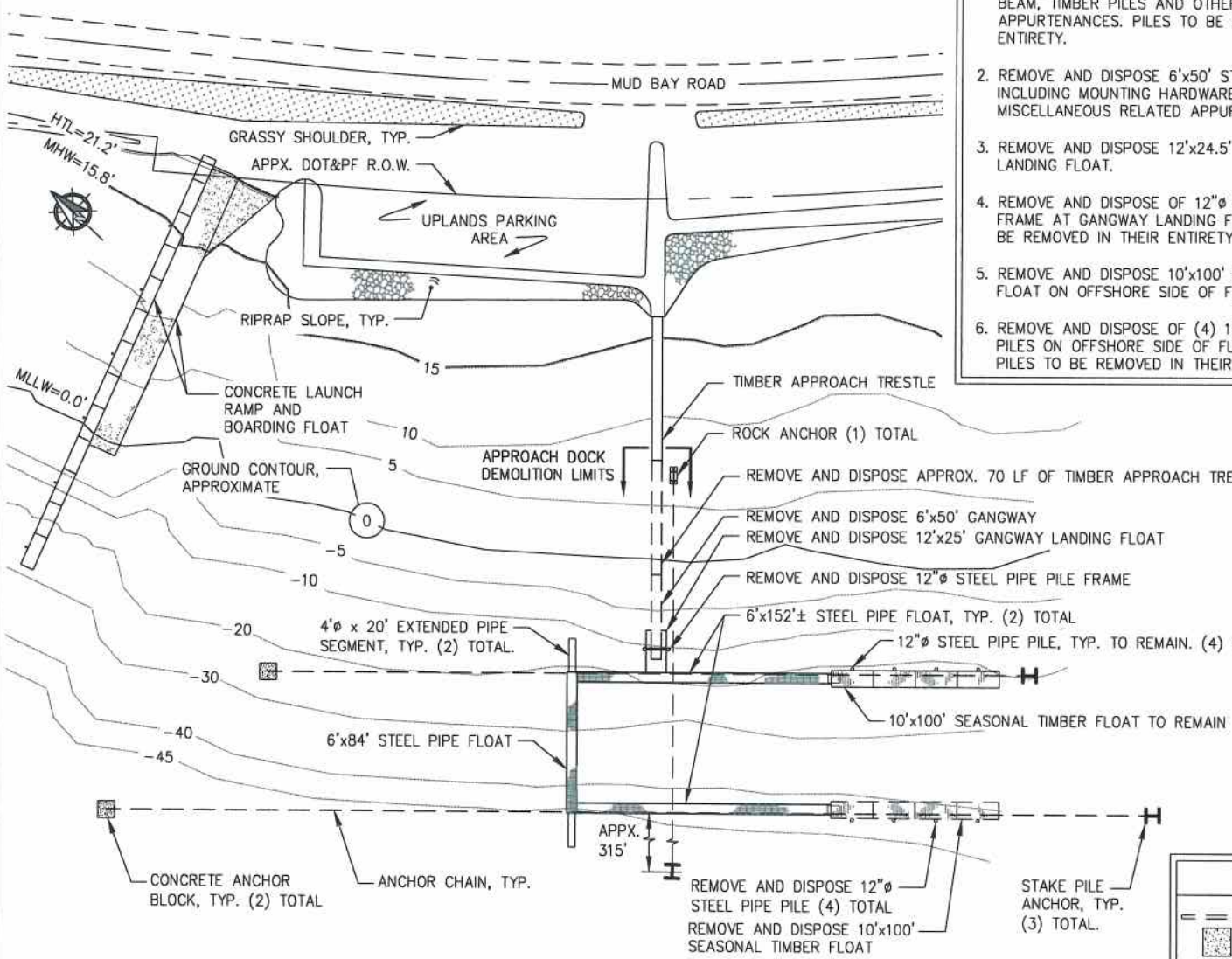
DATUM:
MLLW = 0.0 FT

HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

LETNIKOF COVE HARBOR REPLACEMENT HAINES, ALASKA

PND PROJECT NO. 112091

APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 **T.** 31S **R.** 59E **M** CRM
LAT.: 59.174914°N **LONG.:** 135.390369°W
DATE: JAN 2013



DEMOLITION SUMMARY

1. REMOVE AND DISPOSE APPROXIMATELY 70 LF OF TIMBER APPROACH TRESTLE, (OFFSHORE END), INCLUDING RAILING, DECKING, STRINGERS, CAP BEAM, TIMBER PILES AND OTHER APPURTENANCES. PILES TO BE REMOVED IN THEIR ENTIRETY.
2. REMOVE AND DISPOSE 6'x50' STEEL GANGWAY INCLUDING MOUNTING HARDWARE AND ALL OTHER MISCELLANEOUS RELATED APPURTENANCES.
3. REMOVE AND DISPOSE 12'x24.5' GANGWAY LANDING FLOAT.
4. REMOVE AND DISPOSE OF 12"ø STEEL PIPE PILE FRAME AT GANGWAY LANDING FLOAT. PILES TO BE REMOVED IN THEIR ENTIRETY.
5. REMOVE AND DISPOSE 10'x100' SEASONAL TIMBER FLOAT ON OFFSHORE SIDE OF FLOAT SYSTEM.
6. REMOVE AND DISPOSE OF (4) 12"ø STEEL PIPE PILES ON OFFSHORE SIDE OF FLOAT SYSTEM. PILES TO BE REMOVED IN THEIR ENTIRETY.

DATUM:
HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

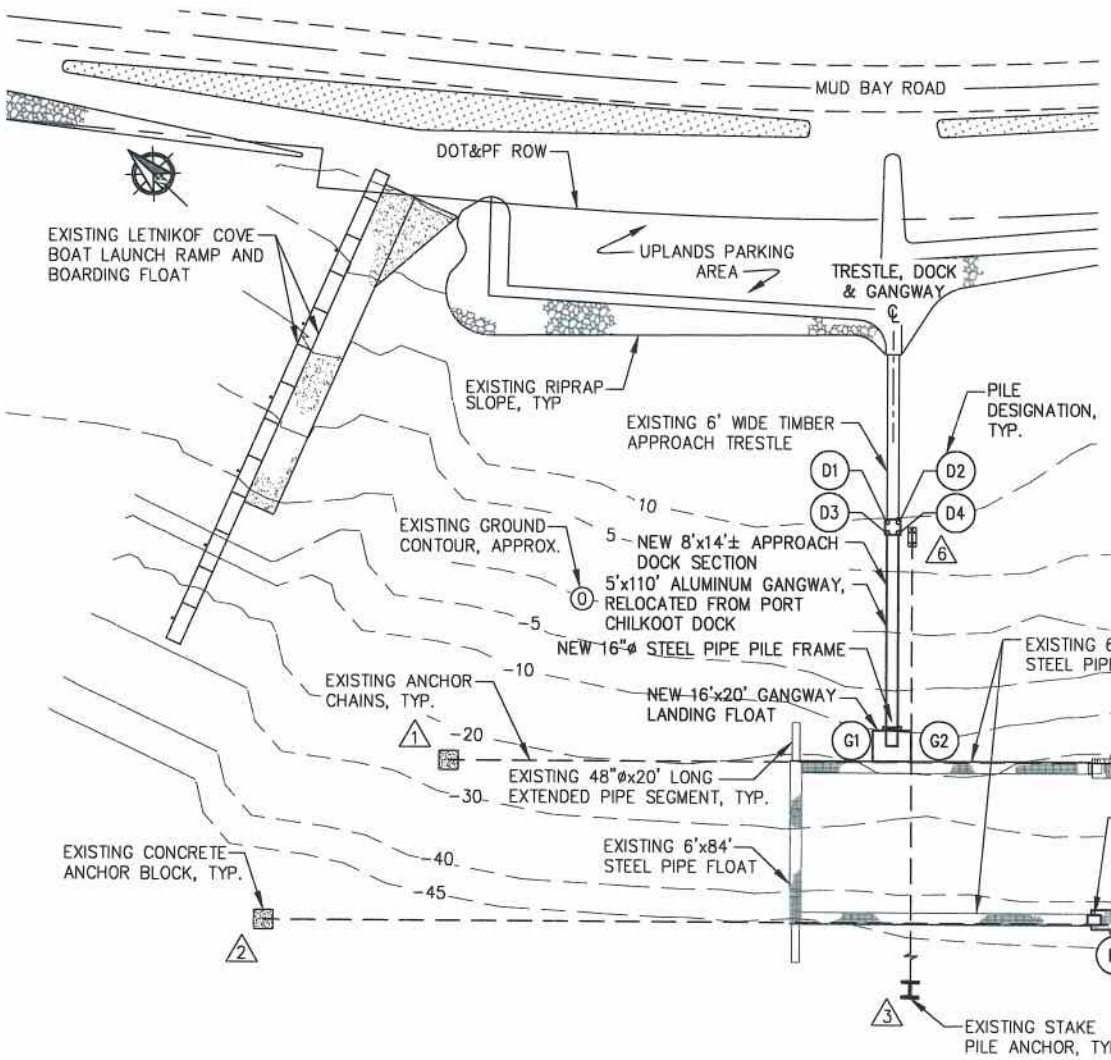
APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 **T.** 31S **R.** 59E **M** CRM
LAT.: 59.174914°N **LONG.:** 135.390369°W
DATE: JAN 2013

LEGEND

- TO BE REMOVED
- CONCRETE ANCHOR BLOCK CONNECTION
- ROCK ANCHOR CONNECTION
- H — STAKE PILE CONNECTION
- ANCHOR CHAIN

EXISTING CONDITIONS AND DEMOLITION PLAN

SCALE IN FEET
0 100 200 FT.



PIPE FLOAT REFURBISHMENT SUMMARY

1. REMOVE AND REPLACE ALL ANCHOR CHAINS AND CONNECTION HARDWARE. SEE ANCHOR REPLACEMENT SCHEDULE.
2. REPLACE SERRATED METAL BAR GRATING ON 6'x84' PIPE FLOAT.
3. REPLACE 4'x10' RUBBOARDS ALONG ENTIRE FLOAT SYSTEM, APPROX. 760 LF.
4. REPLACE STEEL CLEATS PER ENGINEER DIRECTION, APPROX. 12 LOCATIONS.
5. INSTALL NEW ALUMINUM ANODES ALONG ENTIRE FLOAT SYSTEM.

DATUM:
HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

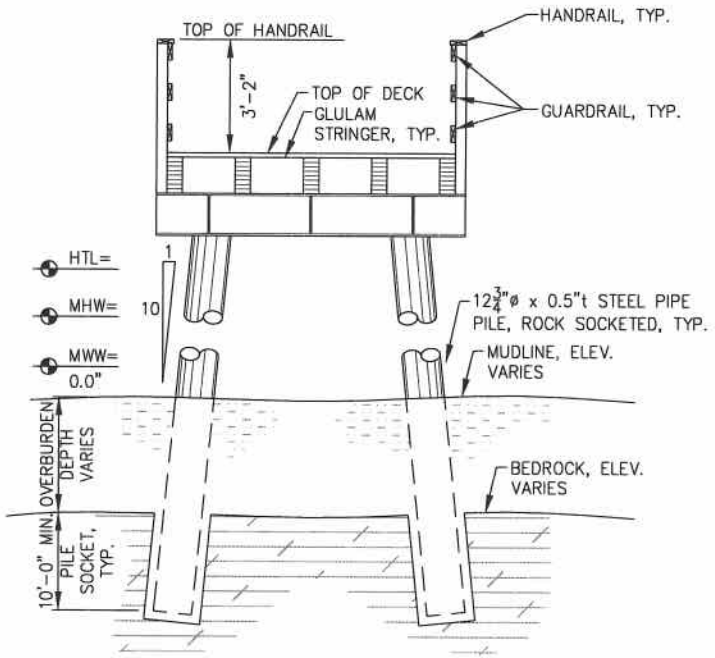
APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 T. 31S R. 59E M CRM
LAT.: 59.174914'N LONG.: 135.390369'W
DATE: JAN 2013

OVERALL SITE PLAN

SCALE IN FEET
0 100 200 FT.

LEGEND

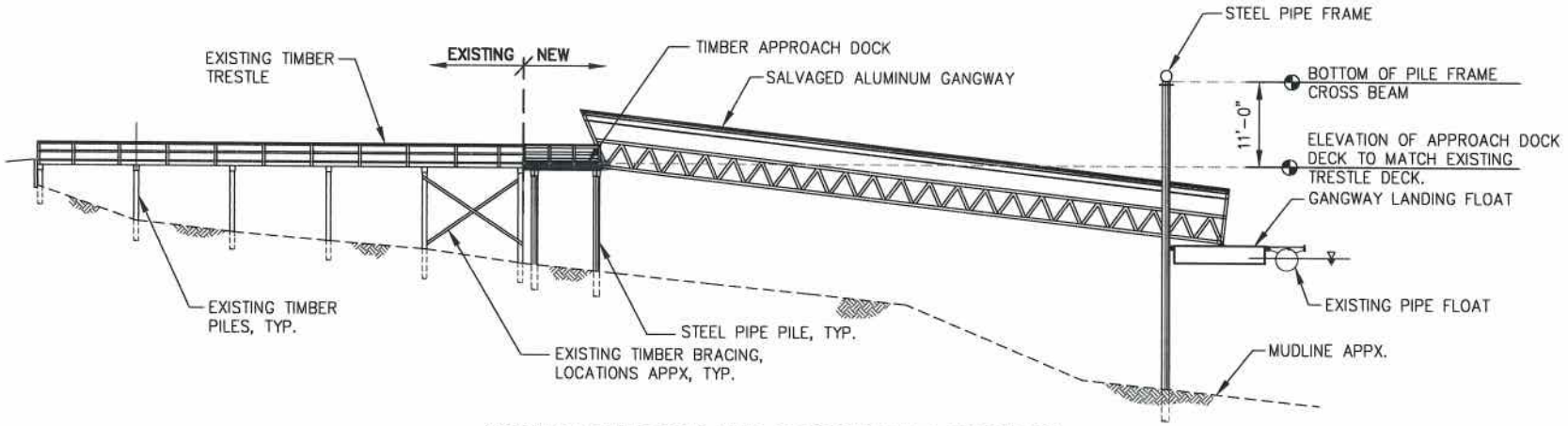
- CONCRETE ANCHOR BLOCK CONNECTION
- ROCK ANCHOR CONNECTION
- H STAKE PILE CONNECTION
- ANCHOR CHAIN
- (D4) PILE DESIGNATION
- (1) ANCHOR DESIGNATION



A - NEW APPROACH DOCK SECTION

SCALE IN FEET

0 2 4 8 12 16 FT.



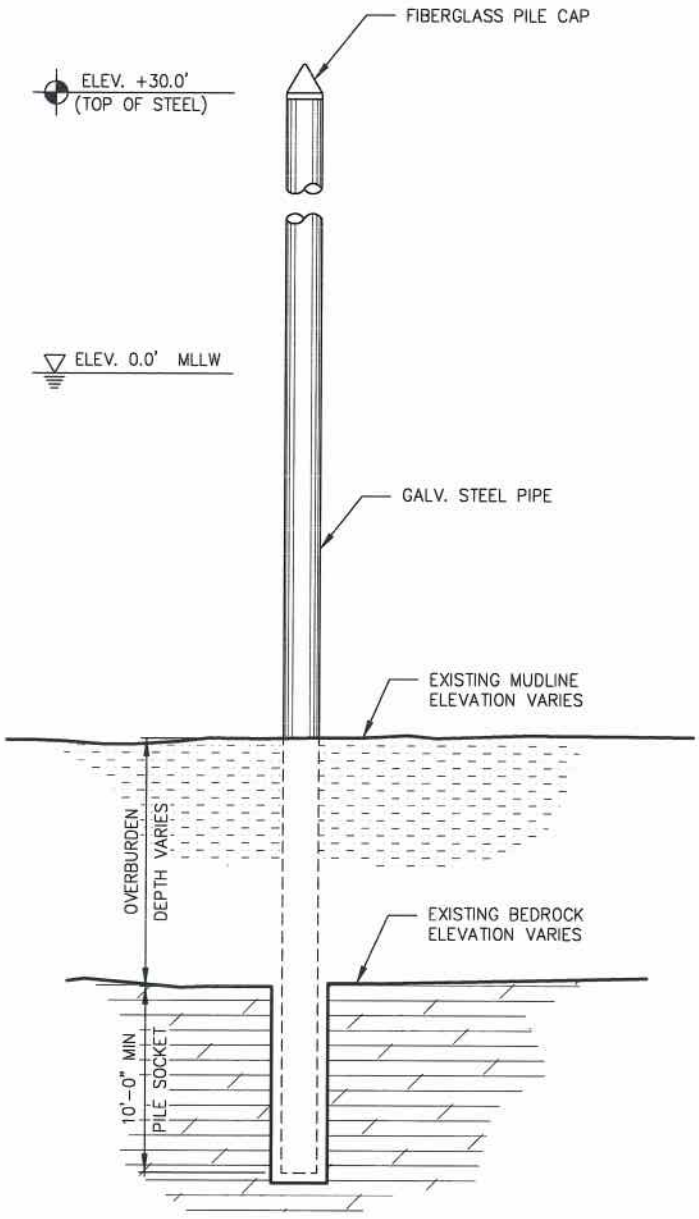
APPROACH DOCK AND GANGWAY ELEVATION

SCALE IN FEET

0 4 8 16 24 32 FT.

DATUM:
HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 **T.** 31S **R.** 59E **M** CRM
LAT.: 59.174914°N **LONG.:** 135.390369°W
DATE: JAN 2013

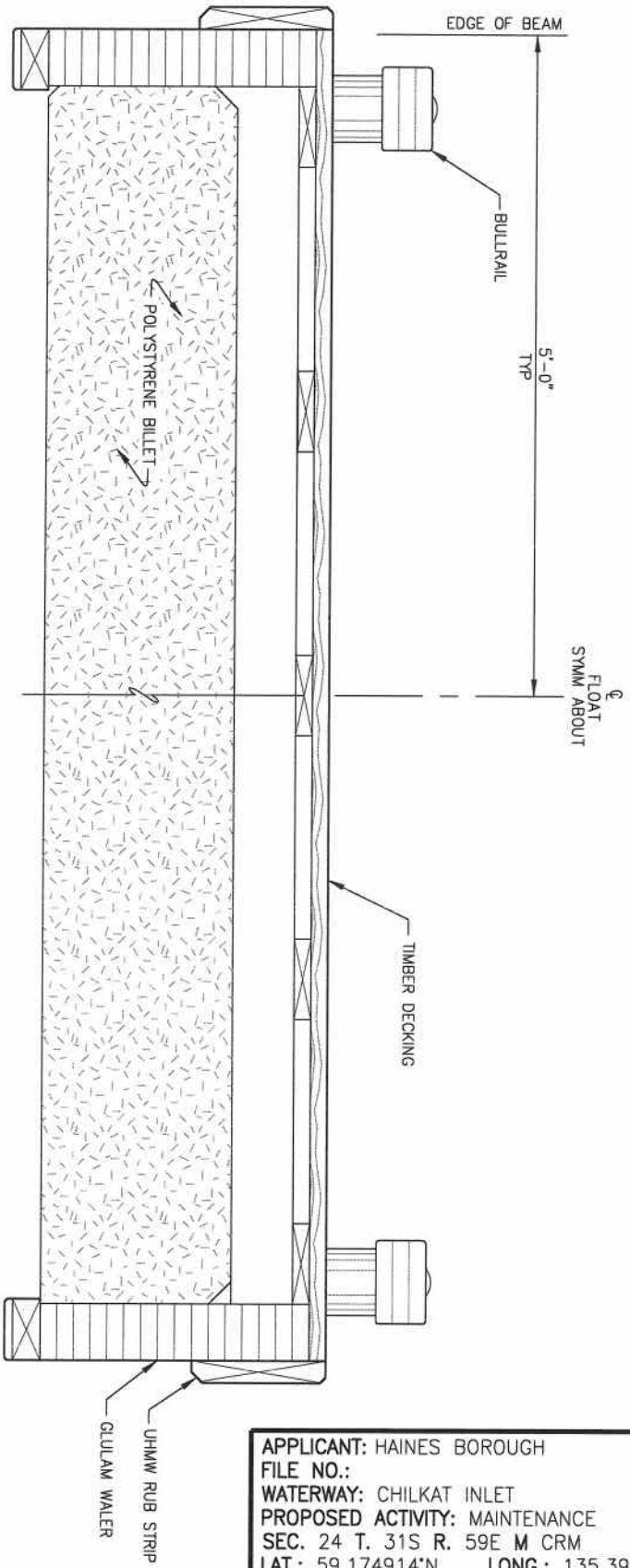


TYPICAL FLOAT PILE INSTALLATION PLAN

SCALE IN FEET
0 8 16 FT.

APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 **T.** 31S **R.** 59E **M** CRM
LAT.: 59.174914°N **LONG.:** 135.390369°W
DATE: JAN 2013

DATUM:
HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'



TYPICAL FLOAT SECTION

SCALE IN FEET
0 1 2 3

APPLICANT: HAINES BOROUGH
FILE NO.:
WATERWAY: CHILKAT INLET
PROPOSED ACTIVITY: MAINTENANCE
SEC. 24 **T.** 31S **R.** 59E **M** CRM
LAT.: 59.174914°N **LONG.:** 135.390369°W
DATE: JAN 2013

DATUM:
HTL = 21.2'
MHW = 15.8'
MLLW = 0.0'

3.Maintenance. (a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill. This NWP also authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris in the vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and/or the placement of new or additional riprap to protect the structure. The removal of sediment is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend farther than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an area that has no waters of the United States unless otherwise specifically approved by the district engineer under separate authorization. The placement of new or additional riprap must be the minimum necessary to protect the structure or to ensure the safety of the structure. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the district engineer.

(c) This NWP also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation. This NWP does not authorize beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 31). The pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Sections 10 and 404)

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption

for maintenance.

Nationwide Permit General Conditions

1. Navigation
2. Aquatic Life Movements
3. Spawning Areas
4. Migratory Bird Breeding Areas
5. Shellfish Beds
6. Suitable Material
7. Water Supply Intakes
8. Adverse Effects from Impoundments
9. Management of Water Flows
10. Fills Within 100-Year Floodplains
11. Equipment
12. Soil Erosion and Sediment Controls
13. Removal of Temporary Fills
14. Proper Maintenance
15. Single and Complete Project
16. Wild and Scenic Rivers
17. Tribal Rights
18. Endangered Species
19. Migratory Bird and Bald and Golden Eagle Permits
20. Historic Properties
21. Discovery of Previously Unknown Remains and Artifacts
22. Designated Critical Resource Waters
23. Mitigation
24. Safety of Impoundment Structures
25. Water Quality
26. Coastal Zone Management
27. Regional and Case-by-Case Conditions
28. Use of Multiple Nationwide Permits
29. Transfer of Nationwide Permit Verifications
30. Compliance Certification
31. Pre-Construction Notification

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8 Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity,

and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16 Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species.

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation

to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the

U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any “take” permits required under the U.S. Fish and Wildlife Service’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such “take” permits are required for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may affect properties

listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation

specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that

compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area

along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: "When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN

and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

ALASKA DISTRICT REGIONAL CONDITIONS
FOR 2012 NATIONWIDE PERMITS

REGIONAL CONDITION A - Additional Pre-Construction Notification (PCN) Requirements [1]

1. NWP 6, Survey Activities: 3-D seismic surveys employing ocean bottom cables.

2. NWP 13, Bank Stabilization: Projects require a PCN when specified by NWP 13 and/or the proposed methods and techniques are not included in Streambank Revegetation and Protection: A Guide for Alaska Revised 2005 (Walter, Hughes and Moore, April 2005) (Guide) or its future revisions.

The Guide is available at http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main

Furthermore, applicants proposing projects not contained in the Guide may still qualify for NWP 13 but they shall provide an alternative analysis to the district engineer with the PCN consisting of the bioengineered methods that were considered and rationale as to why these alternatives are not in the applicant's preferred alternative. Applicants subject to the PCN due to a design that is not included in the Guide are encouraged to include measures that minimize impacts to the aquatic environment including methods that improve fish habitat such as vegetated riprap.

3. Any activity proposing pile driving and/or blasting in marine waters, anadromous lakes or anadromous streams.

4. Proposed projects that qualify for NWPs 3, 12, 13, 14, and 18 within the Municipality of Anchorage.

[1] Where required by the terms of the NWP or Regional Condition A, a prospective permittee must notify the district engineer by submitting a preconstruction notification (PCN) as early as possible. See General Condition 31 of the NWPs for the contents of the PCN or visit www.poa.usace.army.mil/reg/NWPs.

REGIONAL CONDITION B – General Permit Agency Coordination

This Regional Condition establishes geographic and habitat areas that will require agency coordination for projects that are less than 1/2 acre. [1]

For projects requiring a Pre-Construction Notification (PCN) **and** occurring within any of the following geographic/habitat areas, the Corps will conduct agency coordination with the appropriate agencies according to General Condition 31, regardless of the amount of loss of waters of the U.S.

1) The Municipality of Anchorage.
2) Areas designated as "A" or "B" wetlands in the Juneau Wetlands Management Plan.

3) Areas designated as “High” or “Moderate” value wetlands in the Homer Wetland Functional Assessment.
4) Anadromous lakes or anadromous streams including, but not limited to catalogued streams identified in the *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* (available at http://www.adfg.alaska.gov/sf/SARR/AWC/)
5) Jurisdictional areas within 500 feet (measured from OHW or HTL) of anadromous lakes or anadromous streams as identified above.
6) Marine waters

Agency coordination will also occur if the proposed activity:

1) is authorized by NWP 51
2) requires a written waiver by the District Engineer; and/or
3) involves stream relocation

Local, State or Federal applicants may choose to conduct agency coordination in accordance with this regional condition for projects in the above geographic areas having less than 1/2 acre loss of waters of the U.S. The documentation of agency coordination shall be supplied with the PCN and if the Corps determines the applicant’s proposal adequately addresses agency concerns, the project will not be coordinated again.

The Corps (or local, State or Federal applicant, as described above) will coordinate such projects with the Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service and State Historical Preservation Officer or Tribal Historical Preservation Officer. Additionally, project coordination will occur with the State of Alaska’s Department of Environmental Conservation and the Department of Fish and Game.

[1] For activities requiring a PCN that result in the loss of greater than 1/2-acre of waters of the U.S., agency coordination will occur according to general condition 31(d) but also include the agencies as specified above.

REGIONAL CONDITION C - Wood Preservatives

This Regional Condition applies to all NWPs when the regulated activity involves the use of wood preservative products in waters of the U.S. [1]

1. For new materials[2]:

a) Preservatives for wooden structures shall be applied by pressure treatment.

b) In fresh waters, wood structures treated with creosote or pentachlorophenol preservative shall not be used.

c) In marine waters wood structures treated with pentachlorophenol preservative shall not be used.

d) For marine installations with more than 50 pilings, or where current velocities are less than 10 cm/sec, a site-specific risk assessment shall be conducted to determine the potential adverse effects of using creosote or copper-related wood products.

2. For the reuse of previously treated wood products in marine waters the wood preservative product's use shall be consistent with its original use and may not be treated with any additional wood preservative. (e.g. the reuse for dock piling of creosote treated wood for dock piling is allowable, the reuse for a retaining wall of creosote treated railroad ties is not allowed, etc.).

[1] Wood preservative products allowed for use in the aquatic/marine environments is determined by the Environmental Protection Agency.

[2] Treated wood products are produced and installed in accordance with the "Best Management Practices for the Use of Treated Wood in Aquatic and Other Sensitive Environments" (August 2006), including amendments published by the Western Wood Preservers Institute (WWPI) (www.wwpinstitute.org) including the standards set forth by the American Wood-Preservers Association (AWPA) (www.awpa.com), the Timber Piling Council (TPC) (www.timberpilingcouncil.org) and/or the American Lumber Standards Committee as appropriate.

REGIONAL CONDITION D - Activities Involving Trenching

Trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.

Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the original surface condition, within a year of disturbance unless climatic conditions warrant additional time and is approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

Revegetation of the trench should follow the process outlined in RC E.

REGIONAL CONDITION E - Site Restoration for Projects with Ground Disturbing Activities

Disturbed areas shall be stabilized immediately after construction to prevent erosion. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time and is approved by the Corps. Native vegetation and soils removed for project construction shall be stockpiled separately and used for site rehabilitation. If soil and/or organic materials are not available from

the project site for rehabilitation, other locally-obtained native materials may be used. Other topsoil or organic materials (including seed) may be used only if identified in the PCN and approved in the NWP verification. Species to be used for seeding and planting shall follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state. Revegetated areas eventually shall have enough cover to sufficiently control erosion without silt fences, hay bales, or other mechanical means.

REGIONAL CONDITION F - Equipment Standards

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures (e.g. ice roads, compacted snow, low psi ground bearing weight, etc) must be taken to prevent soil disturbance.

REGIONAL CONDITION G – Delineation of Project Boundary

Project boundaries shall be staked, flagged, or otherwise clearly delineated prior to the commencement of the authorized activity for projects that involve the placement of fill.

REGIONAL CONDITION H – Maintenance of Hydrology Patterns

Site preparation, excavation, and fill placement shall be conducted in a manner that prevents adverse hydrologic effects. Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems and other measures to prevent ponding or drying. Excessive ponding and/or dewatering of areas adjacent to fill areas shall indicate non-compliance with this condition. "Excessive" is defined as a measurable change in site hydrology or drainage from the pre-project condition.

REGIONAL CONDITION I – Relocation of Stream Beds

Relocated stream channels shall approximate the length, meander pattern, gradient, channel cross-section, substrate and flow velocity of the original stream channel. Relocated stream channels shall be designed and constructed to avoid excessive loss of flow through the bed and dewatering of the stream channel. The relocation of stream channels shall include establishment of an associated floodplain. The floodplain shall be of similar dimension and form as the original, or sized to convey the 100-year flood while retaining the channel, substrate, and floodplain characteristics without significant down- or head-cutting.

REGIONAL CONDITION J – Culvert Installation

Culverts in fish bearing waters must be installed in accordance with a valid Alaska Department of Fish and Game, Fish Habitat Permit.

<u>REGIONAL CONDITIONS K-N APPLY TO SPECIFIC NWPs</u>

REGIONAL CONDITION K - Seasonal Docks Authorized by NWP 11, Temporary Recreational Structures

Small, seasonal docks shall not extend more than 50 feet waterward of the ordinary high water mark or mean high water mark, or exceed more than 25 percent of the width of the waterbody, whichever is less.

REGIONAL CONDITION L – NWP 40 Agricultural Activities

The following activities are not authorized by NWP 40: a. Drain tiles, ditches, or levees or; b. Mechanized land clearing and land leveling in wetlands within 500' of anadromous lakes or anadromous streams.

REGIONAL CONDITION M – NWP 44 Mining Activities

Placer mining activities are excluded from coverage by NWP 44 (Mining Activities). Placer mining may be authorized by Regional General Permit 2006-1944. In Alaska, NWP 44 will only authorize the following activities:

1. Hard rock mining, not including trenching, drilling, or access road construction. Applicable to Section 404 only.

2. Temporary stockpiling of sand and gravel in waters of the U.S., limited to seasonally dewatered unvegetated sand/gravel bars. Stockpiles shall be completely removed and the area restored to pre-project contours within one year, in advance of seasonal ordinary high water events, and/or prior to equipment being removed from site, whichever comes first.

REGIONAL CONDITION N – NWP 48 Existing Commercial Shellfish Aquaculture Activities

NWP 48 is revoked in Alaska. Applicants seeking authorization for this work are encouraged to apply for Regional General Permit POA-2006-1035, Aquatic Farm Structures within the State of Alaska.

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
WASTEWATER DISCHARGE AUTHORIZATION PROGRAM

SEAN PARNELL, GOVERNOR
555 Cordova Street
Anchorage, Alaska 99501
Phone: (907) 269-6285
Fax: (907) 269-3487
www.dec.alaska.gov

March 13, 2012
Certified Mail 7009-2820-0001-7169-2769

Ms. Nicole Hayes
U.S. Army Engineer District, Alaska
Regulatory Division
P.O. Box 6898 CEPOA-RD
JBER, AK 99506-0898

Subject: Nationwide Permit Reissuance
Reference No. POA-2011-6

Dear Ms. Hayes:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Alaska Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for the reissuance of the U.S. Army Corps of Engineers nationwide permits.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit http://www.dec.state.ak.us/commish/ReviewGuidance.htm for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

Sincerely,

James Rypkema, Manager
Storm Water / Wetlands Section

Enclosure

cc: (with encl.)
Michael Daigneault, ADF&G/Habitat
Ann Rappoport, USF&WS, Anch
Matt LaCroix, EPA, AK Operations
William Ashton, DEC
Brenda Krauss, DEC
Wade Strickland, DEC
Shannon Morgan, CEPOA-RD

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the Federal Clean Water Act and the Alaska Water Quality Standards, is issued to the U.S. Army Corps of Engineers, Alaska District, Regulatory Branch, PO Box 6898, JBER, Alaska 99506, for the proposed new nationwide permits.

The nationwide permits are general permits that cover a class of activities subject to Corps of Engineers jurisdiction that have minimal individual and cumulative adverse effects on the aquatic environment. Nationwide permits are intended to streamline the process for applicants and agencies while reducing procedural and time requirements. The Department of Environmental Conservation supports a regulatory program that streamlines processes, is responsive to public needs, and protects water quality. The regional conditions address Alaska-specific modifications to the nationwide permits.

The proposed activities are located throughout Alaska.

Public notice of the application for this certification was given as required by 18 AAC 15.180.

Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a Corps of Engineers nationwide permit, and a discharge may result from the proposed activity.

Having reviewed the application and comments received in response to the public notice, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act and the Alaska Water Quality Standards, 18 AAC 70.

This certification shall become effective March 19, 2012 and expires at midnight March 18, 2017. If a project is not completed by the expiration date and work under Corps of Engineers Permit will continue, an application must be submitted for renewal of this certification no later than 30 days before the expiration date (18 AAC15.100).

Date March 13, 2012

James Rypkema, Manager
Storm Water / Wetlands Section

SECTION 00853 – STANDARD DETAILS

PART 1 – GENERAL

A. The following most recent version of the State of Alaska Department of Transportation and Public Facilities Standard Details are made a part of these Contract Documents:

STANDARD DETAIL NO.	NAME OF DETAIL
G-00.01	STANDARD GUARDRAIL HARDWARE (NUTS, BOLTS, WASHERS)
G-00.01	STANDARD GUARDRAIL HARDWARE (RAILS AND SPLICES)
G-00.01	STANDARD GUARDRAIL HARDWARE (TERMINAL CONNECTORS)
G-00.01	STANDARD GUARDRAIL HARDWARE (MISCELLANEOUS)
G-04.06S	STEEL POST W-BEAM GUARDRAIL
G-04.07W	WOOD POST W-BEAM GUARDRAIL
G-25.20W	W POST CONTROLLED RELEASE TERMINAL ANCHORS
G- 25.20W	W POST CONTROLLED RELEASE TERMINAL ANCHOR POSTS

PART 2 - PRODUCTS (Not Used)

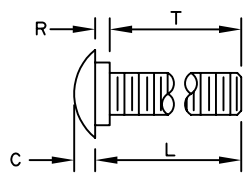
PART 3 - EXECUTION (Not Used)

END OF SECTION

G-00.01 [M]

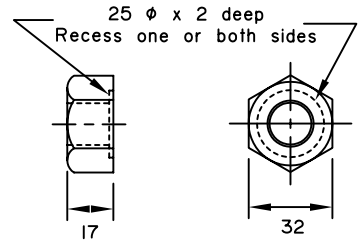
GENERAL NOTES:

1. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.

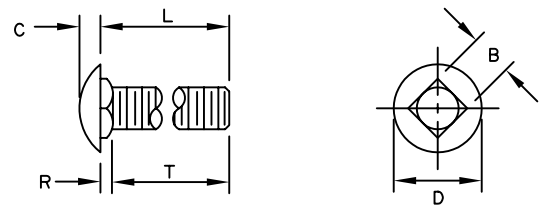


B	C	D	L (Length)	R	T (Thread Length)
24	8	33 or 36	As Required	5	As Required

16 mm BUTTONHEAD BOLT



16 ϕ RECESSED HEX NUT



B	C	D	L (Length)	R	T (Thread Length)
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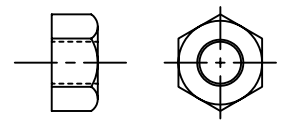
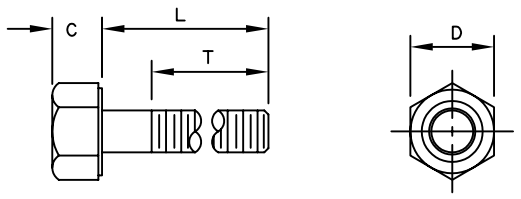
16 ϕ CARRIAGE BOLT

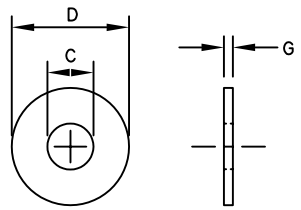


STANDARD HEX NUT



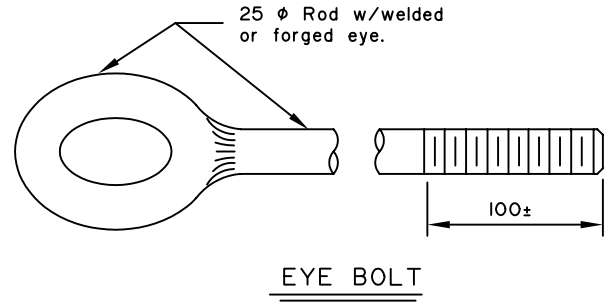
Bolt Size	C	D	L (Length)	T (Thread Length)
8	—	—	38	22
8	—	—	25	25
10	—	—	188	38
13	—	—	38	38
13	—	—	32	32
M16 H.S.	8	22	200	38
M16-11	—	—	38	38
19	—	—	38	38
19	—	—	As Required	50
19 H.S.	12	32	50	38

STANDARD HEX BOLTS

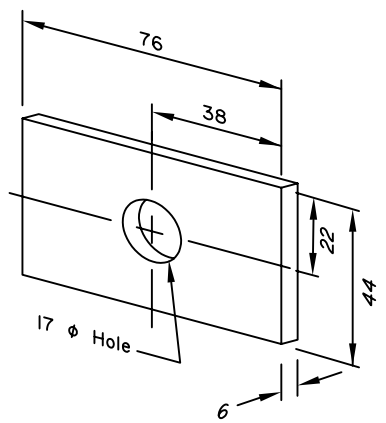


For Bolt ϕ	C	D	G
10	11	25	2
13	13	27	2.5
13 H.S.	13	27	2.5
M16	17	44	3.5
19	21	37	3.5
19 H.S.	21	50	4
25	27	50	3.5

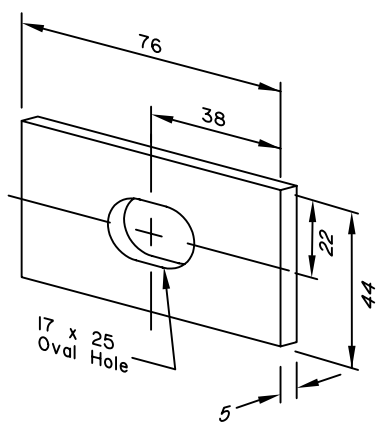
STANDARD STEEL WASHERS



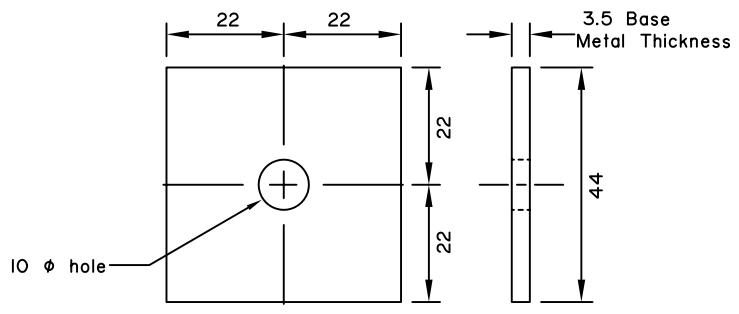
EYE BOLT



FLAT PLATE WASHER



RECTANGULAR POST BOLT WASHER



SQUARE STEEL WASHER

REVISIONS		
Date	Description	By
3/15/99	Delete BCT Hardware	KJS

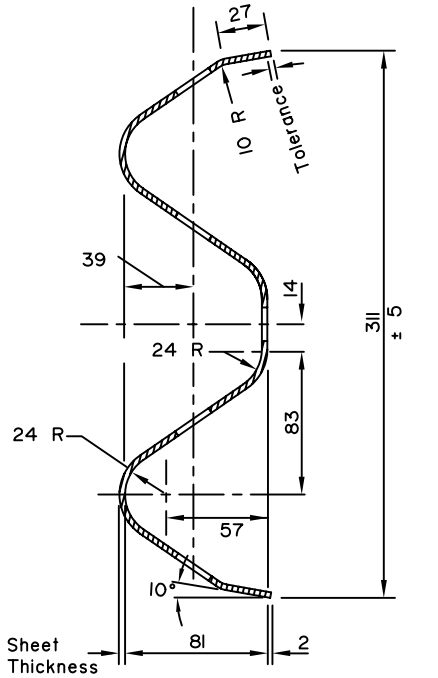
State of Alaska
Department of Transportation
& Public Facilities

STANDARD GUARDRAIL HARDWARE (NUTS, BOLTS, WASHERS)

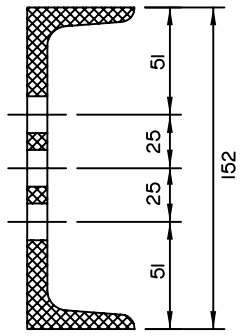
APPROVED
Date 7/15/95

METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

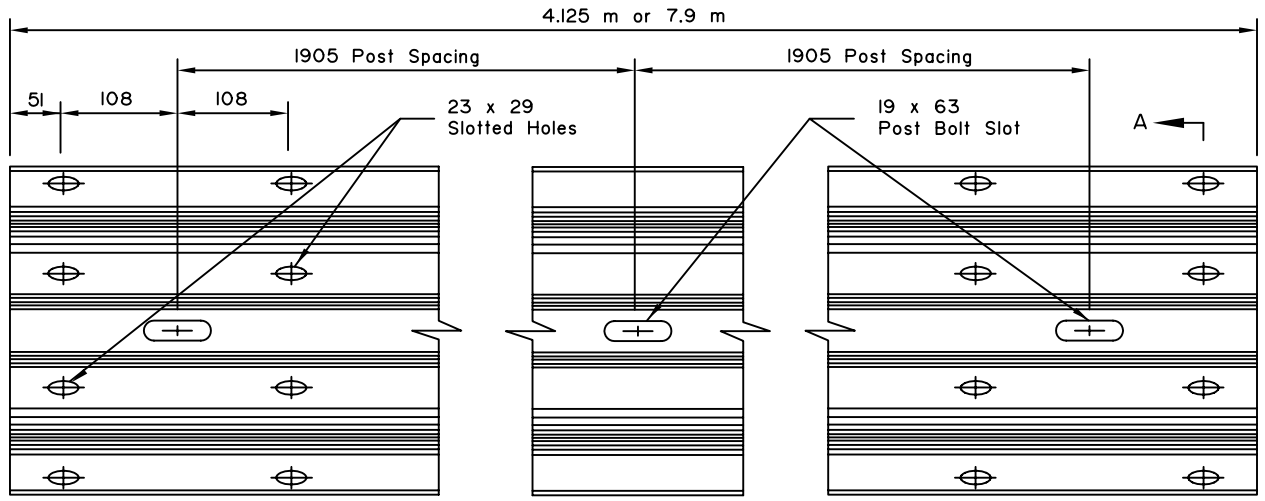
G-00.01 [M]



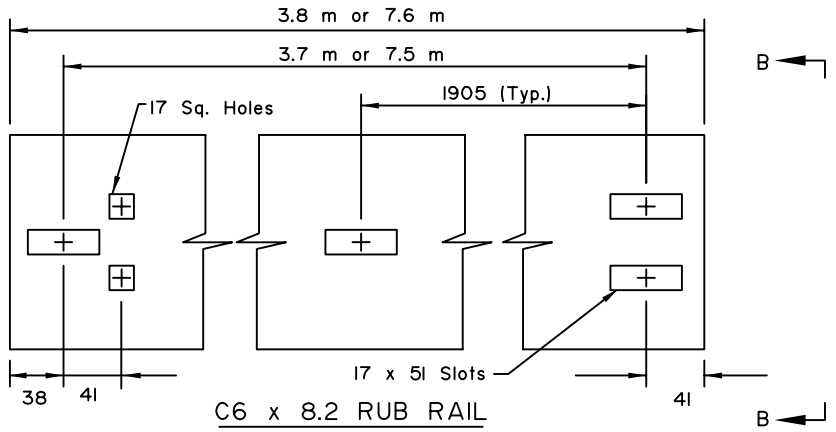
SECTION A-A



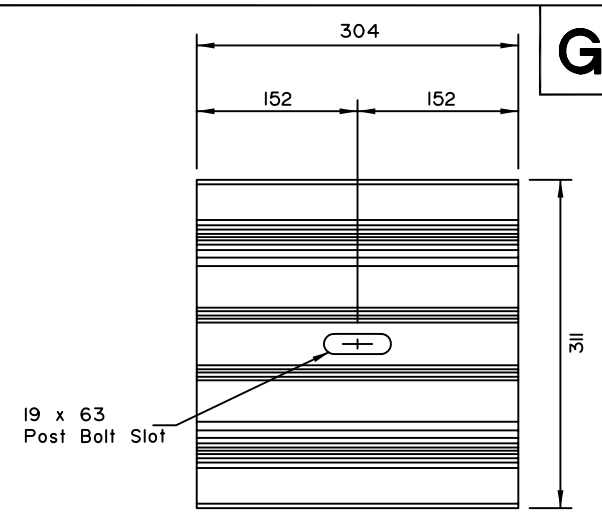
SECTION B-B



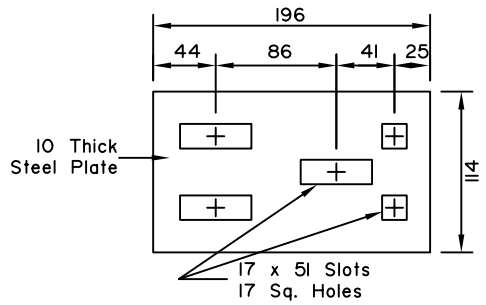
STANDARD W-BEAM PANEL



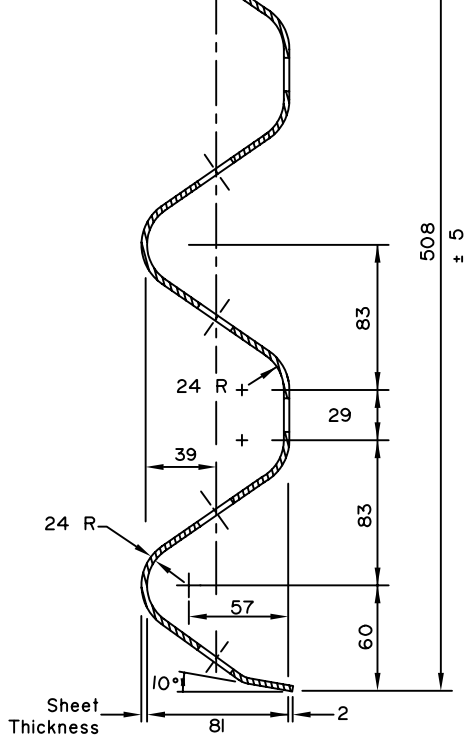
C6 x 8.2 RUB RAIL
ASTM A36 STEEL



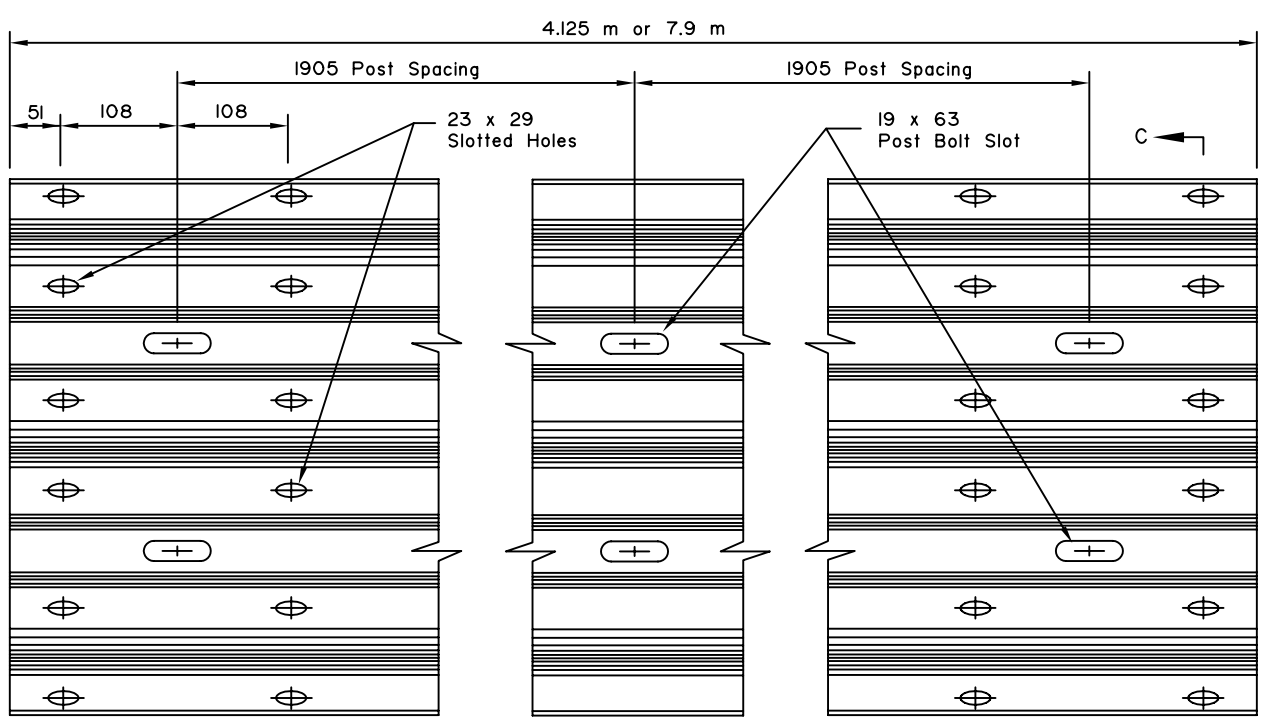
W-BEAM BACKUP PLATE



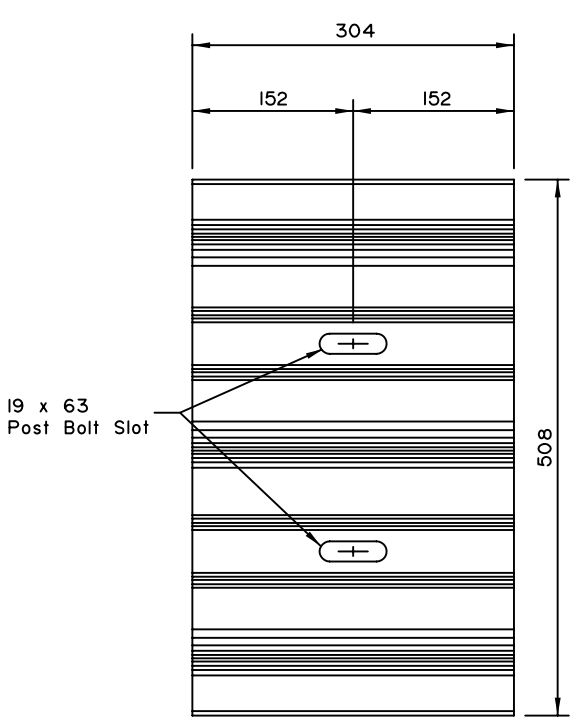
SPLICE PLATE
ASTM A36 STEEL



SECTION C-C



STANDARD THRIE BEAM PANEL



THRIE BEAM BACKUP PLATE

GENERAL NOTES:

1. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Stadardized Highway Barrier Hardware", latest edition.
2. Back-up plates shall be used at intermediate (Non-Splice) posts.

REVISIONS		
Date	Description	By

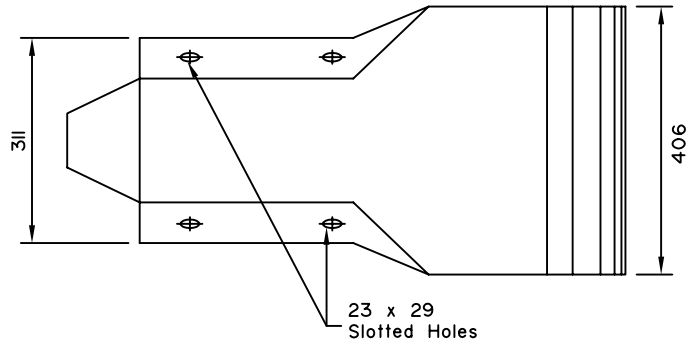
State of Alaska
Department of Transportation
& Public Facilities

STANDARD GUARDRAIL HARDWARE (RAILS AND SPLICES)

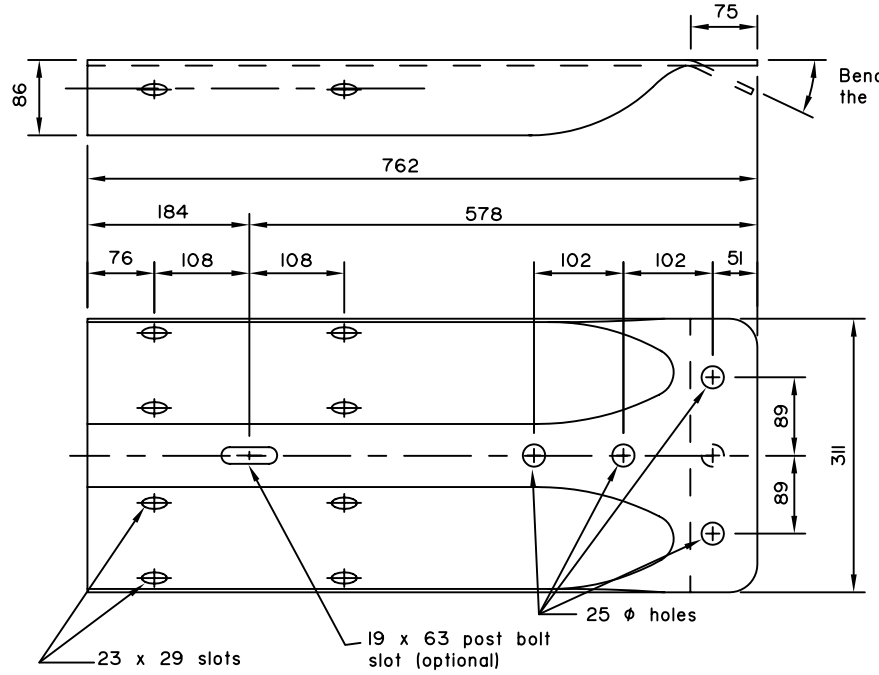
APPROVED
49TH STATE
Date 7/15/95

G-00.01 [M]

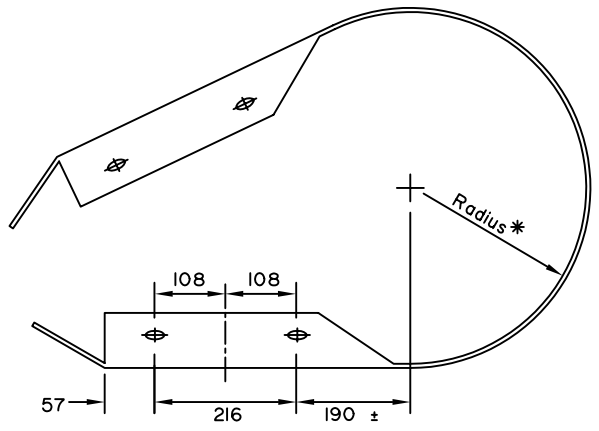
METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.



PROFILE



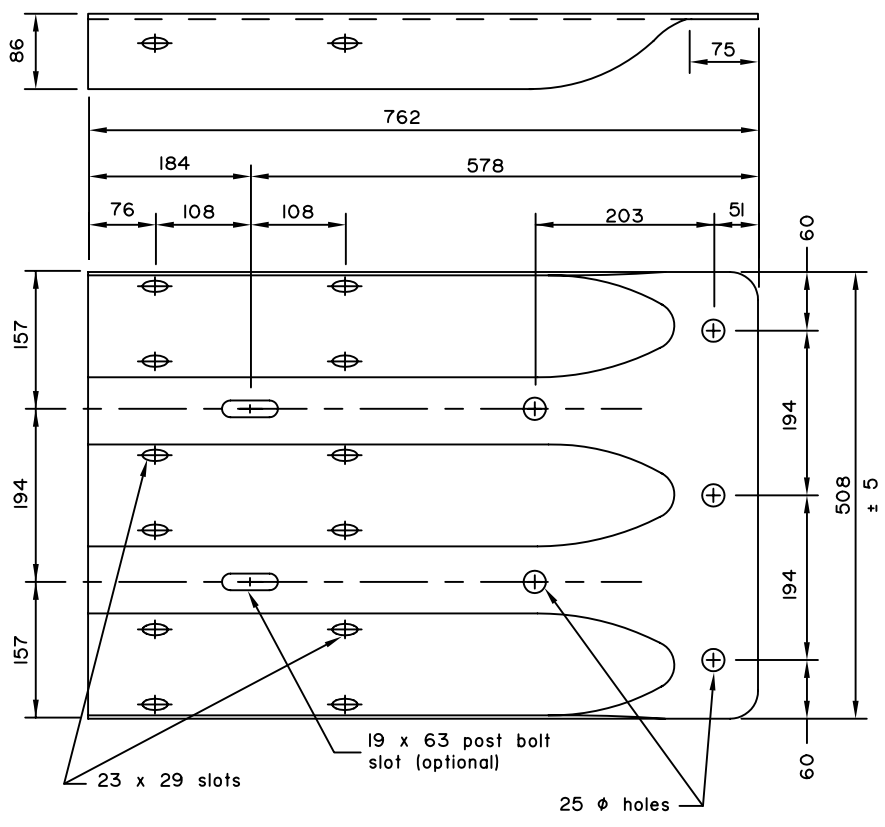
STANDARD W-BEAM TERMINAL CONNECTOR



W-BEAM PLAN VIEW

*Radius to be specified on the plans

STANDARD W-BEAM END SECTION



STANDARD THRIE BEAM TERMINAL CONNECTOR

GENERAL NOTES:

1. W-Beam and Thrie Beam Terminal Connectors shall conform to AASHTO M180, Class B, Type 2.
2. W-Beam end sections shall conform to AASHTO M180, Class A, Type 2.
3. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.

REVISIONS		
Date	Description	By
3/15/99	Delete Thrie End Sect.	KJS

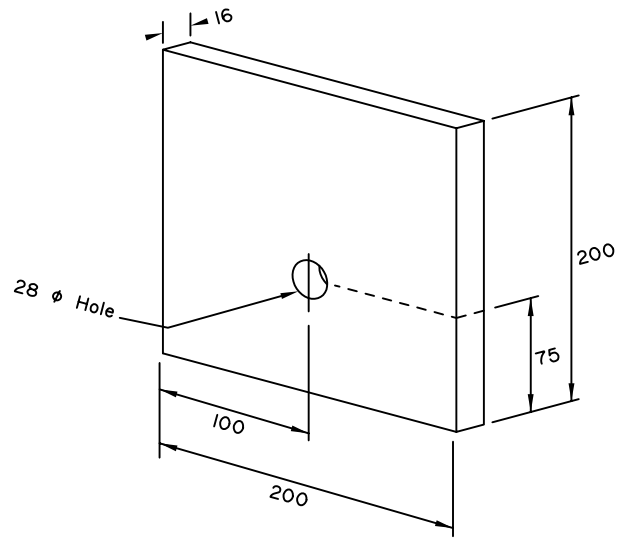
State of Alaska
Department of Transportation
& Public Facilities

STANDARD GUARDRAIL HARDWARE
(TERMINAL CONNECTORS)

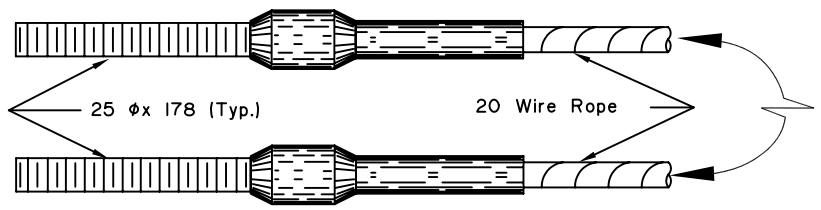
APPROVED
Date 7/15/95

G-00.01 [M]

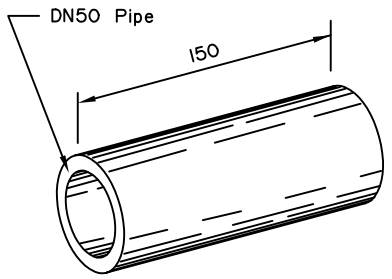
METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.



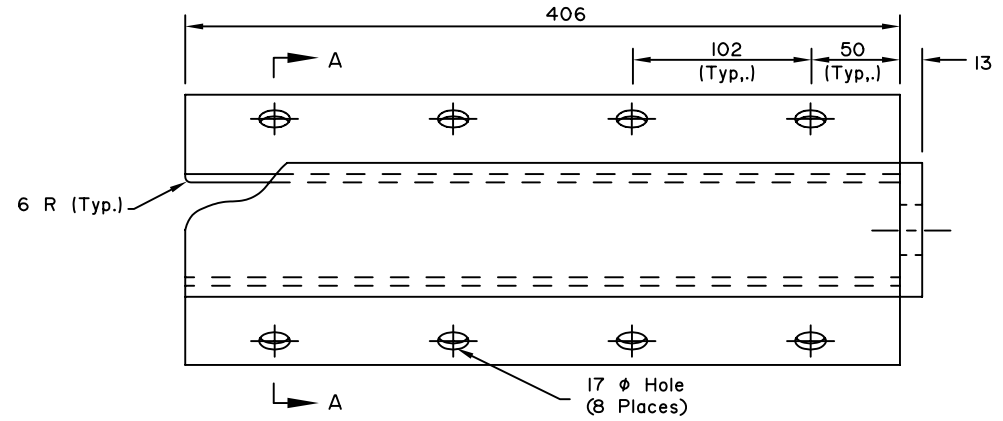
BEARING PLATE for CRT TERMINAL ANCHOR



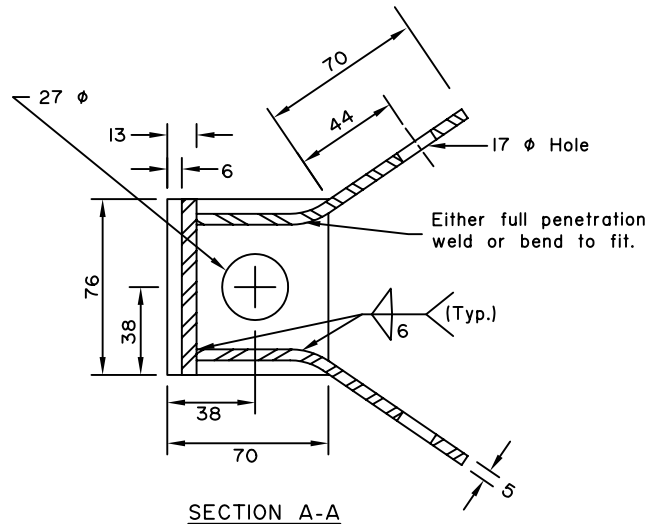
SWAGED FITTING DETAIL



SLEEVE DETAIL



CABLE ANCHOR PLATE

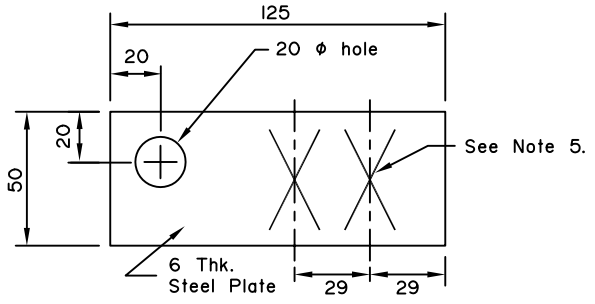


SECTION A-A

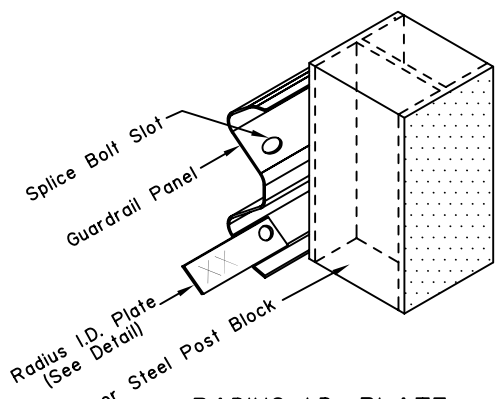
CONTROLLED RELEASE TERMINAL HARDWARE DETAILS

GENERAL NOTES:

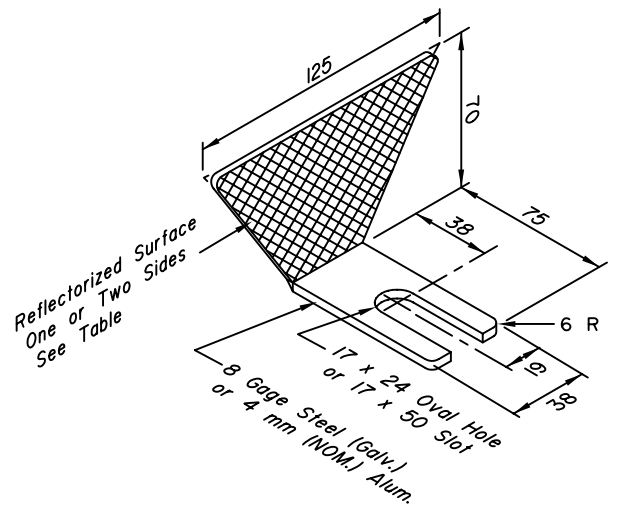
1. Cable Anchor Plate may be formed in single unit or welded fabrication.
2. Anchor Cable Assembly shall conform to AASHTO M-30 with Type II Wire Rope.
3. Sleeve for Wood Posts shall conform to the requirements of ASTM A120 and shall be of DN50 galvanized pipe. Sleeve shall be a tight, pressed fit in post.
4. Bolts, nuts and washers shall conform to ASTM A-325 and galvanized in accordance with ASTM A-153.
5. Radius ID plates shall be attached to all shop-bent guardrail sections. They shall be bolted to the back side of the guardrail panel with the lower splice bolt nearest the P.C. of the radius.
6. Rail bend radius in meters shall be shown as "XX" on the radius ID plate. Digits shall be etched or stamped and have a min. height of 38 and a max width of 19. The plate shall be galvanized after digits are marked.
7. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.



RADIUS I.D. PLATE



RADIUS I.D. PLATE MOUNTING DETAIL



GUARDRAIL REFLECTOR

Guardrail Reflectors

Type	Color	Reflectorized
A	White	Front & Rear
B	White	Front
C	Yellow	Front
D	Yellow	Front & Rear

REVISIONS		
Date	Description	By
3/15/99	Delete BCT Hardware	KJS

State of Alaska
Department of Transportation & Public Facilities

STANDARD GUARDRAIL HARDWARE (MISCELLANEOUS)

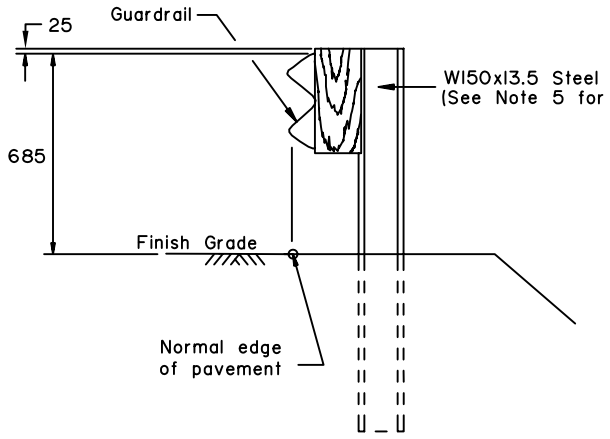
APPROVED
Date 7/15/95

G-00.01 [M]

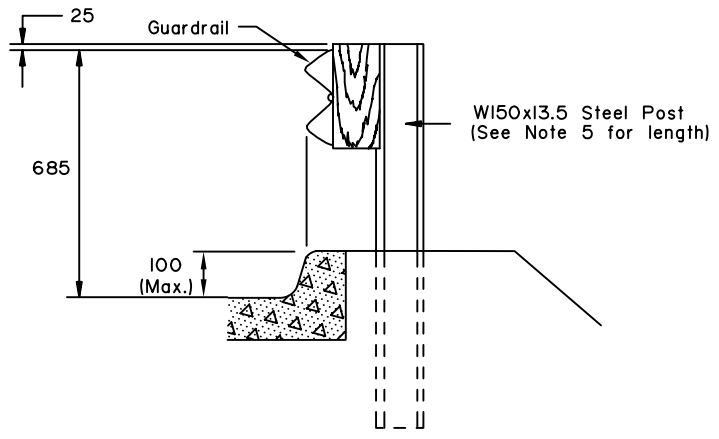
METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

G-04.06S [M]

SHEET 1 of 1



TYPE I POST INSTALLATION



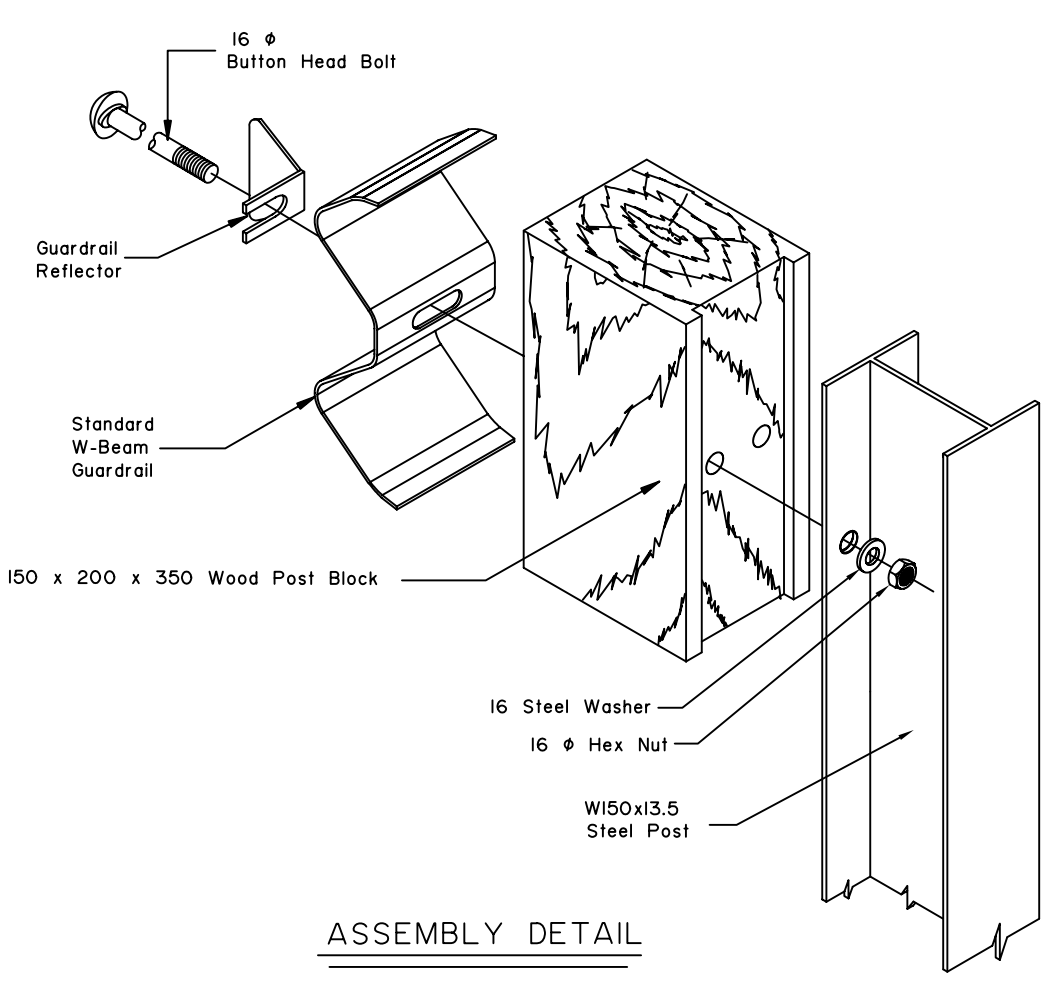
CURB DETAIL

TYPE III POST INSTALLATION

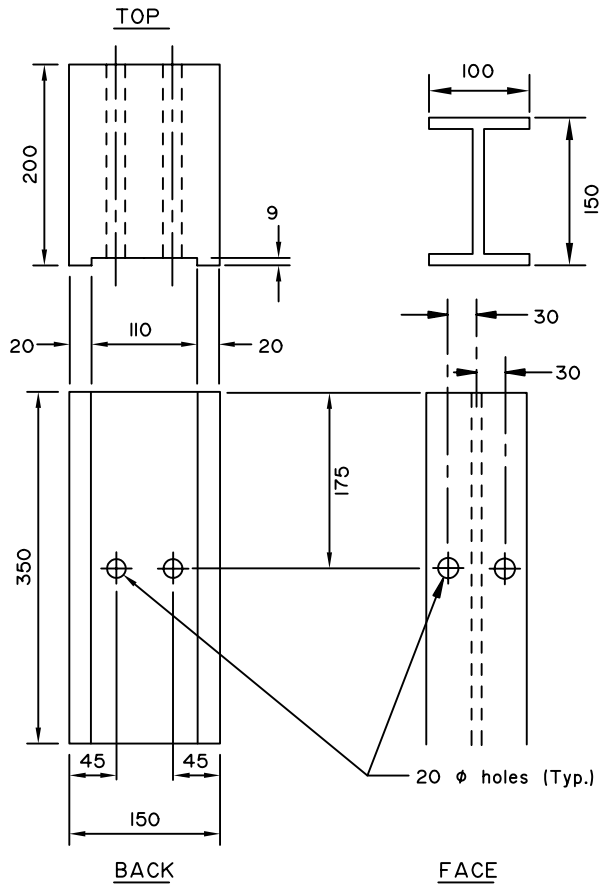
NOTE: Curb should not be installed with guardrail when the speed limit exceeds 65 KPH.

GENERAL NOTES:

1. Guardrail Reflectors shall be mounted at approximately 15 m centers beginning with the first post. Type A Reflectors shall be used unless specified otherwise on the plans.
2. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.
3. See standard drawings G-00, "Standard Guardrail Hardware" for hardware details.
4. Mount rail to block with bolt on approaching traffic side of block web.
5. See standard drawing G-10, "Beam Guardrail Post Installation" for post lengths corresponding to different combinations of slope and behind-post embankment width.
6. Typical post spacing is 1905 center to center.
7. This barrier is acceptable under NCHRP 350, TL3.



ASSEMBLY DETAIL



150x200
WOOD BLOCK

W150x13.5
STEEL POST

REVISIONS		
Date	Description	By
12/1/87	600 mm behind post	Gdo
4/1/93	Gen Note 6	Gdo
7/15/95	Del Hardware Details	Gdo
3/15/99	Modified Block Detail and post length	KJS

State of Alaska
Department of Transportation
& Public Facilities

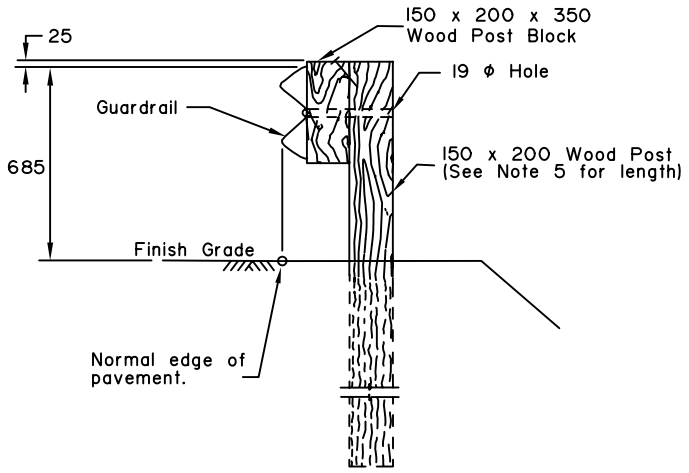
STEEL POST
W-BEAM GUARDRAIL

APPROVED
Date 7/15/82

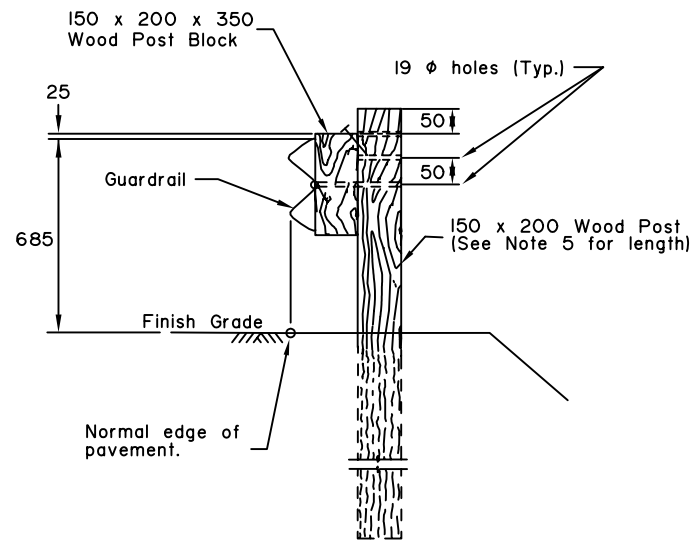
G-04.06S [M]

METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

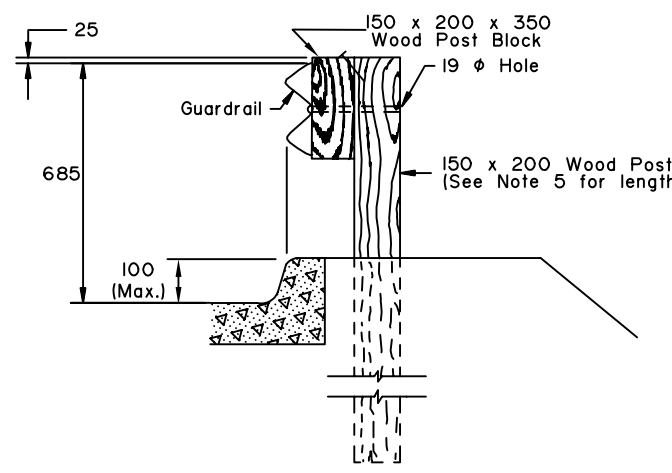
G-04.07W [M]



TYPE I POST INSTALLATION



TYPE II POST INSTALLATION



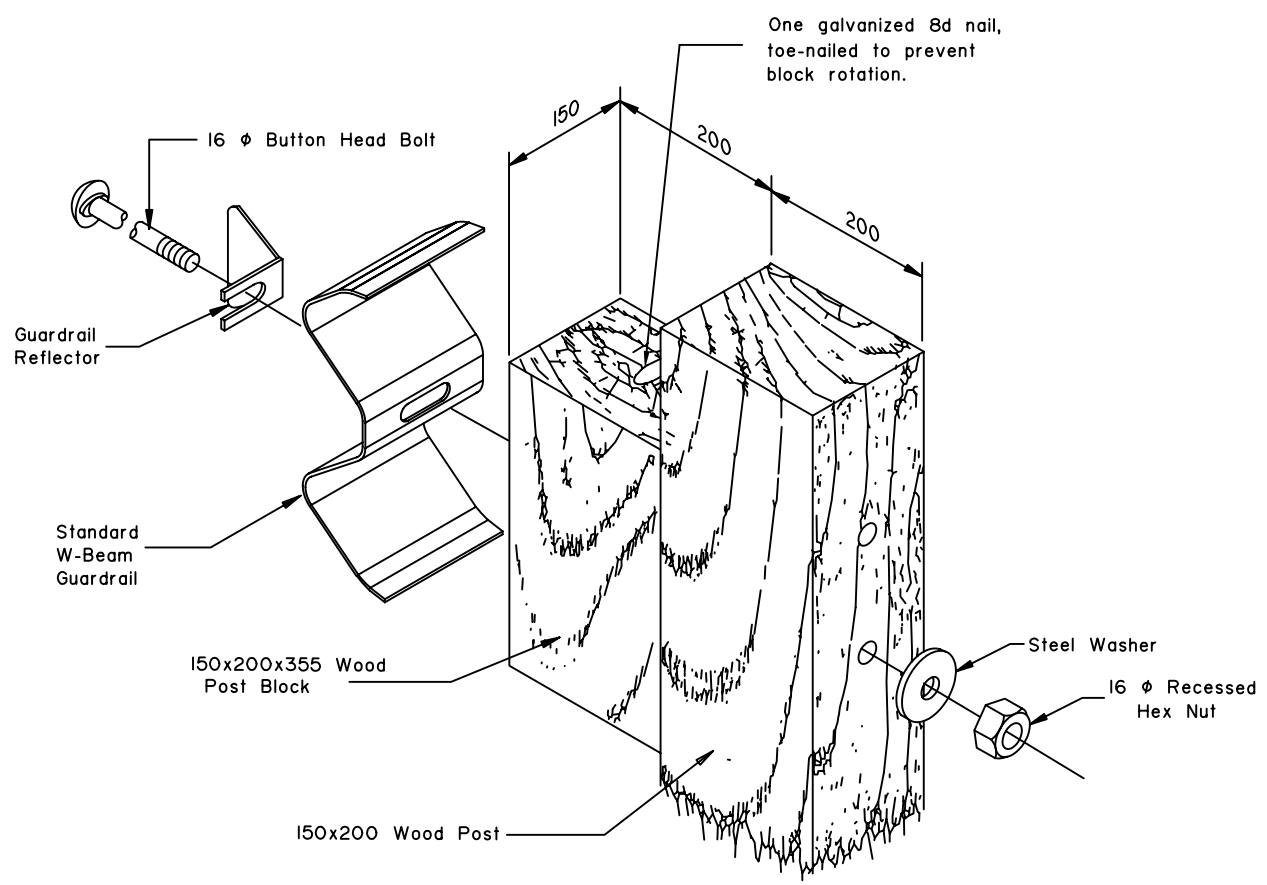
CURB DETAIL

TYPE III POST INSTALLATION

NOTE: Curb should not be installed with guardrail when the speed limit exceeds 65 kph.

GENERAL NOTES:

1. Guardrail Reflectors shall be mounted at approximately 15 m centers beginning with the first post. Type A Reflectors shall be used unless specified otherwise on the plans.
2. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.
3. See standard drawings G-00, "Standard Guardrail Hardware" for hardware details.
4. Type II installations facilitate raising the rail and should be used when future overlays are anticipated.
5. See standard drawing G-10, "Beam Guardrail Post Installation" for post lengths corresponding to different combinations of slope and behind-post embankment width.
6. Typical post spacing is 1905 center to center.
7. This barrier is acceptable under NCHRP 350, TL3.



ASSEMBLY DETAIL

REVISIONS		
Date	Description	By
12/1/87	600 behind post	Gdo
5/15/89	Re: S4S to rough sawn	Gdo
4/1/93	Hinge Point Note	Gdo
7/15/94	Del. Hrdwr/Add Type II	Gdo
3/15/99	Mod. post length & misc.	KJS

State of Alaska
Department of Transportation
& Public Facilities

WOOD POST
W-BEAM GUARDRAIL

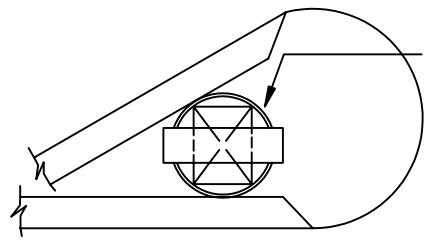
APPROVED

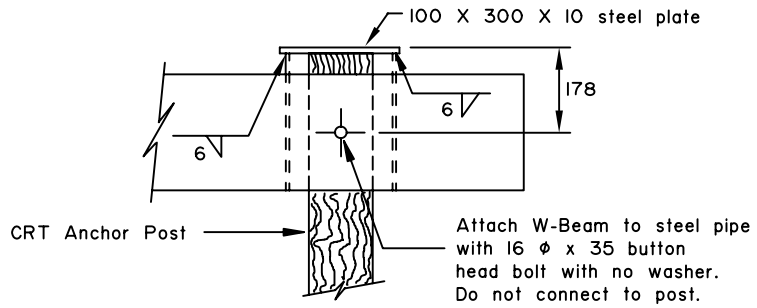
Date 7/15/82

G-04.07W[M]

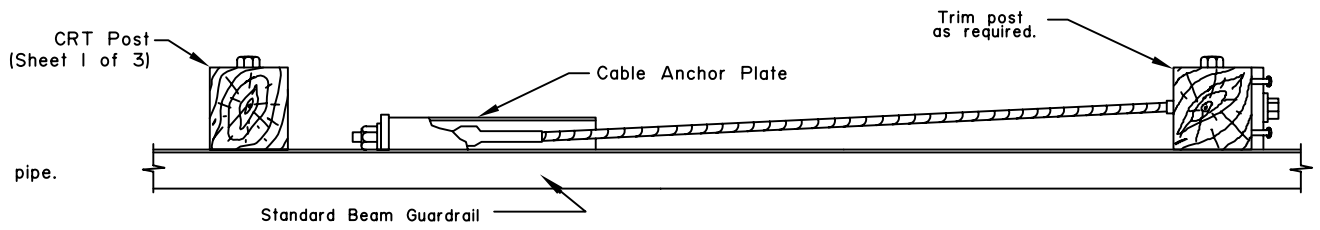
METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

G-25.20W [M]

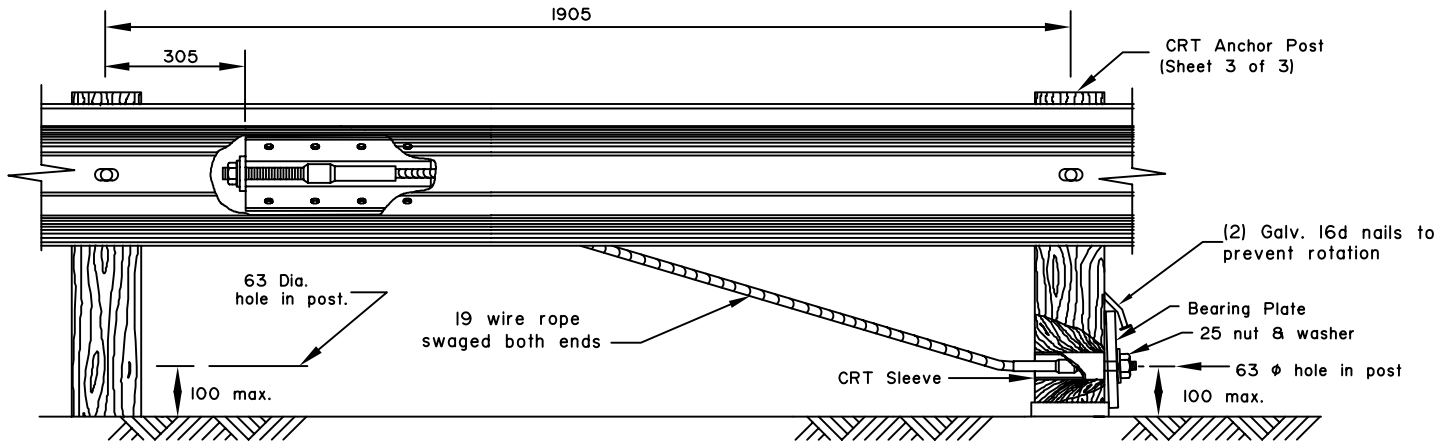




ROTATING POST CAP

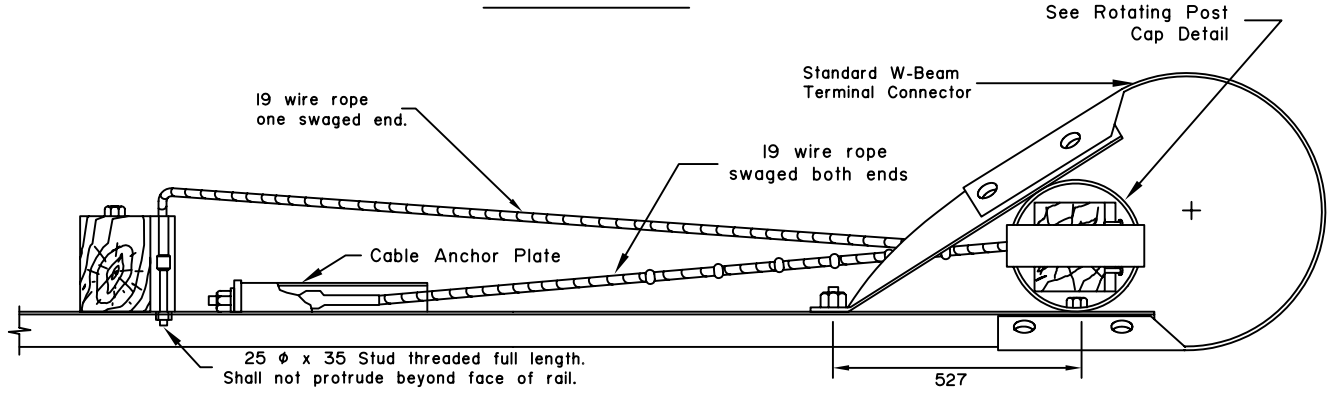


PLAN

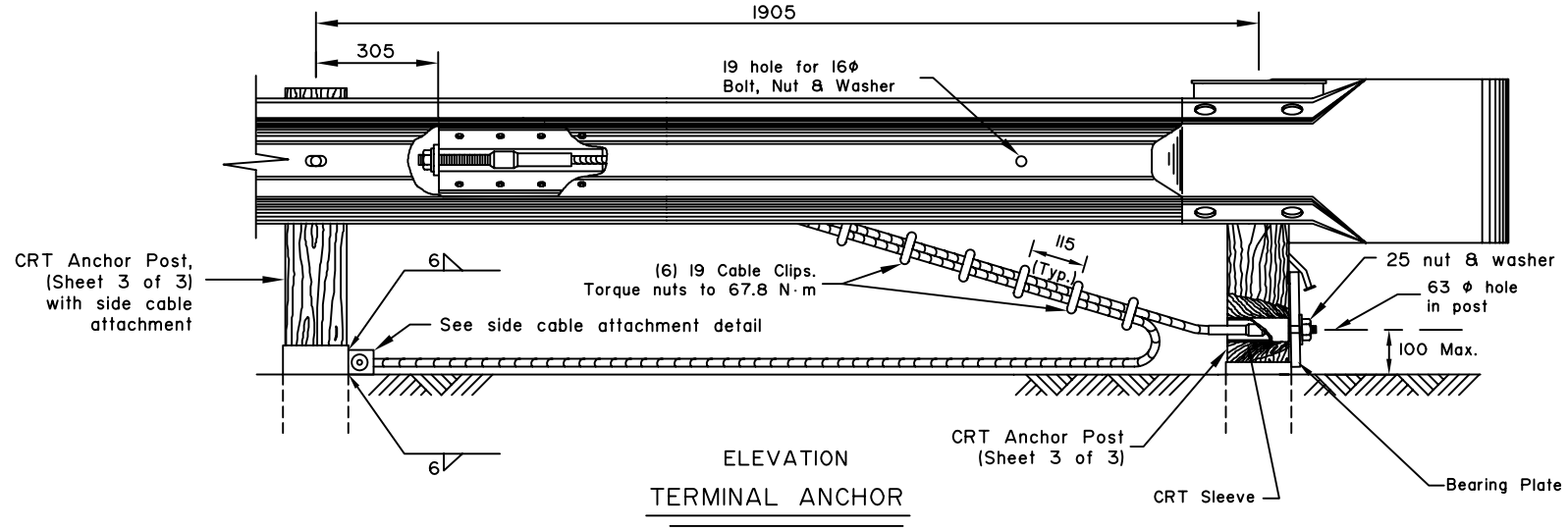


ELEVATION

IN-LINE ANCHOR

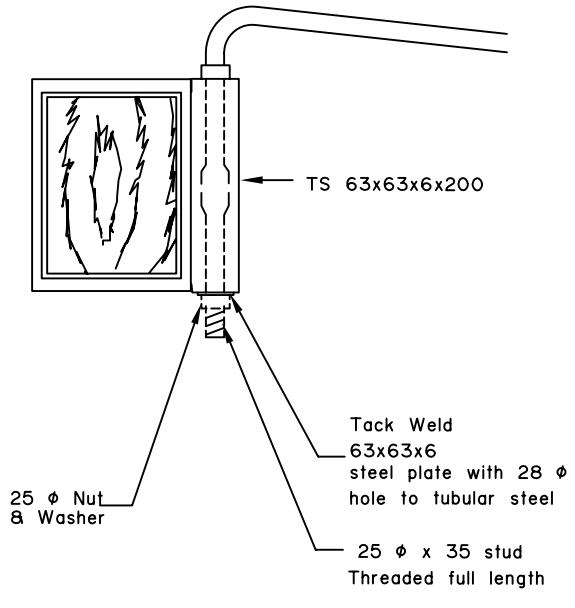


PLAN



ELEVATION

TERMINAL ANCHOR



SIDE CABLE ATTACHMENT

GENERAL NOTES:

1. Hardware details not shown here shall conform to drawings G-04 & G-00.
2. All covered hardware shall comply with the AASHTO/AGC/ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.

REVISIONS		
Date	Description	By

State of Alaska
Department of Transportation
& Public Facilities

WOOD POST CONTROLLED RELEASE TERMINAL ANCHORS

APPROVED
Date 3/15/99

METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

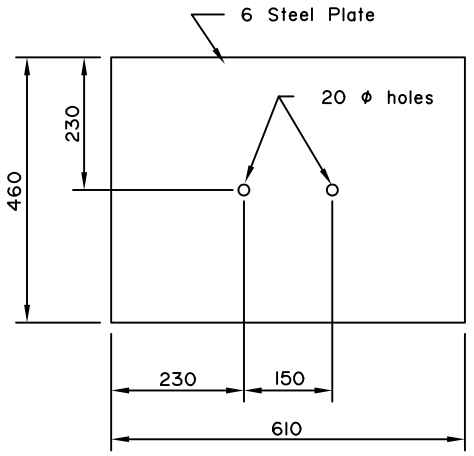
G-25.20W [M]

G-25.20W [M]

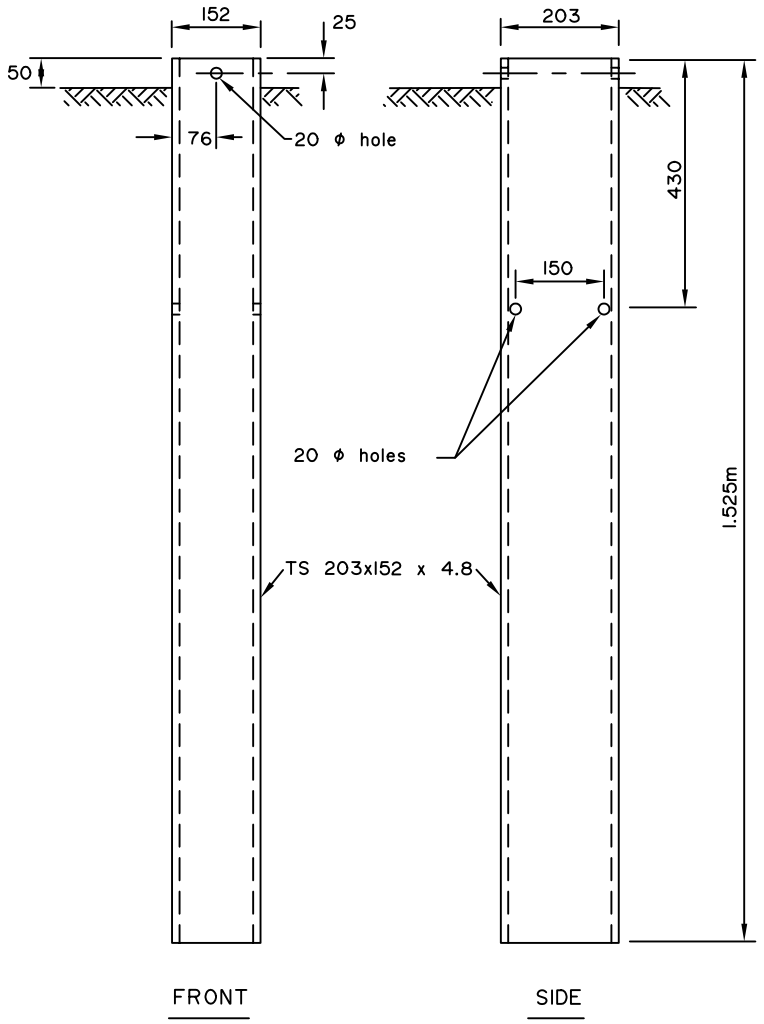
SHEET 3 of 3

GENERAL NOTES:

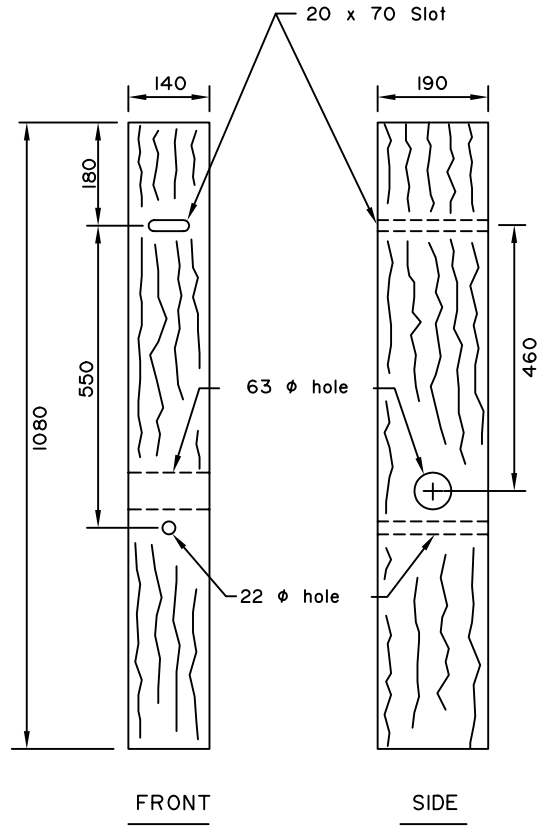
1. Hardware details not shown here shall conform to drawings G-04 & G-00.
2. All covered hardware shall comply with the AASHTO/AGC.ARTBA "A Guide to Standardized Highway Barrier Hardware", latest edition.
3. Each CRT Anchor Post with a cable attached shall conform to these details except the 2nd post in the Terminal Anchor, which shall conform except for the method of cable attachment (See sheet 2 of 3).



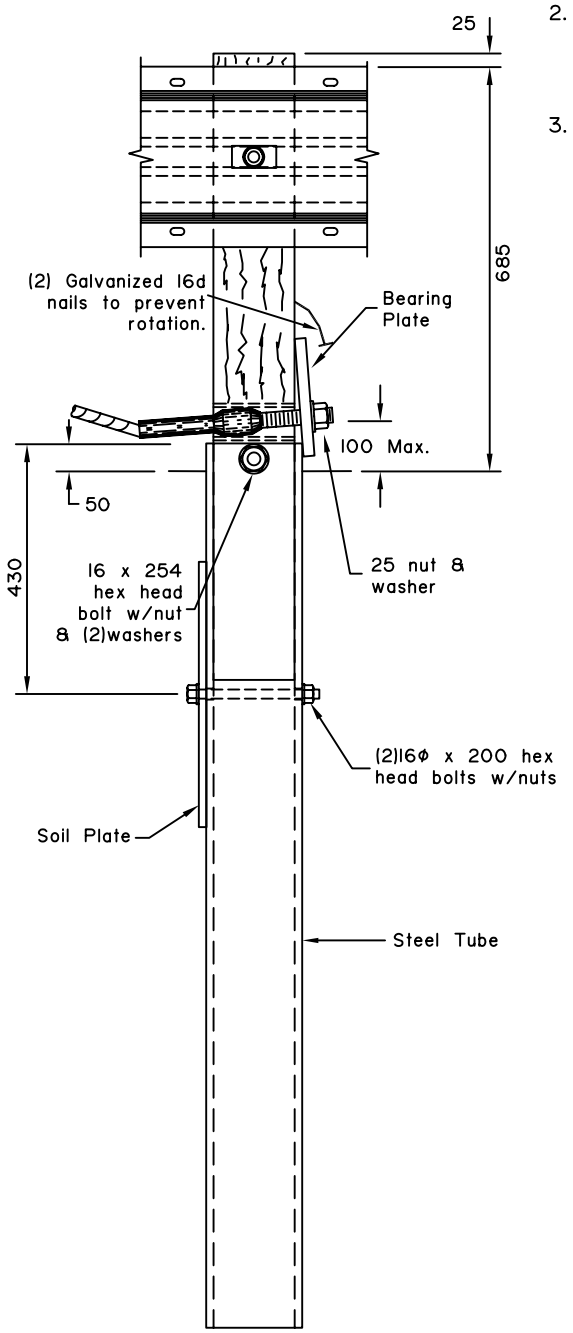
STEEL SOIL PLATE



STEEL TUBE



WOOD POST



ASSEMBLY

REVISIONS		
Date	Description	By

State of Alaska
Department of Transportation
& Public Facilities

WOOD POST CONTROLLED RELEASE TERMINAL ANCHOR POSTS

APPROVED

Date 3/15/99

G-25.20W [M]

METRIC VERSION: All dimensions in millimeters (mm) unless otherwise noted.

SECTION 01010 - SUMMARY OF WORK

PART 1 – GENERAL

1.1 GENERAL

A. The 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 which 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 will be performed at the Port Chilkoot Dock and generally consists of various items including demolition of an existing timber approach trestle, abutment and main dock, uplands modifications, retaining wall modifications, concrete abutment, concrete apron slab, aluminum gangway replacement, timber approach trestle, gangway queuing deck replacement with ambulance turn around, timber approach dock, re-grade of existing approach dock, floating dock modifications, steel pipe piles, electrical conductor replacement with (8) duplex receptacles, domestic water system, and transport of select salvaged materials to a designated disposal site.

B. Additive Alternate A WORK will be performed at Letnikof Cove and generally consists of renovating the Letnikof Harbor, which includes partial demolition of the existing timber trestle, new approach dock addition, gangway replacement, existing pipe float system maintenance, anchor chain replacement, seasonal timber floats, gangway landing float, and rock-socketed steel piles, and other miscellaneous and incidental work to complete renovation of the harbor.

C. Additive Alternate B WORK will be performed at the Port Chilkoot Dock and generally consists of installation of a new mooring dolphin with batter piles, a platform and a bollard.

D. Additive Alternate C WORK will be performed at the Port Chilkoot Dock and generally consists of the addition of dock lighting, float electrical power, and gangway lighting.

1.3 SITE OF THE WORK

A. The site of the Base Bid WORK is located in Portage Cove at the Port Chilkoot Dock in Haines, Alaska.

B. The site of the Additive Alternate A WORK is located in Letinikof Cove at the Letnikof Cove Harbor in Haines, Alaska.

C. The site of Additive Alternates B and C WORK is located in Portage Cove at the Port Chilkoot Dock 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	COMPLETION DATE
Port Chilkoot Dock Renovation	
Earliest Field Start	August 16, 2013
Substantial Completion	June 2, 2014
All WORK under the Contract Documents	July 1, 2014
Letnikof Cove Harbor Renovation:	
Earliest Field Start	October 1, 2013
Substantial Completion	May 1, 2014
All WORK under the Contract Documents	May 15, 2014

1.5 CONTRACT METHOD

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

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.

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:

   a. Plan of Operation.
   b. Project Overview Bar Chart Schedule.
   c. Procurement schedule of major equipment and materials and items requiring long lead time.
   d. Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.
   e. 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.

   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.

4. The OWNER will preside at the Pre-Construction Conference and will arrange for keeping and distributing the minutes to all persons in attendance.

5. The CONTRACTOR and its Subcontractors should plan on the conference taking no less than 2 full working days. The first day will cover the items listed in paragraph 3, and the following day(s) will be spent on 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.

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 which may develop. During each meeting, the CONTRACTOR is required to present any issues which 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:

Furnish - means to supply and deliver to the site, to unload and unpack ready for assembly, installation, testing, and start-up.

Indicated - is 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.

Install - defines operations at the site including assembly, erection, placing, anchoring, applying, shaping to dimension, finishing, curing, protecting, and cleaning, ready for the OWNER's use.

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.

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

SCOPE

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 will be made for any pay 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. Temporary shoring of trenches or bracing of existing facilities as required for constructing any/all improvements.
4. Maintenance of all services through the Project area, including water, storm, garbage pickup, mail delivery, other deliveries and emergency vehicles.
5. All traffic control, including flaggers and preparation of satisfactory Traffic Control Plans.
6. Minor grading of fill materials as required matching existing grades and maintaining positive surface drainage.
7. Minor changes in grades to fit field conditions.
8. Miscellaneous connecting and attachment hardware as required to connect water and electrical equipment.
9. Field measurements prior to manufacturing of materials.

DIVISION 1

1.1 MOBILIZATION (Pay Item No. 1505.1, 1505.1A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Mobilization will 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 the Base Bid will be made at the amount shown on the Bid Schedule under Pay Item No. 1505.1, which payment will 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 Additive Alternate A will be made at the amount shown on the Bid Schedule under Pay Item No. 1505.1A, which payment will constitute full compensation for all WORK described in Section 01505 - Mobilization, as shown on the Plans and as directed by the ENGINEER.

D. Partial payments will 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, will be paid.

2. When 10% of the total original contract amount is earned from other pay items, 100% of the amount bid for Mobilization, or 10% of the original Contract amount, whichever is lesser, will be paid.

3. Upon completion of all WORK on the Project, payment of any amount bid for Mobilization in excess of 10% of the total original contract amount will be paid.

DIVISION 2

2.1 DEMOLITION, SALVAGE AND DISPOSAL (Pay Item No. 2060.1, 2060.1A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Demolition, Salvage and Disposal under the Base Bid will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including removal and relocation of existing gangway, gangway landing, conex shipping container, sawcuts, ACP, concrete abutment, timber approach trestle, timber main dock, timber approach dock, 6" steel fuel lines, fuel risers, fuel riser frame, 6" DI waterline and associated appurtenances, gangway support pile frame, gangway winch, platform, and rigging, geotextile mesh, concrete blocks, telephone conductor, approach dock steel handrail, safety ladders, electrical, and other items complete, and in accordance with the requirements of the Contract Documents. WORK will also include the salvage and transportation of select materials to a disposal site designated by the owner as shown on the Plans.

B. Measurement for payment for Demolition, Salvage and Disposal under Additive Alternate A shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit including removal and disposal of the existing timber trestle, timber piling and bracing, segmental timber floats, steel grating, timber rubboards, anchor chains and all other appurtenances in accordance with the Plans. This pay items also includes the removal and salvage of the existing 6'x50' gangway, steel pile frame, timber gangway landing float, steel moorage piles, and all other appurtenances in accordance with the Plans and as required in the Contract Documents.

C. Payment for Demolition, Salvage and Disposal under the Base Bid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2060.1, which payment will constitute full compensation for all WORK described in Section 02060 – Demolition. Salvage and Disposal, as shown on the Plans and as directed by the ENGINEER.

D. Payment for Demolition, Salvage and Disposal under Additive Alternate A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2060.1A, which payment will constitute full compensation for all WORK described in Section 02060 – Demolition, Salvage and Disposal, as shown on the Plans and as directed by the ENGINEER.

2.2 WATER SYSTEM (Pay Item No. 2601.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Water System, shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including connection to existing water pipe, trenching bedding and backfill as required for pipe installation, fabrication and installation of meter enclosures, installation of meters, backflow prevention devices, bollards, pipe, valves, joints, bends, fittings, thrust blocking, blow off assemblies, water system drain and appurtenances, rip rap removal and reassembly, waterline hangers, stands and clamps, thermal expansion offsets and loops, flanges, pipe stands, hose outlets, sill cocks, misc. steel components, and hardware, modification of existing water system components and pipe, modification of timber bull rail and decking, coordination with Owner and local Utilities as required, complete in place, as required by the Contract Documents and as shown on the Plans.

B. Payment for Water System, under the Base Bid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2601.1 which payment shall constitute full compensation for all WORK described in Section 02601 – Water System, as shown on the plans and as directed by the ENGINEER.

2.3 CONSTRUCTION SURVEY MEASUREMENT (Pay Item No. 2702.1, 2702.1A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Construction Survey Measurement will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including establishing basis' of bearing as noted in the plans, providing as-built Plans, maintaining record of existing utilities encountered, and other miscellaneous associated items, complete, all in accordance with the requirements of the Contract Documents.

B. Payment for Construction Survey Measurement under the Base Bid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2702.1, which payment will constitute full compensation for all WORK described in Section 02702 - Construction Surveying, as shown on the Plans and as directed by the ENGINEER.

C. Payment for Construction Survey Measurement under Additive Alternate A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2702.1A, which payment will constitute full compensation for all WORK described in Section 02702 - Construction Surveying, as shown on the Plans and as directed by the ENGINEER.

2.4 RETAINING WALL AND UPLAND MODIFICATIONS (Pay Item No. 2726.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Retaining Wall and Upland Modifications shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete including all, excavation, placement compaction and grading of base course and shot rock borrow, rip rap reconfiguration, grading, geogrid modification, geotextile modification, concrete block retaining wall reconfiguration, guard rail and handrail relocation, concrete apron slab, rebar and joints, complete in place and in accordance with the requirements of the Contract Documents.

B. Payment for Retaining Wall and Upland Modifications under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2726.1, which payment shall constitute full compensation for all WORK described in Section 02726 – Retaining Wall and Upland Modifications as shown on the plans and as directed by the ENGINEER.

2.5 TRESTLE, QUEUING DECK, AND APPROACH DOCK (Pay Item No. 2727.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Trestle, Queuing Deck, and Approach Dock shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place above pile cut-off, including all pile caps, weldments, glulam stringers, timber decking, timber bullrail, handrail, steel connectors, bolts, nuts, washers, and all other miscellaneous appurtenances, all in accordance with the requirements of the Contract Documents.

B. Payment for Trestle, Queuing Deck, and Approach Dock under the Base Bid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2727.1, which payment will constitute full compensation for all WORK described in Section 02727 – Timber Structures, as shown on the Plans and as directed by the ENGINEER.

2.6 RE-GRADE EXISTING APPROACH DOCK (Pay Item No. 2727.2) PRICE BASED ON LUMP SUM

A. Measurement for payment for Re-grade Existing Approach Dock shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place above pile cut-off, including all pile caps, weldments, glulam stringers, timber decking, timber bullrail, handrail, steel connectors, bolts, nuts, washers, and all other miscellaneous appurtenances, all in accordance with the requirements of the Contract Documents.

B. Payment for Re-grade Existing Approach Dock under the Base Bid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2727.2, which payment will constitute full compensation for all WORK described in Section 02727 – Timber Structures, as shown on the Plans and as directed by the ENGINEER.

2.7 APPROACH DOCK ADDITION (Pay Item No. 2727.3A) PRICE BASED ON LUMP SUM

A. Measurement and Payment for Approach Dock Addition shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit including steel pile caps, weldments, glulam stringers, timber decking, railing, steel connectors, all hardware, removal and replacement of any components on the existing timber trestle to complete approach dock installation, and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Approach Dock Addition under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2727.3A, which payment will constitute full compensation for all WORK described in Section 02727 – Timber Structures, as shown on the Plans and as directed by the ENGINEER.

2.8 MOORAGE FLOAT MODIFICATIONS (Pay Item No. 2810.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Moorage Float Modifications shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete including all field cuts, structural steel, pile hoop, hardware, decking, timbers, HDPE pipe pontoons, and other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Moorage Float Modifications under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2810.1, which payment will constitute full compensation for all WORK described in Section 02810 – Moorage Float Modifications, as shown on the Plans and as directed by the ENGINEER.

2.9 REPLACE FLOAT GRATING (Pay Item No. 2885.1A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Replace Float Grating shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, including supply and installation of new grating, attachment hardware, field measurements prior to manufacture, and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Replace Float Grating under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2885.1A, which payment will constitute full compensation for all WORK described in Section 02885 – Letnikof Cove Float Refurbishment, as shown on the Plans and as directed by the ENGINEER.

2.10 REPLACE FLOAT RUBBOARD (Pay Item No. 2885.2A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Replace Float Rubboard shall be based upon the completion of the entire Work as a Lump Sum Pay Unit, and includes replacement of the timber rubboards, field measurements prior to fabrication, cutting, treating, bolts and other miscellaneous hardware, and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Replace Float Rubboard under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2885.2A, which payment will constitute full compensation for all WORK described in Section 02885 – Letnikof Cove Float Refurbishment, as shown on the Plans and as directed by the ENGINEER.

2.11 REPLACE BROKEN CLEATS (Pay Item No. 2885.3A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Replace Broken Cleats shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, , and includes supply and installation of steel cleats, hardware, and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Replace Broken Cleats under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2885.3A, which payment will constitute full compensation for all WORK described in Section 02885 – Letnikof Cove Float Refurbishment, as shown on the Plans and as directed by the ENGINEER.

2.12 REPLACE ANCHOR CHAINS (Pay Item No. 2885.4A) PRICE BASED ON LUMP SUM

A. Measurement for Payment for Replace Anchor Chains shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, and includes surveying, supplying and installing new float anchor chains, shackles, chain connection links, and making final adjustments, as well as any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Replace Anchor Chains under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2885.4A, which payment will constitute full compensation for all WORK described in Section 2885 – Letnikof Cove Float Refurbishment, as shown on the Plans and as directed by the ENGINEER.

2.13 COVERED ALUMINUM GANGWAY (Pay Item No. 2894.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Covered Aluminum Gangway shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete fabrication, installation, including all hardware, hinges, structural framing, railing, decking, roofing, transition plates, guide angles, UHMW components, skid plates and other associated appurtenances, all in accordance with the requirements of the Contract Documents.

B. Payment for Covered Aluminum Gangway under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Item 2894.1, which payment will constitute full compensation for all WORK described in Section 02894 – Gangway, as shown on the Plans and as directed by the ENGINEER.

2.14 MODIFY & INSTALL SALVAGED GANGWAY (Pay Item No. 2894.2A) PRICE BASED ON LUMP SUM

A. Measurement for payment for Modify & Install Salvaged Gangway shall be based on the completion of the entire WORK as a Lump Sum Pay Unit, including installation of salvaged gangway, modifications to salvaged gangway components, approach dock mounting angle assembly, link plates, bushings, rubber pads, UHMW components, gangway guide placement and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Modify & Install Salvaged Gangway under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Item 2894.2A, which payment will constitute full compensation for all WORK described in Section 02894 – Gangway, as shown on the Plans and as directed by the ENGINEER.

2.15 16’ X 20’ GANGWAY LANDING FLOAT (Pay Item No. 2895.1A) PRICE BASED ON LUMP SUM

A. Measurement for payment for 16’x20’ Gangway Landing Float shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including fabrication and installation of float unit, rubboards, bullrails, pile hoops, skid plates, rubber fenders, chains, shackles , plates, hardware and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for 16'x20' Gangway Landing Float under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2895.1A, which payment shall constitute full compensation for all WORK described in Section 02895 – Timber Floats, as shown on the plans and as directed by the ENGINEER.

2.16 8' X 100' SEGMENTAL FLOAT (Pay Item No. 2895.2A) PRICE BASED ON LUMP SUM

A. Measurement for Payment for the 8'x100' Segmental Float shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including fabrication and installation of all segmented float units, connection hardware, bullrails, rubboards, pile hoops, steel weldments, along with all hardware and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for the 8'x100' Segmental Float under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2895.2A, which payment will constitute full compensation for all WORK described in Section 02895 – Timber Floats, as shown on the Plans and as directed by the ENGINEER.

2.17 FURNISH STEEL PIPE PILE, 24" DIA. X 0.500" THICK (Pay Item No. 2896.1) PRICE BASED ON QUANTITY, LINEAR FOOT

A. Measurement for Payment for Furnish Steel Pipe Pile, 24" Dia. x 0.500" Thick shall be per linear foot, complete, including steel pile and reinforced pile tips. Piles shall be furnished by the CONTRACTOR in the lengths indicated on the Plans.

B. Payment for Furnish Steel Pipe Pile 24" Dia. x 0.500" Thick under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.1, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.18 INSTALL 24" DIA. VERTICAL PILE (Pay Item No. 2896.2) PRICE BASED ON QUANTITY, EACH

A. Measurement for Payment for Install 24" Dia. Vertical Pile shall be measured per each, complete in place, as shown in the Plans and installed in accordance with the requirements of the Contract Documents.

B. Payment for Install 24" Dia. Vertical Pile under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.2, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.19 INSTALL 24" DIA. BATTER PILE (Pay Item No. 2896.3) PRICE BASED ON QUANTITY, EACH

A. Measurement for Payment for Install 24" Dia. Batter Pile shall be measured per each, complete in place, as shown in the Plans and installed in accordance with the requirements of the Contract Documents.

B. Payment for Install 24" Dia. Batter Pile under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.2, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.20 SPIN FIN PILE TIP (Pay Item No. 2896.4) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Spin Fin Pile Tip shall be measured per each, complete, including steel pile, fins, reinforced pile tip, and splice connection to corresponding pile. Spin Fin Pile Tip shall be furnished by the CONTRACTOR and attached to piles as indicated on the pile schedule in accordance with the requirements of the Contract Documents.

B. Payment for Spin Fin Pile Tip under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.4, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.21 FURNISH AND INSTALL FLOAT MOORING PILE, 16" DIA. X 0.500" THICK (Pay Item No. 2896.5, 2896.5A) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Furnish and Install Float Mooring Pile, 16" Dia. x 0.500" Thick shall be measured per each, complete in place, including steel pile, reinforced pile tip, and fiberglass cap. Steel pipe piles shall be furnished by the CONTRACTOR in the lengths indicated on the Plans.

B. Payment for Furnish and Install Float Mooring Pile, 16" Dia. x 0.500" Thick under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.5, which payment will 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 and Install Float Mooring Pile, 16" Dia. x 0.500" Thick under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.5A, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.22 GANGWAY SUPPORT PILE FRAME (Pay Item No. 2896.6) PRICE BASED ON LUMP SUM

A. Measurement for payment for Gangway Support Pile Frame shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete including all field cuts, structural steel, and other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Gangway Support Pile Frame under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.6, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.23 PILE SPLICE (Pay Item No. 2896.7) PRICE BASED ON QUANTITY, EACH

A. Pile Splice 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 additional pile length to be installed beyond the lengths shown in the pile schedule. Pile Splice shall be measured per each, complete, as shown in the Plans and installed in accordance with the requirements of the Contract Documents.

B. Payment for Pile Splice under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.7, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.24 FURNISH AND INSTALL DOCK SUPPORT PILE, 16" DIA. X 0.500" THICK (Pay Item No. 2896.8A) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Furnish and Install Dock Support Pile, 16" Dia. x 0.500" Thick shall be measured per each, complete in place, including steel pile and reinforced pile tip. Steel pipe piles shall be furnished by the CONTRACTOR in the lengths indicated on the Plans.

B. Payment for Furnish and Install Dock Support Pile, 16" Dia. x 0.500" Thick under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.8A, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.25 STEEL PIPE PILE CROSS BEAM (Pay Item No. 2896.9A) PRICE BASED ON LUMP SUM

A. Measurement and Payment for Steel Pipe Pile Cross Beam shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including fabrication and installation and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for the Steel Pipe Pile Cross Beam under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.9A, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Pile, as shown on the Plans and as directed by the ENGINEER.

2.26 PILE SOCKET (Pay Item No. 2896.10A) PRICE BASED ON QUANTITY, EACH

A. Measurement and Payment for Pile Socket shall be based upon the completion of each, complete in place, as shown in the Plans and installed in accordance with the requirements of the Contract Documents.

B. Payment for Pile Socket under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.10A, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Pile, as shown on the Plans and as directed by the ENGINEER.

2.27 FURNISH AND INSTALL MOORING DOLPHIN BATTER PILE, 20" DIA. X 0.500" THICK WITH SPIN FIN TIP (Pay Item No. 2896.11B) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Furnish and Install Mooring Dolphin Batter Pile, 20" Dia. x 0.500" Thick With Spin Fin Tip shall be measured per each, complete in place, including steel pile, fins, and reinforced pile tip. Steel pipe piles shall be furnished by the CONTRACTOR in the lengths indicated on the Plans.

B. Payment for Furnish and Install Mooring Dolphin Batter Pile, 20" Dia. x 0.500" Thick With Spin Fin Tip under Additive Alternate B shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.11B, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Piles, as shown on the Plans and as directed by the ENGINEER.

2.28 MOORING DOLPHIN PILE CAP & BOLLARD (Pay Item No. 2896.12B) PRICE BASED ON LUMP SUM

A. Measurement and Payment for Mooring Dolphin Pile Cap & Bollard shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including fabrication and installation and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Mooring Dolphin Pile Cap & Bollard under Additive Alternate B shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2896.12B, which payment will constitute full compensation for all WORK described in Section 02896 – Steel Pipe Pile, as shown on the Plans and as directed by the ENGINEER.

2.29 FLOAT TRANSITION PLATES (Pay Item No. 2897.1A) PRICE BASED ON LUMP SUM

A. Measurement and Payment for Float Transition Plates shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including fabrication and installation of each transition plate, hardware, hinges, UHMW nosing, skid plates and any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Float Transition Plates under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2897.1A, which payment will constitute full compensation for all WORK described in Section 02897 – Float Transition Plates, as shown on the Plans and as directed by the ENGINEER.

2.30 ANODE (Pay Item No. 2996.1A) PRICE BASED ON LUMP SUM

A. Measurement and Payment for Anode shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, including supplying and installing, field repairs to pipe moorage float, continuity test, field photos and report, as well as any other appurtenances in accordance with the requirements of the Contract Documents.

B. Payment for Anode under Additive Alternate A shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2996.1A, which payment will constitute full compensation for all WORK described in Section 02996 – Anodes, as shown on the Plans and as directed by the ENGINEER.

DIVISION 3

3.1 CONCRETE ABUTMENT (Pay Item No. 3304.1) PRICE BASED ON QUANTITY, LUMP SUM

A. Measurement for payment for Concrete Abutment shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete including all earthwork, base course placement and compaction, formwork, reinforcement, pipe/conduit penetrations, cast-in anchors bolts, sleeves, nuts, washers, and hardware, and other appurtenances, all in accordance with the requirements of the Contract Documents.

B. Payment for Concrete Abutment under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 3304.1, which payment shall constitute full compensation for all WORK described in Section 03304 – Concrete Abutment, as shown on the plans and as directed by the ENGINEER.

DIVISION 16

16.1 ELECTRICAL POWER TO EXISTING CRUISE SHIP DOCK LIGHTS (Pay Item No. 16000.1) PRICE BASED ON LUMP SUM

A. Measurement for Electrical Power to Existing Cruise Ship Dock Lights shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete and in place, including all trenching, electrical conductor and components, panels, conduit from the vault on shore to the panelboard, conduit extended from that provided for the All Weather Receptacles to the lights, controls, and other miscellaneous appurtenances as shown on the Plans and in accordance with the requirements of the Contract Documents.

B. Payment for Electrical Power to Existing Cruise Ship Dock Lights under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Item No. 16000.1, which payment will constitute full payment for all WORK described in Division 16 Electrical, as shown on the Plans and as directed by the ENGINEER.

16.2 INSTALL (8) ALL-WEATHER 120V DUPLEX POWER RECEPTACLES (Pay Item No. 16000.2) PRICE BASED ON LUMP SUM

A. Measurement for Install (8) All-Weather 120V Duplex Power Receptacles shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete and in place, including all electrical conductor and components, conduit, junction and device boxes, duplex power receptacles, and other miscellaneous appurtenances from the panelboard with allowances for the addition of lighting as shown on the Plans and in accordance with the requirements of the Contract Documents.

B. Payment for Install (8) All-Weather 120V Duplex Power Receptacles under the Base Bid shall be made at the Unit Price named in the Bid Schedule under Item No. 16000.2, which payment will constitute full payment for all WORK described in Division 16 Electrical, as shown on the Plans and as directed by the ENGINEER.

16.3 DOCK LIGHTING (Pay Item No. 16000.3C) PRICE BASED ON LUMP SUM

A. Measurement for Dock Lighting shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete and in place, including all electrical conductor and lighting components, conduit extended from that provided for the All Weather Duplex Receptacles, and other miscellaneous appurtenances as shown on the Plans and in accordance with the requirements of the Contract Documents.

B. Payment for Dock Lighting under Additive Alternate C shall be made at the Unit Price named in the Bid Schedule under Item No. 16000.3C, which payment will constitute full payment for all WORK described in Division 16 Electrical, as shown on the Plans and as directed by the ENGINEER.

16.4 ELECTRICAL POWER TO FLOAT AND GANGWAY LIGHTING (Pay Item No. 16000.4C) PRICE BASED ON LUMP SUM

A. Measurement for Electrical Power to Float and Gangway Lighting shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete and in place, including all electrical conductor and lighting components, cables, conduit, power pedestal, and other miscellaneous appurtenances as shown on the Plans and in accordance with the requirements of the Contract Documents.

B. Payment for Electrical Power to Float and Gangway Lighting under Additive Alternate C shall be made at the Unit Price named in the Bid Schedule under Item No. 16000.4C, which payment will constitute full payment for all WORK described in Division 16 Electrical, as shown on the Plans and as directed by the ENGINEER.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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

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.

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
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
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
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.

B. References herein to "Building Code" or "Uniform Building Code" shall mean Uniform Building Code of the International Conference of Building Officials (ICBO).

C. 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.

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

E. 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.

F. Applicable Standard Specifications: References in Contract Sections 02801 -Asphalt Concrete Pavement to Standard Specifications shall mean the Alaska Department of Transportation and Public Facilities "Standard Specifications for Highway Construction - 1998" and any supplements or amendments thereto.

G. 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.

H. 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. Whenever Submittals are required hereunder, all such Submittals by the CONTRACTOR shall be submitted to the ENGINEER.

B. Within 14 days after the date of commencement as stated in the Notice of Award/Notice to Proceed, the CONTRACTOR shall submit the following items to the ENGINEER for review:

1. A preliminary schedule of Shop Drawing, 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 the required date for receipt of the permit.
3. A complete progress schedule for all phases of the project.
4. All required Material Safety Data Sheets.
5. A staging and 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, and providing a specimen of his signature.
8. A letter designating the CONTRACTOR's safety representative and the EEO Officer and the person's responsibility and authority.

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, 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 and 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 ENGINEER's standard submittal transmittal form. The form may be obtained in quantity from the ENGINEER. Any submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal.

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 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 otherwise provided herein, the ENGINEER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within 30 calendar days following their receipt 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 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 words, 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 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 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 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 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 submittal 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, time, or requirements.

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 so 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 thereby shall be the total responsibility of the CONTRACTOR.

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.

L. Electronic transmission may be acceptable for some submittals if agreed to by the ENGINEER.

1.3 SAMPLES SUBMITTAL

A. Whenever in the Specifications samples are required, the CONTRACTOR shall submit not less than 3 samples of each item or material to the ENGINEER for acceptance at no 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 set of the samples will be stamped and dated by the ENGINEER and returned to the CONTRACTOR, and one set of samples will be retained by the ENGINEER, and one 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 price, the CONTRACTOR will clearly indicate this on the transmittal page of the submittal.

1.4 TECHNICAL MANUAL SUBMITTAL

A. Using the outline provided in the Equipment Maintenance Summary Sheet (copy of which may be obtained from the ENGINEER), the CONTRACTOR shall include in the technical 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.
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 contact settings.

B. The CONTRACTOR shall furnish to the ENGINEER 5 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 in final form to the ENGINEER not later than the 75 percent of construction completion date. All discrepancies found by the ENGINEER in the technical manuals shall be corrected by the CONTRACTOR within 30 days from the date of written notification by the ENGINEER.

D. Incomplete or unacceptable technical manuals at the 75 percent construction completion point shall constitute sufficient justification to withhold payment for WORK completed beyond that period in accordance with Paragraph “Technical Manual Submittal” of Section 01700, “Project Closeout.”

1.5 SPARE PARTS LIST SUBMITTAL

A. The CONTRACTOR shall furnish to the ENGINEER 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 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 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 quality 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.
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 contractors affected by the resulting change.

B. The procedure for review by the ENGINEER will include the following:

1. If the CONTRACTOR wishes 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 of Award.
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 Forms" 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.
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 CERTIFICATON 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, ASTM and/or CBJ 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)

SUBSTITUTION REQUEST FORM

TO: _____ Project: _____
Contract No. _____
OWNER: _____

SPECIFIED ITEM:

Section	Page	Paragraph	Description
_____	_____	_____	_____

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: _____
Signature _____
Firm: _____
By: _____
Title: _____
Date: _____
Attachments: _____

Reviewed by ARCHITECT/ENGINEER_____
☐ Accepted ☐ Accepted as Noted
☐ Not Accepted ☐ Received Too Late
Date: _____
Telephone: _____

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.

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. Obtaining all required PERMITS.
4. Having all OSHA required notices and establishment of safety programs.
5. Having the CONTRACTOR's superintendent at the job site full time.
6. 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.
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.

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.

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.

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

B. 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 Underground 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.

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 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.

B. 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.

C. 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 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. Beach Road is used by the public. Traffic control devices, warning signs and public notification are required to avoid all risks to the public that uses the roadway. Provide the ENGINEER with CONTRACTOR’s traffic control plan meeting DOT&PF approval.

C. The CONTRACTOR shall submit three (3) DOT&PF 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.

D. 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.

E. 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.

F. 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.

G. 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.

H. 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.

I. 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.

J. 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.

K. 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 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.

L. 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.

M. 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.

N. 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.

O. 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.

P. 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.

Q. 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.

R. 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.

S. 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.

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.

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. 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.

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 EAGLE NESTING TREES

A. Eagle nesting trees are known to exist in Southeast Alaska. Those known to exist are shown on the Plans. 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 local Noise Ordinance.

1.8 SILTATION AND TURBIDITY DURING ROCK-SOCKETED PILE INSTALLATIONS

A. The CONTRACTOR shall install a silt containment boom to surround all pile installation equipment and operations during rock-socketing procedures.

B. Maintain and relocate silt containment boom as required to control turbidity.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01570 - EROSION CONTROL

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide for erosion control during construction. All sedimentation from on-site drainage shall be caught on-site.

B. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to construct and maintain erosion control works; including but not limited to, silt fences, settling ponds, hay or straw bale check dams, ditches, etc.

PART 2 - PRODUCTS

2.1 MATERIALS. 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 shall install temporary erosion control structures as necessary and/or as directed by the ENGINEER. They shall be maintained in effective operating condition at all times. Settling ponds and silt fences shall be cleaned whenever they have become half-filled with silt or debris, and other items shall be cleaned, repaired, or replaced as necessary.

B. Temporary erosion control structures shall remain in place until replaced by permanent erosion control WORK, or until the ENGINEER approves their removal.

C. All temporary erosion control WORK shall be incidental to the other items in the Contract. The CONTRACTOR shall be responsible for all permits required near streams and water bodies and, therefore, shall be responsible for the quality of the run- off water from the Project site and for any fine and penalties resulting from the construction operation.

D. The CONTRACTOR shall submit an erosion control plan to the ENGINEER, prior to beginning any WORK at the Project site. No WORK at the Project site will be permitted until approval of this plan has been obtained from the governing agency or agencies.

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.

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 complied 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 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 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. Completed Certificate of Compliance and Release for all contractors involved in the WORK. Submit the original signed document to Mark Earnest, Borough Manager.

1.4 MAINTENANCE AND GUARANTEE

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

B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a 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 a 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 his surety shall be liable to the OWNER for the cost thereof.

1.5 BOND. The CONTRACTOR shall provide a bond to guarantee performance of the provisions contained in Paragraph "Maintenance and Guarantee" above, and Article 13 of the General Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 01700 - PROJECT CLOSE-OUT

CERTIFICATE OF COMPLIANCE AND RELEASE

PROJECT: _____
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 that 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 OWNER 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.

_____ Capacity: CONTRACTOR
Firm Name

_____ _____ _____
Signed Printed Name and Title Date

Return completed form to: Mark Earnest, Borough Manager, P.O. Box 1209, Haines, AK 99827.

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, SALVAGE AND DISPOSAL

PART 1 - GENERAL

1.1 DESCRIPTION

A. 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.

1.2 SUBMITTALS

A. Provide public notification in local newspaper and on local radio to notify public of anticipated interruption to traffic along Beach Road, interruption of access and parking services within the general dock and harbor areas, or interruption to moorage. Provide copy of all public notices to the ENGINEER for review prior to placing notices.

PART 2 - PRODUCTS (Not Used).

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. 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.

B. Prior to commencement of WORK, the CONTRACTOR shall conduct a survey to determine best fit alignment of existing structures as described in section 02702 – Construction Surveying

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

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

3.2 DEMOLITION, SALVAGE AND DISPOSAL

A. The CONTRACTOR shall coordinate with OWNER on the schedule and sequencing of dock/trestle removal at least five working days prior to commencement of any demolition activities.

B. Items designated for salvage at the PORT CHILKOOT DOCK shall be delivered to the timber disposal site shown on the Plans.

C. The existing gangway at PORT CHILKOOT DOCK shall be salvaged and delivered to the LETNIKOF COVE HARBOR RENOVATION project. Salvaged gangway items include the gangway, the gangway mounting assembly, transition plates, guide angles and any other appurtenances as shown on the Plans.

D. Items designated for salvage at LETNIKOF COVE HARBOR shall be placed in the uplands parking area adjacent to the harbor as shown on the Plans.

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

F. Repair any damage to existing facilities designated to remain.

G. Place construction signs and barricades as required preventing public entry into WORK area.

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.

C. There shall be zero grade change in the ACP that remains.

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 EXCAVATION. All excavation shall be unclassified excavation, and shall consist of excavation and disposal or use of all materials, of whatever character, encountered in the WORK.

2.2 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 500 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	20 – 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 of lengths no greater than twice the designated screen diameter.

C. Class A shot rock borrow shall contain no muck, frozen material, roots, sod or other deleterious matter.

PART 3 - EXECUTION

3.1 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. Where excavation to the limits indicated on the Plans encounters unsuitable underlying material, the ENGINEER may require the CONTRACTOR to 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.

D. Excavated soils that do not meet the requirements for embankment material and surplus suitable excavation shall be disposed of by the CONTRACTOR at a location and in a manner approved by the ENGINEER. No material may be wasted without the prior approval of the ENGINEER

E. 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 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.

F. Temporary storage of useable or suitable excavation is the responsibility of the CONTRACTOR, and no additional payment will be made.

G. If the CONTRACTOR fails to comply with the provisions of any city ordinance or permit pertaining to waste disposal or 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.

H. The CONTRACTOR shall conduct all operations to prevent contaminating useable excavation with unsuitable material.

I. When frozen material is excavated and meets all other requirements for embankment material, 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.

J. 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.

K. 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.

3.2 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.

B. The underlying ground shall be properly prepared and graded 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 sufficient depth 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 so as to avoid further damage.

G. The finish subgrade surface shall not vary more than 0.1-foot when tested using a 10-foot straightedge, nor 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.

3.3 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.

3.4 EMBANKMENTS CONSTRUCTED WITH CLASS A SHOT ROCK BORROW.

A. 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, pockets and bridging will be reduced to a minimum. 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. 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. Compaction of embankments constructed with Class A Shot Rock Borrow, shall be achieved utilizing a minimum level of compactive effort defined as 6 complete coverage passes with a 10-ton vibratory steel drum roller suitably equipped by the manufacturer for compacting shot rock materials.

END OF SECTION

SECTION 02203 - TRENCHING

PART 1 - GENERAL

1.1 GENERAL

A. The WORK under this section includes providing all labor, materials, tools and equipment necessary for the excavation and backfill required for installation of pipelines, and other appurtenances; and for ground surface restoration.

B. The WORK under this section shall be considered incidental to the pipelines, structures or appurtenances to which this WORK applies as shown in the Plans or directed by the ENGINEER.

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 Bedding 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
1½ -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	35-75
No. 4	20-35
No. 200	0-6

D. Drain rock shall be approximately 2” washed rock free of muck, frozen material, lumps, organic material, trash, lumber or other debris with no more than 3% material passing through a ¼” screen.

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, which is 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 conforming to the requirements of Class A Shot Rock Borrow Section 02202-Excavation and Embankment.

B. Material and installation costs of imported backfill shall be incidental to trenching.

2.5 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall conform to that specified in 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.

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 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 waterline 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. The CONTRACTOR recognizes all in-water work restrictions and shall adhere to the requirements set-forth by applicable agencies regarding such restrictions.

O. Care shall be taken while performing trench excavations required adjacent to the MSE Retaining Wall to not damage the existing geogrid and geotextile reinforcements.

1. Excavations shall be completed using a bladed sand and gravel bucket or other means that will not result tearing, cutting or damage to the existing geogrid or geotextile.

2. Existing geogrid is located at elevations between existing MSE wall concrete blocks at approximately two foot intervals. Excavate to expose each layer of geogrid reinforcement and roll back geogrid against concrete blocks prior to excavating the succeeding layer.

3.2 BEDDING

A. Bedding shall be placed in conformance with the lines and grades shown on the Plans. 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 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. 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.

C. 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.

D. 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.

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-WAQTC FOP for AASHTO 310. The initial density test for any class of bedding material 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 for any bedding material, shall be paid for by the CONTRACTOR.

2. 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. Such tests shall be paid for by the CONTRACTOR.

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 imported backfill. The backfill and/or imported backfill shall be compacted to 95% of maximum density, as determined by AASHTO T 180-D. Lifts shall not exceed 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. Backfill required within the MSE retaining wall geogrid reinforcement fill prism shall be completed in accordance with Section 02726-MSE Retaining Wall Reconfiguration.

3.4 RIP RAP/ ARMOR ROCK REPLACEMENT

A. All rip rap and armor rock disturbed during trenching WORK shall be replaced to pre-construction configuration unless otherwise indicated in the Plans or directed by the engineer.

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*, published by the Alaska Department of Transportation and Public Facilities, (ATM).

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
Sodium Sulfate Loss, %	9 max.	AASHTO T 104

3. Aggregate hall 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 in the Plans:

Sieve Designation	A	B	C	C-1	D	D-1	E	E-1
4	100							
2	85-100	100						
1½				100				
1			100	70-100	100	100		
¾				60-90		70-100		100
3/8				45-75		50-80		
No. 4	30-60	30-70	40-75	30-60	45-80	35-65		45-80
No. 8				22-52		20-50		32-80
No. 10			25-55		30-65			
No. 40				8 -30		8-30		
No. 200	0-10	3-10	4-10	0-6	4-12	0-6	0-6	0-6

C. For gradings 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 gradings 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.

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 density of 95% 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, with additional stakes at vertical curves.

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. 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 to 95% of its maximum density as determined by AASHTO T 180-D before the succeeding layer is placed.

F. 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 base course 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. The initial density test for any class of base course material 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 for any base course material, shall be paid for by the CONTRACTOR.

2. 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. Such tests shall be paid for by the CONTRACTOR.

G. Blading, rolling, compacting and tamping shall continue until the surface is smooth and free from waves and irregularities.

H. If at any time the base course 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.

I. 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.

END OF SECTION

02601 – WATER SYSTEM

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 the domestic water system to include buried and suspended water pipe and fittings, enclosures and equipment, thrust blocks, tie rods, electrical continuity, disinfection and testing. The CONTRACTOR shall install the water pipe and fittings to the horizontal and vertical alignment shown on the Plans and shall complete all associated WORK described in this Section.

B. All water system components shall have NSF 61 certification unless otherwise approved by the Engineer.

1. Lead free NSF 61 certified lead free products shall be provided where available.

C. All water system components shall have a minimum pressure rating of 150 p.s.i. unless otherwise specified.

1.2 REFERENCES

A. ASME – American Society of Mechanical Engineers

B. ASSE-- American Society of Sanitary Engineering

C. ASTM – American Society for Testing and Materials

D. AWWA- American Water Works Association

E. DIPRA- Ductile Iron Pipe Research Association

F. NSF – National Science Foundation

G. PPI – Plastic Pipe Institute

1.3 SUBMITTALS

A.	Water pipe and fittings:	Material certifications and catalogue cut sheets.
B.	Waterline appurtenances:	Catalogue cut sheets.
C.	HDPE fusion technician:	Certificate of fitness.
D.	Flanges and backup rings:	Material certifications and shop drawings
E.	Meter Enclosures:	Material certifications, shop drawings, warranty information and all components cut sheets.

F. Steel Component: Shop drawings per Section 05120- Metal Fabrication

G. On catalogue sheets with more than one item clearly indicate which item shall be utilized.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE (DIP)

A. Ductile iron water pipe (DIP) shall conform to the requirements of AWWA C151, with cement mortar lining conforming to the requirements of AWWA C104. Standard Thickness Class 52 pipe shall be used unless otherwise shown on the Plans. Water pipe shall have an exterior bituminous coating conforming to the requirements of AWWA C110. All water pipe shall be clearly marked with the manufacturer's name, type, class and/or thickness as applicable. Lettering shall be legible and permanent under normal conditions of handling and storage.

2.2 DIP JOINTS

A. Unless otherwise shown on the Plans, or as specified below, pipe joints shall be push-on rubber gasket type conforming to the requirements of AWWA C111.

B. DIP placed within pipe casings shall have restrained joint connections.

C. Restrained joint water pipe shall be U.S. Pipe TR FLEX, U.S. Pipe field Loc Gasket, EBBA IRON "Mega-lug System," Griffin Snap Lock, Pacific State Lock Mechanical type, or approved equal. Restrained push-on joints for pipe shall be designed for a water working pressure of 250 psi and shall be capable of being deflected a minimum of 3 per joint, for pipe sizes through 18 inches, after assembly.

2.3 DIP FITTINGS

A. Fittings for all ductile iron water pipe and restrained joint water pipe shall be U.S. Pipe TR FLEX, push-on gasket fittings compatible with U.S. Pipe Field Loc Gasket, mechanical joint fittings with EBBA IRON "Mega-lug System" Griffin Snap Lock, Pacific State Lock Mechanical Type, or approved equal.

B. For connecting to existing water mains, the CONTRACTOR shall use a mechanical joint tee and a mechanical joint cut-in-sleeve similar to Clow F-1220 or Mueller H-843, or a cast iron coupling similar to Rockwell 431, or approved equal. The length of all sleeves and couplings shall equal or exceed the diameter of the pipe.

C. All valve clusters consisting of a tee and one or more valves, including fire hydrant legs, shall be monolithically restrained with EBBA Iron "Mega-lug System," or approved equal.

2.4 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.

B. HDPE waterline pipe shall be rated for a minimum 150 psi.

C. HDPE fittings shall be PE4710 with the cell classification noted above. Fittings shall be molded or fabricated 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.
4. All components shall be NSF-61 certified.

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 flange shall be per ASTM D 3261. Fabricated flange adapters shall be per ASTM F 2206.

1. Back-up rings, bolts and associated hardware shall be 316 stainless steel where submerged and hot dip galvanized elsewhere unless otherwise noted in the Plans and shall be provided in accordance with Section 05120-Metal Fabrication. Installation shall follow the guidelines of Plastic Pipe Institute Technical Note # 38. 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 at a minimum equal to the pressure-class of the pipe with which the flange adapter assembly will be used, and such pressure rating shall be clearly marked on the back-up ring.

E. Service connections shall be electro-fusion saddles, sidewall fusion branch saddles, or manufactured tapping tees made from materials specified in Part 2.4C unless otherwise noted on the Plans or approved by the ENGINEER. When service connections require a change in pipe material, transitions shall be made with a 316 stainless steel threaded outlet unless otherwise noted in the Plans. Mechanical strap-on saddles shall only be permitted upon ENGINEER approval, and must be approved by the manufacturer for use on HDPE pipe. Mechanical strap-on saddles shall be entirely constructed of 316 s.s. unless otherwise noted or approved by the engineer. All service connections shall be installed per manufacturer's recommendations.

1. Service connection outlet size shall be threaded IPS of the size noted in the Plans.

2. The size of a sidewall fusion saddle shall be as indicated on the plans. The saddle shall be made in accordance with ASTM D 3261 or ASTM F 2206. After installation, approximately ¼" of the PE pipe shall be visible beyond the saddle to confirm that proper surface preparation occurred. Saddle faces that do not provided ¼ inch of area beyond the saddle are not acceptable.

3. Tapping tees shall conform to ASTM D3261.

F. Transition fittings shall be full bore, butt fusion type IPS transitions of the size and material noted on the Plans.

1. Where transitioning to steel pipe transition shall be 316 stainless steel unless otherwise noted.

2. Where transitioning to copper, brass or bronze pipe transitions shall be red brass or silicon bronze respectively.

G. HDPE ball valves shall be PE 4710 full bore type with a minimum pressure rating greater than or equal to that of the pipe and a 2" operation nut.

1. HDPE ball valves shall be butt fusion type unless otherwise noted in the Plans.

2. CONTRACTOR to confirm compatibility with valve operation riser assembly prior to material order.

2.5 STANDARD STEEL PIPE AND FITTINGS

A. Steel pipe and fittings shall be provided in accordance with Section 05120-Metal Fabrication and shall be NSF-61 listed. Steel fittings shall conform to AWWA C208 and shall be NSF 61 listed.

B. Steel flanges shall conform to AWWA C228 and C207 as applicable and shall be factory welded or onto pipe as noted in the plans per AWS recommendations. Flanges shall be provided in accordance with Section 05120-Metal Fabrication.

C. Bolts, nuts, and other miscellaneous hardware shall be hot dip galvanized unless otherwise noted in the Plans and shall be provided according to section 05120-Metal Fabrication.

2.6 STAINLESS STEEL PIPE AND FITTINGS

A. Stainless steel pipe and fittings shall conform to AWWA C220, C226 and Section 05120-Metal Fabrication. Stainless steel pipe and fittings shall be NSF 61 listed.

B. Stainless steel flanges shall conform to AWWA C228 and C207 as applicable and shall be factory welded onto pipe as noted in the plans per AWS recommendations. Flanges shall be provided in accordance with Section 05120-Metal Fabrication.

C. Bolts, nuts, and other miscellaneous hardware shall be 316 s.s. unless otherwise noted in the Plans and shall be provided according to section 05120-Metal Fabrication.

2.7 BRASS AND BRONZE PIPE AND FITTINGS

A. All brass pipe and fitting shall be rated for 150 psi min.

B. Brass pipe shall be threaded schedule 40 “red brass.” unless otherwise noted.

C. Fittings shall be threaded “red brass.” or flanged where noted.

D. Flanges shall be of similar construction and performance standards as the flanged components to which they are connecting.

E. Pipe and fittings shall be NSF 61 lead free certified.

2.8 LUBRICANT

A. The lubricant shall be suitable, and acceptable by the manufacturer and the Haines Borough Water Utility for lubricating the parts of the joint for assembly. The lubricant shall be non-toxic, "industrial food grade", shall not support the growth of bacteria, and shall have no deteriorating effects on the gasket material. It shall not impart taste or odor to the water in a pipe that has been flushed in accordance with AWWA C601, "Standard for Disinfecting Water Mains". The lubricant containers shall be labeled with the trade name or trademark and the pipe manufacturer's name where applicable."

2.9 THAW WIRE

A. Thaw wire and continuity straps shall be No. 2 copper wire, stranded, with HMWPE insulation. Exothermic welding to attach continuity straps on DIP and fittings shall be “Cadweld” or approved equal and coated with bituminous coating.

2.10 UNDERGROUND MARKING TAPE

A. Underground marking tape for ductile iron, copper, or steel water pipe shall be blue, six inch wide, four mil thick, polyethylene tape with black lettering with the following wording: “Caution: Waterline Buried Below.” Marking tape shall be installed 12 inches above the top of all water pipe.

B. For HDPE water pipe the Contractor shall provide and install a detectable locator tape with black lettering with the following wording: “Caution: Waterline Buried Below.” The locator tape shall not be less than five (5) mil, foil backed, and six inch (6”) wide vinyl tape. The Contractor shall install the locator tape above and parallel to the axis of the utility with no breaks in continuity. The Contractor shall install the locator tape three feet (3’) below finish grade or two feet (2’) deep in the street structural section. Installation of the locator tape is considered incidental to Water System.

2.11 INSULATION BOARD

A. Insulation board shall required around buried water pipe per Engineer Direction where the depth of cover to top of pipe is less than five (5) feet, 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 *Dow Chemical Company, Styrofoam Highload 40,* or approved equal.

2.12 TIE RODS

A. Tie rods shall be threaded black iron or mild steel with a 12-mil minimum asphaltic coating and shall be located symmetrically around the perimeter of the pipe using anchorage lugs of standard manufacture for attachment where required. Unless otherwise shown on the Plans, the number and size of the rods shall be as shown on the table below:

PIPE SIZE	TIE ROD SIZE	NO. OF RODS
4" – 10"	¾"	2
12" – 16"	¾"	4
18" – 20"	¾"	6
22"	1"	4
24"	1"	6

2.13 CONCRETE

A. Concrete for thrust blocks shall conform to Section 03301 – Structural Concrete unless otherwise indicated.

2.14 UPLAND WATER SYSTEM COMPONENTS

A. Upland meter enclosure shall be a *"Lok-Box" model LB8NS* as manufactured by *Hubbel* or approved equal enclosure fabricated to the dimensions shown on the plans.

1. Enclosure shall be constructed to meet local building code with substantial attention paid to snow and wind loads.

B. The upland water meter shall be *Sensus Omni C2 Lead Free Meter* with built in strainer and *Radio Read model 510R* remote meter reading transmitter as manufactured by *Sensus* mounted to a nearby parking bumper.

1. Meter shall provide readout in gallons.

2. Radio Transmitter electrical cable shall be routed in buried conduit conforming to Division 16000 - Electrical.

C. The backflow prevention assembly shall be *Wilkins model 375 Lead Free Reduced Pressure Zone Assembly.*

D. Dismantling joint shall be *Romac DJ400* or approved equal.

E. Pipe supports shall hot dip galvanized per Section 05120 – Metal Fabrication.

1. Pipe supports shall be mounted to the concrete slab on grade with $^{3}/_{8}$" *Simpson Strong Tie ET-HP Epoxy Anchors*. Install per manufacturers explicit instructions.

F. The drain service saddle shall be *Mueller BR2S Series* with (2) Stainless steel straps or approved equal.

G. Corporation stop shall be *Mueller 300 Ball Valve* type with iron pipe thread inlet and outlet or approved equal.

H. Curb stop shall be quarter turn ball valve type with drain and iron pipe thread inlet and outlet.

I. Curb box shall be a stationary rod type. Provide curb box sleeve around top of curb box within concrete slab.

J. Removable blow-off adapter shall be a tapped steel blind flange provided of similar construction and performance standards as the ductile iron pipe flanges.

2.15 TRESTLE WATER SYSTEM COMPONENTS

A. Trestle water meter enclosures shall be constructed of 5086-H116 marine grade aluminum per ASTM B-928 to the performance standards specified in ASSE 1060-2006 for a Class III enclosure.

1. Enclosures shall be lockable.
2. Enclosures shall be vandal and weather resistant.
3. Enclosures shall be constructed to the dimensions shown on the Plans.
4. Enclosures may be open bottom.
5. Enclosure lids shall open a maximum of 15° past vertical as shown in the Plans and shall be capable of staying open without being held.
6. Enclosures shall be fabricated using industry standard bending, folding, welding and finishing techniques to ensure no burrs or sharp edges exist.
7. Mounting and other hardware used in the construction of the enclosures shall be 304 SS and shall be isolated from un-similar materials to prevent galvanic corrosion.
8. Enclosures shall be mounted to the deck with ½" x 3" minimum 304 SS lag bolts per manufacturer's recommendations.
9. Enclosures shall be warranted against manufacturer and material defects for a minimum of two years from the date of installation. Warranty may be a replacement warranty from the CONTRACTOR.
10. Enclosures shall be constructed to meet local building codes with substantial attention paid to snow and wind loads.
11. Submit enclosure shop drawings and warranty information to the ENGINEER.

B. Water meters shall be *Sensus Omni C2 Lead Free Meter* with built in strainer and remote reader mounted to nearby bull rail per Owner direction, and shall provide readout in gallons. All cable shall be routed in conduit per Division 16 - Electrical.

C. Thrust resistant pipe stand shall be hot dip galvanized in accordance with Section 05120-Metal Fabrication.

D. Angle valves shall be bronze or brass manufactured by *Nibco* or approved equal rated for 150 psi minimum. With fire department compatible threads and brass cap attached with chain.

E. Hose outlets shall be Mueller Industries Proline Series Quartermaster Item No. 104-82* ¼ Turn Anti-Siphon Frost Free Sillcock or approved equal sized to mount to handrail as shown in the Plans.

1. Hose outlets at cruise ship service and queuing deck shall be Mueller Industries Proline Series Quartermaster Item No. 108-054HN ¼ turn sill cock or approved equal.

F. Pipe hangers, pipe supports, steel stands, plates, other miscellaneous steel shapes and all hardware shall be hot dip galvanized unless otherwise noted and provided in accordance with the provisions of Section 05120-Metal Fabrication.

G. Ultra High Molecular Weight (UHMW) Polyethylene components shall be manufactured from virgin polyethylene material, be U.V. stabilized and shall be partially cross-linked. UHMW components shall be black in color, unless otherwise noted, and edges chamfered as shown on Plans.

PART 3 - EXECUTION

3.1 GENERAL

A. 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.

B. 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.

C. The CONTRACTOR shall give at least 24 hours notice to the Haines Borough Water and Wastewater Utility Divisions and the Haines Borough and Harbors Department prior to:

1. needing water or sewer main line locates;
2. interruption of water service in any area; or
3. use of water from any fire hydrant.

D. Any water service disruption shall be restored as soon as possible. The CONTRACTOR shall comply with the current policy on "Water and Sewer Line Locates" of the Haines Borough Public Works Department, Water and Wastewater Utilities Divisions. The CONTRACTOR shall notify all local radio stations and any major customers who will be affected of a planned water service disruption.

E. The CONTRACTOR is responsible for maintaining continuous water service at existing volume and pressure to all structures, with either existing, temporary or new piping, except as provided in this Section.

3.2 PIPE INSTALLATION

A. All water 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 water pipe, the cut shall be made by abrasive saw or by special pipe cutter.

C. The water pipe shall be laid to the horizontal and vertical alignment shown on the Plans. A minimum five foot cover shall be maintained from finish grade to top of water pipe, unless otherwise shown on the Plans. 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. Existing water pipe and appurtenances to be removed or abandoned shall be as designated on the Plans or directed by the ENGINEER. Abandoned water services shall be plugged at the cut ends. Abandoned water pipes shall be removed as shown on the Plans, or mechanically plugged if not required to be removed.

3.3 DUCTILE IRON PIPE INSTALLATION

A. Existing ductile iron pipe systems in the area may contain US Pipe Tyton Joint pipe, US Pipe, field lock 350 gaskets, Tyler Union mechanical joint compact fittings, and Romac, Roma-Grip mechanical joint restraints. CONTRACTOR shall verify existing system pipe, fittings and appurtenances and ensure component and material compatibility with existing system.

1. Existing ductile iron pipe, fittings and components exterior of the MSE wall designated to be salvaged are coated with TNEMEC Pota-Pox Series 20 polymide epoxy coating. The CONTRACTOR shall reapply 2 coats of the coating to all exposed ductile iron pipe, fittings and appurtenances designated to remain. Apply per manufacturers recommendations.

B. Ductile iron water pipe shall be installed in accordance with the manufacturer's printed specifications and instructions, and in conformance with AWWA C151.

C. Water pipe shall be handled carefully to prevent damage to the pipe, pipe lining, or coating. Water pipe and fittings shall be loaded and unloaded using hoists and slings to avoid shock or damage, and under no circumstances shall they be dropped, skidded, or rolled. If any part of the coating or lining is damaged, repair thereof shall be made in a manner satisfactory to the ENGINEER at the CONTRACTOR's expense.

D. All pipe ends shall be square with the longitudinal axis of the water pipe and shall be reamed and smoothed to assure a good connection.

E. Vertical deflections to avoid obstructions that exceed allowable water pipe joint deflections shall be accomplished by the use of fittings and either joint restraints or vertical thrust blocking conforming to the Standard Details. Additional fittings to those indicated on the Plans will be required to accomplish these vertical deflections.

F. Concrete thrust blocks shall be furnished and installed in accordance with the Plans.

G. Pressurized water pipe ends shall be plugged and thrust blocks installed. Volume and bearing area of thrust blocks for end plugs shall be equal to applicable standards for bends greater than 45°.

H. All pipe fittings shall be restrained with EBBA Iron "Megalug System," or approved equal.

I. All joints within 50 feet of tees or bends equal to or greater than 45 shall be restrained joints.

J. Polyethylene encasement shall be required in areas as shown on the plans.

K. Polyethylene encasement shall be installed in conformance to the methods described in the most current edition of AWWAC105/ANSI A21.5 and DIPRA's "A Guide for the Installation of Ductile Iron Pipe" and "Polyethylene Encasement".

3.4 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 outlined 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 the pipe manufacturer for each technician prior to beginning fusion operations.

B. Saddle fusion shall be done in accordance with the manufacturer's recommendations and ASTM F 2620. Saddle fusion joints shall be made by qualified fusion technicians. If the CONTRACTOR intends to use saddle fusion joints testing of sample joints may be required per the direction of the ENGINEER in accordance with ASTM F905.

C. 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.

D. Socket fusion joints are not permitted.

3.5 FLUSHING, TESTING AND DISINFECTION

A. Prior to; flushing, testing, disinfection or placement of any section of the water system into service, the procedures outlined by the manufacturers of the various system components shall be reviewed and followed as they apply. Should any of the Items in **Part 3-Execution** herein jeopardize the integrity or warranty of the various components according to the manufacturers printed literature the CONTRACTOR shall consult with the ENGINEER prior to proceeding. Any damage incurred due to the failure to comply with this provision shall be repaired in a manner satisfactory to the ENGINEER at the CONTRACTOR's expense.

B. Prior to acceptance, the CONTRACTOR shall "Open-Bore" flush the water pipe then perform hydrostatic tests, electrical continuity tests, and disinfection and coliform tests. Testing may be done in any sequence. However, in the event the disinfection, coliform and continuity tests have been performed and repairs are made to the water pipe system in order to pass the hydrostatic test, all previous tests and the "Open-Bore" flushing shall be repeated to the satisfaction of the ENGINEER.

3.6 OPEN-BORE FLUSHING

A. Open bore flushing is required of all installed water pipes to remove any foreign matter. The CONTRACTOR shall furnish, install and remove all pumps, fittings and pipes necessary to perform the flushing; shall provide all additional excavation and backfill; and shall dispose of all water and debris flushed from the water pipe. Flushing through fire hydrants, reduced outlets or fittings shall not be permitted unless specifically authorized in writing by the ENGINEER. The CONTRACTOR shall notify the ENGINEER and the Haines Borough Water Utility Division, in writing, 48 hours in advance of any flushing operation. A flushing scheme and schedule shall be submitted by the CONTRACTOR for review and approval by the ENGINEER prior to flushing. The schedule for flushing must be approved by the Haines Borough Water Utility Division and all flushing operations shall be done in the presence of the Haines Borough Water Utility Division unless otherwise approved in writing. The CONTRACTOR shall be responsible for obtaining any permits necessary for flushing operations.

3.7 HYDROSTATIC TESTING

A. 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.

B. Sections to be tested shall be limited to 1,500 feet, unless otherwise approved in writing by the ENGINEER.

C. Hydrostatic testing will be conducted in the presence of the ENGINEER on newly installed water pipes after "Open-Bore" flushing, in accordance with the requirements of AWWA C600 or C901 and as stated hereafter. The CONTRACTOR shall furnish all assistance, equipment, labor, materials, and supplies necessary to complete the test to the satisfaction of the ENGINEER. The CONTRACTOR shall suitably valve-off or plug the outlet to existing or previously-tested water pipe prior to performing the required hydrostatic test. Prior to testing, all air shall be expelled from the water pipe. If permanent air vents are not available to accommodate testing, the CONTRACTOR shall install corporation stops and blow-off lines so the air can be expelled as the line is filled with water.

D. 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.

E. After completion of testing, all test and air vent pipe shall be removed and the corporation stop closed at the water pipe, in the presence of the ENGINEER.

3.8 DIP HYDROSTATIC TESTING PROCEDURE

A. The DIP hydrostatic test pressure shall be a minimum of 150 psi or 1½ times the operating pressure of the water pipe (measured at the highest elevation of the newly-installed water pipe), whichever is greater, unless otherwise directed by the ENGINEER. Acceptance pressure testing shall be done with all service lines installed, corporation stops open, and pressure against the closed curb stops. The duration of each hydrostatic pressure test shall be one hour. Pumping will cease after the required test pressure has been reached. If the pressure remains constant for one hour without additional pumping, or pressure drop is less than five psi, that section of water pipe is acceptable.

B. If the pressure drops five (5) psi or more during the initial one hour hydrostatic pressure test, the CONTRACTOR shall conduct a leakage test. Leakage shall be determined by measuring "make-up" water necessary to restore the specified test pressure. The quantity of water lost from the water pipe shall not exceed the number of gallons per hour as determined by the following formula:

$$\frac{ND\sqrt{P}}{L} = 7400$$

L= Allowable leakage in gallons per hour

N= Summation of mechanical and push-on joints in length of water pipe tested

D= Diameter of water pipe in inches

P= Test pressure in pounds per square inch

C. Should the tested section fail to meet the pressure test as specified, the CONTRACTOR shall locate and repair the defects and then retest the water pipe as specified above. Any specific leakage point detected shall be corrected by the CONTRACTOR to the satisfaction of the ENGINEER regardless of the allowable leakage specified above.

D. If applicable, tests shall be performed with the auxiliary gate valves open and pressure against the hydrant. After the hydrostatic test has been successfully completed, each valve shall be tested by closing in turn and relieving the pressure beyond. This test of the valves will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The CONTRACTOR shall verify that the pressure differential across the valve does not exceed the rated working pressure of the valve.

3.9 HDPE HYDROSTATIC TESTING PROCEDURE

A. Testing shall be performed with water only. Compressed gas will not be accepted as a suitable test medium.

B. The hydrostatic test pressure shall be a minimum of 150 psi or 1½ times the operating pressure of the water pipe (measured at the highest elevation of the newly-installed water pipe), whichever is greater, unless otherwise directed by the ENGINEER. Acceptance pressure testing shall be done with all service lines installed, corporation stops open, and pressure against the closed curb stops. If appurtenances in the system have a maximum pressure rating lower than that specified above they will be isolated from the system by the CONTRACTOR and tested separately per manufacturer's recommendations as approved by the ENGINEER. If isolation cannot reasonably be performed as determined by the ENGINEER the test pressure for the system shall be equal to 95% of the maximum operating pressure of the lowest pressure rated component in the system.

C. Testing shall be performed with all parts of the system within the test section installed in their design location to the extent possible and reasonable as determined by the ENGINEER. All parts of the section to be tested shall be restrained from movement in case of failure.

D. 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.

E. If DIP fire hydrant assemblies are present in the system perform DIP test item # 3.8-D above.

F. If the test section fails, depressurize the system and repair defective areas.

G. The system must be allowed to "relax" for a minimum of 8 hours prior to retesting.

3.10 ELECTRICAL CONTINUITY

A. Electrical continuity is required for six inch or smaller D I water pipe and fire hydrant assemblies, and shall be provided by two electrical continuity straps installed on each side of the water pipe joint or fittings. Electrical continuity tests will be performed by the CONTRACTOR in the presence of the Haines Borough Water Utility unless otherwise approved. The testing shall be performed in a manner that is approved by the ENGINEER.

B. "All resilient seat gate valves 6 inch and smaller are required to have a thaw wire either bolted or cad welded to the valve body, and raised through the inside of the valve box, therefore making it available for both continuity testing, and thawing. An additional thaw wire will still need to be attached to the main, and coiled around the outside of the box according to the Plans.

C. If the initial testing of an installation within any Project phase fails, additional testing required shall be at the CONTRACTOR's expense. The CONTRACTOR will maintain a circuit of 300 amps DC current for a period of 90 seconds. Current loss, through the test circuit, shall not exceed 10%. Continuity test sections shall not exceed 500 lineal feet. All test leads brought up to the surface shall be removed to a depth of two feet below finish grade upon completion of the tests.

3.11 DISINFECTION

A. Disinfection by chlorination of all new water pipe shall be completed and a satisfactory bacteriological report obtained prior to placing the pipe in service. "Open-bore" flushing shall be completed before chlorination is begun.

B. Chlorine shall be applied by one of the following methods:

1. liquid chlorine gas-water mixture;
2. direct chlorine gas feed; or
3. hypochlorite commercial products such as HTH, Perchloren, Macho-chlor, or approved equal.

The chlorinating agent shall be applied at the beginning of the section adjacent to the feeder connection, insuring treatment of the entire water pipe. Water shall be fed slowly into the new water pipe with chlorine applied in amounts to produce a dosage of 50 ppm. Application of the chlorine solution shall continue until the required residual of not less than 50 ppm free chlorine is evident at all extremities of the newly constructed line.

C. The chlorine gas-water mixture shall be applied by means of a solution-feed chlorinating device. Chlorine gas shall be fed directly from a chlorine cylinder equipped with a suitable device for regulating the rate of flow and the effective diffusion of gas within the water pipe. Hypochlorite products shall be placed or injected into the water pipe. During the chlorination process, all intermediate valves and accessories shall be operated. Valves shall be manipulated so that the strong chlorine solution in the water pipe being treated will not flow back into the pipe supplying the water.

D. The following table is to be used as a guide for chlorinating pipes by the calcium hypochlorite and water mixture method. The given dosage per 100 feet results in a chlorine solution of 40 to 50 ppm. This dosage takes into account that CONTRACTORs most frequently use granular HTH, which is 65% pure. If another chlorinating agent is used, the dosage must be adjusted.

PIPE DIAMETER	DOSAGE PER 100 FEET
4"	.60 oz.
6"	1.35 oz.
8"	2.75 oz.
10"	4.30 oz.
12"	6.19 oz.
16"	11.00 oz.
20"	17.00 oz.

E. A residual of not less than 50 ppm free chlorine shall be produced in all parts of the water pipe. After 24 hours detention there shall be a minimum free chlorine residual of 25 ppm in all parts of the water pipe. This residual shall then be neutralized in the pipe by injecting an approved reducing agent such as sulfur dioxide, sodium bisulfate, sodium sulfite or sodium thiosulfate.

F. After the water pipe system has been thoroughly flushed, samples will be taken at representative locations in the system by the ENGINEER, placed in sterile bottles, and submitted to an approved laboratory for bacteriological examination. The presence of bacteria in any sample shall be verified with a second sample at the same location. If verified, the pipe disinfection procedure shall be repeated and additional samples taken for bacteriological examination. Pipe disinfection shall be repeated, at the CONTRACTOR's expense, until satisfactory results are obtained. The first testing sequence will be paid for by the OWNER. Any further testing and sampling required due to insufficient disinfection (positive coliform tests) will be paid for by the CONTRACTOR.

G. The water shall be flushed from the water pipe at its extremities, including all curb stops, until the replacement water chlorine residuals are equal to those of the permanent source of supply. The de-chlorinated water and water used for flushing shall be disposed of in a manner approved by the ENGINEER and in conformance with current requirements of the Alaska Department of Fish and Game, and the Alaska Department of Environmental Conservation.

PART 4 - ACCEPTANCE

4.1 HAINES BOROUGH

A. Prior to acceptance the Contractor shall contact the Haines Borough Water Utility and have the meter enclosures, meters, and backflow prevention devices inspected and approved by a Haines Borough Official.

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.

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 CONTRACTOR shall conduct a survey, under the Base Bid, to establish best fit alignment of the existing trestle and cruise ship approach dock structures as indicated on the Plans. CONTRACTOR to set field control reference stakes to establish layout of new structures prior to the onset of demolition activities. Submit to ENGINEER for approval.

C. The CONTRACTOR shall conduct a survey, under Additive Alternate A, to establish location of steel pipe moorage float at LETNIKOF COVE HARBOR prior to replacement of the anchor chains as indicated on the Plans.

D. 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.

E. 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.

F. The CONTRACTOR shall provide the OWNER with a copy of all surveyor's notes, if requested by the ENGINEER, prior to each Pay Request, which payment for Pay Item No. 2702.1, Construction Surveying, is increased from the previous Pay Request.

G. 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.

H. 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.

I. 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.

J. The CONTRACTOR shall perform all staking necessary to delineate clearing and/or grubbing limits; all cross sections necessary for determination of excavation, embankment, including preliminary, intermediate and/or re-measure cross sections as may be required; all slope staking; all staking and all staking of culverts and drainage structures, 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; 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.

K. The CONTRACTOR's field books shall be available for inspection by the ENGINEER at any time.

L. 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.

M. 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.

END OF SECTION

SECTION 02707 – HANDRAIL

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK in this section shall include all labor, materials, tools and equipment necessary for fabrication and installation of the handrail, and all other hardware and related WORK in accordance with the requirements of the Contract Documents and as shown on the plans.

1.2 SUBMITTALS

A. Handrail Fabrication Shop Drawings – Submit handrail segment lengths for approval.

B. Timber Grading and Pressure Treatment Certification

C. Structural Steel Submittals per Section 05120 – Metal Fabrication

D. Rubber Bearing Pads; submit manufacturers published literature for specific product.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All sawn timber shall be surfaced four sides (S4S) and graded in accordance with the West Coast Lumber Inspection Bureau Standard No. 17, meeting Douglas Fir No. 1 grade. All sawn timber shall be pressure treated with ACZA per AWPA C-2 to a net dry salt retention of not less than 0.6 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4. Bolt holes shall be 1/8 inch oversized.

B. Miscellaneous plates and shapes shall be ASTM A36, galvanized per ASTM A123 or A153. Pipe shall be ASTM A53, Grade B, Type E or S, galvanized per ASTM A123 or A153. All steel shall comply with Section 05120 – Metal Fabrication.

C. Bolts shall comply with Section 05120 – Metal Fabrication.

D. Neoprene Bearing Pads shall be rated with a minimum tensile strength of 2,500 psi and a durometer hardness of 50. Bearing pads shall be temperature rated to -20 degrees F, be ultraviolet resistant, and suitable for use in a marine environment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install as indicated on the plans.

B. CONTRACTOR shall utilize a string line or laser equipment to achieve a single line, horizontal alignment, parallel to the face to the MSE retaining wall, or edge of trestle deck for face of all handrail segments. Tolerance shall be such that handrail does not bow nor deviate from this single line, horizontal alignment by a distance greater than 1/4 inch. All handrail segments shall be installed plumb vertically and level except at elevation changes. Handrail shall be parallel to the surface to which it is mounted.

END OF SECTION

SECTION 02708 - GUARDRAIL

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 new W-Beam Guardrail with termination ends and/or extruder terminals, and remove and reconstruct existing guardrail as shown on the Plans and in conformance with the Specifications.

1.2 SUBMITTALS.

A. W-Beam guardrail details and manufactures certification including illustrations of all guardrail posts, blocks, hardware and appurtenances.

B. Guardrail terminal drawings and manufacture certification for standard W-Beam terminal connector.

1.3 REFERENCES

A. ASTM (American Society of Testing Materials) Specifications.

PART 2 - PRODUCTS

2.1 GUARDRAIL

A. Guardrail, terminal sections, and remove and reconstruct existing guardrail shall conform to Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction 2004 or latest edition, Section 606 Guardrail.

PART 3 - EXECUTION

3.1 CONSTRUCTION - GUARDRAIL

A. Install guardrail at the design locations shown on the Plans per Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction Section 606 and Standard Details as follows:

1. G-00.01 Standard Guardrails Hardware (Nuts, Bolts, Washers)
2. G-00.01 Standard Guardrails Hardware (Rails and Splices)
3. G-00.01 Standard Guardrails Hardware (Terminal Connectors)
4. G-04.06S Steel Post W-Beam Guardrail
5. G-04.07W Wood Post W-Beam Guardrail
6. G-20.10 Widening for Guardrail End Terminals

3.2 FIELD FIT

A. Minor adjustments in alignment may be made to field fit guardrail at no additional cost to the Owner.

END OF SECTION

SECTION 02726 –RETAINING WALL AND UPLAND MODIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION. The Work under this Section includes providing all labor, materials, tools and equipment necessary for reconfiguring a MSE (Mechanically Stabilized Earth) retaining wall with precast concrete facing blocks, geogrid reinforcement and geotextile reinforcement, as well as all upland modifications to include, excavation, embankments, shot rock borrow fill, base course, grading and drainage, concrete approach slab with galvanized rebar, ACP modifications, rip rap slope reconfiguration, in conformance with the Plans and Specifications.

1.2 SUBMITTALS.

A. Geotextile reinforcement catalog cuts and product data sheets.

B. Geogrid reinforcement catalog cuts and product data sheets.

C. Precast Concrete Facing Block product data sheet and concrete mix design.

D. Wall reconfiguration construction plan indicating placement methods and sequencing for demolition, reconfiguration and replacement, geotextile reinforcement, geogrid reinforcement, wall backfill and compaction.

PART 2 - REFERENCE DOCUMENTS

2.1 American Society for Testing and Materials (ASTM)

A. ASTM D-6637 Method A Ultimate Strength
B. ASTM D-5262 Creep Limited Strength
C. ASTM D 1682 Grab Tensile Strength
D. ASTM D 751 Bursting Strength

2.2 Geosynthetic Research Institute (GRI)

A. GRI-GG4 Determination of Long Term Design Strength of Geogrids
B. GRI-GG5 Test Methods of Geogrid (soil) Pullout

PART 3 - PRODUCTS

3.1 GEOTEXTILE REINFORCEMENT

A. The geotextile reinforcement 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 positions with respect to each other. The edges of the cloth shall be selvedge or otherwise finished to prevent the outer yarn from pulling away from the cloth.

C. The geotextile reinforcement, woven or non-woven, shall meet the following requirements:

1.	ASTM D 1682 Grab Tensile Strength	200 lbs. min.
2.	ASTM D 751 Bursting Strength	500 psi min.

3.2 GEOGRID REINFORCEMENT

A. Geogrid reinforcement used for wall reinforcement shall be STRATAGRID SG600 knitted geogrid reinforcement or approved equal. Geogrid shall be coated with an impregnated PVC coating that resists peeling, cracking, and stripping. The geogrid reinforcement rolls shall be tagged showing the number of square yards contained in each roll. Field seams in wall reinforcement geogrid will not be allowed. During shipment, storage and placement, the geogrid reinforcement shall be protected from direct sunlight, moisture, ultraviolet rays, temperatures greater than 140º F, mud, dirt, dust and debris.

B. Wall geogrid reinforcement shall meet the following physical and properties:

1.	ASTM D-6637 Method A Ultimate Strength	8150lbs/ft.
2.	ASTM D-5262 Creep Limited Strength	5062 lbs./ft.
3.	RF Inst. Damage (3/4” Minus angular aggregate)	1.1
4.	RF Inst. Damage (1.5” Minus angular aggregate)	1.2
5.	Soil Interaction Coefficient for Pullout and Direct Sliding for Gravel, Sand Gravel Mix, Well-Graded Sand (SW, GP, GW)	0.9-1.0

3.3 PRECAST CONCRETE FACING BLOCKS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Precast Concrete Facing Blocks:

Alaska Concrete Casting

C. Concrete Units: ASTM C 1372, Normal Weight, except that units shall not differ in height more than plus or minus 1/16 inch from specified dimension.

1. Provide units that comply with requirements for freeze-thaw durability.
2. Provide units that interlock with courses above and below by means of integral lugs or lips.

D. Shapes: Provide units of basic shape as shown on the drawing and dimensions that will produce facing units of the retaining wall having dimensions and profiles indicated without interfering with other elements of the Work and as follows:

1. Exposed Face: Machine-split textured, shaped face with deeply beveled vertical edges.
2. Batter: Provide units that offset from course below to provide a vertical batter of 1:12.

E. Cap Units: Provide recessed cap units.

F. Special Units: Provide corner units, end units, and other shapes as needed to produce MSE walls of dimensions and profiles indicated and to provide texture on exposed surfaces matching face.

G. Precast Concrete Facing Blocks concrete shall conform to the following:

1.	Minimum Cement Content (94 lb. sacks/cy)	7.0
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	5-8 %
6.	Coarse Aggregate (AASHTO Gradation)	No. 67
7.	Fine Aggregate (AASHTO Gradation)	M-6
8.	Minimum Design Strength, psi (f’c)	6,000

3.4 EXCAVATION

A. All excavation shall be classified as described in section 02202-Excavation and Embankment.

3.5 SHOT ROCK BORROW

A. Shot Rock Borrow shall be the type noted on the drawings and shall be provided in accordance with the provisions of Section 2202 Excavation and Embankment. All fill to include the retaining wall backfill material shall be incidental to Retaining Wall and Upland Modifications.

3.6 BASE COURSE

A. Base course shall be of the type noted on the drawings and shall be provided in accordance with the provisions of Section 02204-Base Course. All base course materials shall be considered incidental to Retaining Wall and Upland Modifications.

3.7 CONCRETE APPROACH SLAB ON GRADE

A. Concrete approach slab on grade shall be provided in accordance with the provision of section 03301-Structural Concrete.

B. Rebar shall be provided in accordance with the provisions of section 03301-Structural Concrete and hot dip galvanized in accordance with section 05120 Metal Fabrication.

3.8 DELIVERY, STORAGE, AND HANDLING

A. Store and handle concrete units and accessories to prevent deterioration or damage due to moisture, temperature changes, contaminants, breaking, chipping, or other causes.

B. Store geotextile and geogrid reinforcement in manufacturer's original packaging with labels intact. Store on elevated platforms, protected from moisture, sunlight, chemicals, flames, temperatures above 160° F or below 32° F, and other conditions that might damage them. Verify identification of geotextile and geogrid reinforcement before using and examine them for defects as material is placed.

PART 4 - EXECUTION

4.1 EXCAVATION

A. All Required excavation shall be performed in accordance with section 02202 Excavation and Embankment.

B. Care shall be taken while performing excavations adjacent to the existing retaining wall so as not to damage the existing geogrid and geotextile reinforcements.

1. Excavations shall be completed using a bladed sand and gravel bucket or other means that will not result tearing, cutting or damage to the existing geogrid or geotextile.

2. Existing geogrid is located at elevations between existing MSE wall concrete blocks at approximately two foot intervals. Excavate to expose each layer of geogrid reinforcement and roll back geogrid against concrete blocks prior to excavating the succeeding layer.

3. Geogrid and geotextile reinforcements damaged during excavation operations shall be repaired as described herein.

4.2 MSE WALL RECONFIGURATION

A. The Contractor shall submit, for approval by the ENGINEER, a wall reconfiguration plan prior to commencing Work on this item.

B. General area grading shall be as indicated on the Plans. The wall shall be constructed in accordance with all details shown on the Plans. Care shall be taken to avoid damage to existing structures near the wall locations. Repair any and all damages to existing or better conditions.

C. Care shall be taken to assure that cuts and tears do not occur in the geotextile reinforcement or geogrid during excavation, placement or during backfilling operations. Damaged geotextile reinforcement and geogrid reinforcement materials shall be removed and replaced with new material at no additional cost to the OWNER.

D. Geogrid reinforcement shall be placed such that the warp and fill of the grid are oriented perpendicular and parallel, respectively, to the wall face.

E. Precast concrete wall blocks shall be placed on top of the underlying blocks and grid as shown on the Plans and in such a manner that the blocks are interlocked to one another, effectively anchoring the grid between them and resulting in a stable block mass. Only one layer of blocks shall be used for each lift. The precast concrete blocks shall be placed such that the width of the blocks in all directions is equal to or greater than its height.

F. Wall construction shall begin at the lowest elevation and each layer shall be placed to the lines and grades shown on the Plans. Each layer shall be completed in its entirety before the next layer is started. The geogrid reinforcement shall be stretched out in the direction perpendicular to the wall face and secured to ensure that no slack exists in the geogrid reinforcement prior to backfilling.

G. Geogrid reinforcement shall be smooth with no bunching due to misalignment. Backfill material shall be placed in a manner that will not dislodge the geogrid reinforcement from its proper alignment. Pegs, pins, or a manufacturer's recommended method shall be used to hold the geogrid reinforcement in place until the specified backfill material is placed and compacted.

H. Geotextile reinforcement placed parallel to the wall to prevent the migration of fines shall have a 2' overlap with the perpendicular geogrid. Field seams of geotextile reinforcement shall have a 3' overlap.

I. The wall backfill material shall be placed and compacted as follows:

Compaction Method	Loose Lift Thickness	No. of Passes
10 ton Vibratory Drum Roller	12 inches, max.	8
Vibratory Plate Compactor	6 inches, max.	8

J. Special care shall be exercised during compaction near face of wall to prevent displacement of block units.

K. Geogrid reinforcement shall extend approximately 6 inches beyond the exposed face of precast concrete facing blocks during initial placement. Excess geogrid reinforcement protruding from the block face at each layer shall be trimmed neatly or melted back in such a manner that a neat bead of melted geogrid reinforcement remains at the block-to-block interface on the face of the wall upon final completion.

L. In locations where utility lines or pipe is designated to travel through layers of geogrid, geogrid shall be trimmed neatly around the utility. Holes in geogrid created for the passage of utilities shall be at least 3' from the edge of the geogrid strip.

M. The MSE retaining wall as-built tolerances shall be as follows:

1. Vertical alignment: ±1/4 " over any 10' distance.

2. Wall Batter: within 2 degrees of design batter.

3. Horizontal alignment: ±1/4" over any 10' distance.

4. Corners, ± 0.5ft. to theoretical location

5. Maximum horizontal gap between erected units shall be 1/4 inch.

4.3 EMBANKMENTS

A. Embankments outside of the wall backfill prism shall be constructed in accordance with the provisions of section 02202-Excavation and Embankment.

4.4 BASE COURSE

A. Base course shall be placed to lines and grades shown on the Plans in accordance with the provisions of section 02204-Base Course.

4.5 CONCRETE APPROACH SLAB ON GRADE

A. Concrete approach slab on grade shall be constructed as shown on the Plans in accordance with the provisions of section 03301-Structural Concrete.

4.6 EXISTING HANDRAIL MODIFICATIONS

A. Existing handrail designated for modification shall be modified as shown on the Plans and reassembled as required in accordance with section 02707-Handrail.

B. Damaged or removed galvanizing shall be field repaired in accordance with section 05120-Metal Fabrication.

C. Field cuts to timber shall be repaired and treated per AWPA M-4 as specified in section 02727-Timber Structures.

4.7 EXISTING GUARD RAIL MODIFICATIONS

A. Modify the existing guard rail as shown on the plans. The guardrail shall be reassembled per the Standard Details and the provisions of section 02708-Guard Rail.

END OF SECTION

SECTION 02727 – TIMBER STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION. The WORK under this Section shall include all labor, materials, tools and equipment necessary for modifications to existing pile supported timber structures and construction of new pile supported timber structures as shown in the Plans.

1.2 REFERENCES

A. AWPA (American Wood Preservers Association), 2002 Standards

B. WWPA (Western Wood Products Association) Western Lumber Grading Rules, 1998

C. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction (ASD).

D. ASTM (American Society of Testing Materials) Specifications

1.3 SUBMITTALS

A. Timber Fabrication Shop Drawings for all fabricated timber items.

B. Timber Grading and Pressure Treatment Certification for all timbers utilized for fabrication of dock components.

C. Timber Treatment product for field treatment of timbers. Submit product specifications from the manufacturer for field treating of both ACZA treated timbers and creosote treated timbers.

D. Structural Steel Submittals per Section 051020 – Metal Fabrication. Steel fabrication drawings must be approved by the ENGINEER prior to cutting, drilling and treatment of timbers. CONTRACTOR shall coordinate shop drawing submittals between timber fabricator and steel fabricator so as to submit both timber and steel fabrication shop drawings simultaneously.

PART 2 - PRODUCTS

2.1 GENERAL

A. MATERIALS - All materials for timber structures components 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 fore mentioned 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 shall supply specified materials if the proposed substitution is not approved by the ENGINEER.

2.2 TIMBER

A. All glued-laminated members shall be manufactured with Coast Region Douglas Fir that conforms to AITC Standard No. 117-87 specifications and shall be manufactured in balanced combinations having equal design values for both the positive and negative bending. The glulam members shall have an industrial finish, shall be for exterior use and have design values equal to or exceeding the following when loaded perpendicular to the widest faces of the laminations.

1. Combination: 24F-V8
2. Bending (Fb) = 2,400 psi
3. Horizontal Shear (Fv) = 265 psi
4. Modulus of Elasticity (E) = 1,800,000 psi

B. Unless otherwise noted, all glued-laminated timbers shall be pressure treated with creosote per AWPA C-28 to a minimum retention of 12 pounds per cubic foot. Fabrication and drilling of timber shall be completed as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Glued-laminated timber ends that have been field cut after treatment shall be scatter nailed with 3-inch copper nails at 2 inches on-center each way in addition to field treatment. Bolt holes shall be 1/8 inch oversized.

C. All sawn timber shall be surfaced four sides (S4S), unless otherwise noted on the Plans, and conform to No. 1 and better Coastal Region Douglas Fir, according to WCLIB Grading Rules. No individual timber shall fall outside the specified grade. Each piece of lumber shall be stamped with a grade mark, which identifies the grading and certification, and shall be so marked as to be legible after pressure treatment. All sawn timber shall be pressure treated. Sawn timber located above waterline shall be pressure treated with ACZA per AWPA C-2 to a net dry salt retention of not less than 0.6 pounds per cubic foot. Sawn timber located below waterline shall be pressure treated with creosote per AWPA C-28 to a minimum retention of 12 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Bolt holes shall be 1/8 inch oversized.

D. Deck timbers shall be S1S2E. Gap widths between installed deck timbers shall be a minimum of 1/8-inch and a maximum of 3/8-inch. As much as possible, deck timbers shall be evenly spaced. CONTRACTOR shall determine total number of deck boards required to achieve the spacing requirements indicated above, and shall layout deck boards along entire length of approach dock prior to nailing of timbers. Aesthetics are important for deck timbers; consequently, CONTRACTOR shall ensure deck material has minimal amount of wane. Deck timbers containing wane shall be installed with wane facing down and top face rough cut per specifications.

E. All materials shall conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.3 HARDWARE

A. Bolts and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication.

2.4 FIELD TREATMENT COMPOUNDS

A. Treatment compounds for holes and cuts to treated timber shall be one of the following: Copper Napthenate solutions in concentrations as specified by AWPA M-4 or mastic applied per manufacturer's instructions.

B. Mastic shall be coal tar mastic complying with ASTM D450.

2.5 STRUCTURAL STEEL

A. Fabricated steel weldments and miscellaneous steel plates and shapes shall comply with Section 05120 - Metal Fabrication.

2.6 DELIVERY, STORAGE, AND PROTECTION

A. All timber shall be protected during transportation to and from treatment facilities. There shall be no mechanical damage to timbers from steel banding, handling, etc. Timber shall be stored above ground on pallets, platforms or other supports.

B. All other materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports, and be protected from excessive exposure to moisture prior to fabrication.

PART 3 - EXECUTION

3.1 TIMBER CONSTRUCTION

A. Field confirm all existing conditions and measurements required to complete WORK prior to construction.

B. Confirm final assembly of timber elements and gangway attachment with ENGINEER prior to construction.

C. Minor and incidental modifications may be directed by the ENGINEER to field fit new dock addition to existing.

D. Plug holes in existing stringers resulting from removal of hardware with tight fitting treated timber dowels.

E. Provide temporary support as required to existing structural elements designated to remain during erection of new materials.

F. Field treat all holes and cuts made after pressure treatment and all timber damaged prior to final acceptance per AWPA M-4. All field drilled holes and cuts shall be liberally swabbed/coated with Copper Napthenate solution. In addition, for creosote treated

timbers, the entire bolt surface in contact with timber shall be coated with mastic prior to bolt installation in order to seal the hole/bolt interface.

G. Construction methods and products not specifically mentioned in these Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all work and products not specifically mentioned 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.

H. Re-grade Existing Approach Dock consists of removal and salvage of the existing approach dock timber bullrail, decking, glulam stringers, and hardware. Contractor shall fully assess existing conditions prior to bid. Existing pile caps shall be cut off at the elevations shown on the plans and salvaged or replaced as indicated on the Plans. Existing pile remnants on underside of salvaged pile caps shall be removed and surface ground smooth to bare metal at the point of attachment in preparation for re-installation on existing piles. Existing handrail, safety ladders, electrical conductor and accessories, fender pile brackets, 6" dia. steel fuel pipe and hangers, and 6" DIP water pipe and hangers shall be removed and disposed in accordance with the Plans. New pile cap shall comply with Section 05120 – Metal Fabrication. New and salvaged pile caps shall be re-installed at the elevation indicated on the plans with galvanized coating damage to pile and pile cap repaired in accordance with Section 05120 – Metal Fabrication. As-built measurements to stringer brackets shall be taken from existing pile cap at gridline 18 prior to demolition and disposal for use in the detailing of the new pile cap. Salvaged glulam stringers shall be re-installed using existing hardware if possible. Any connection hardware found to be damaged before or after demolition shall be replaced with new hardware that conforms to this specification. Any new holes drilled in glulam beams shall be field treated with wood preservative in accordance with this section. Existing timber decking shall be re-installed on re-graded deck using new spikes in accordance with the Contract Documents. Existing bullrail shall be re-installed with existing hardware supplemented with new hardware where required. If existing glulam beams, timber decking, or bullrail are inadequate in length, new material shall be used as needed to complete the structure in accordance with the Plans. At the Contractor's option, new material may be installed in lieu of the salvaged material on a partial or complete basis. Any new material used to supplement or replace existing gluelam beams, timber decking, or timber bullrail must be dimensionally equivalent to the existing and must conform to the requirements of this specification. Install new steel handrail and timber handrail cap in accordance with the Contract Documents.

END OF SECTION

SECTION 02810 – MOORAGE FLOAT MODIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK in this Section shall include all labor, materials, tools and equipment necessary to modify the existing moorage float at the PORT CHILKOOT DOCK including all steel, weldments, timber walers, decking, HDPE pipe pontoons, and all other miscellaneous hardware and related Work in accordance with requirements of the Contract Documents and as indicated on the Plans.

1.2 REFERENCES

A. AWPA (American Wood Preservers Association)

B. WWPA (Western Wood Products Association) Western Lumber Grading Rules

C. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction (ASD).

D. ASTM (American Society of Testing Materials) Specifications

1.3 SUBMITTALS

A. Timber Fabrication Shop Drawings for all fabricated timber items.

B. Timber Grading and Pressure Treatment Certification for all timbers utilized for fabrication of dock components.

C. Structural Steel Submittals per Section 05120 – Metal Fabrication.

D. UHMW (Ultra High Molecular Weight) Polyethylene – Submit product specific material specifications and Fabrication Shop Drawings for each type of UHMW piece.

E. HDPE pipe pontoon material specifications, fabrication drawings, HDPE welding process and welding operator certification.

F. HDPE pipe pontoon installation plan.

G. Rubber Float Connection Pads: Submit rubber material specification, drawings indicating overall dimensions, and fabrication and dimensional tolerances.

H. Field Repair Procedure for Painted Structures.

I. Marine deck plate product information.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials for float modification components 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 fore mentioned 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 shall supply specified materials if the proposed substitution is not approved by the ENGINEER.

B. All sawn timber shall be surfaced four sides (S4S), unless otherwise noted on the Plans, and conform to No. 1 and better Coastal Region Douglas Fir, according to WCLIB Grading Rules. No individual timber shall fall outside the specified grade. Each piece of lumber shall be stamped with a grade mark, which identifies the grading and certification, and shall be so marked as to be legible after pressure treatment. All sawn timber shall be pressure treated with ACZA per AWPA C-2 to a net dry salt retention of not less than 0.6 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Bolt holes shall be 1/8 inch oversized.

C. Deck timbers shall be S1S2E. Gap widths between installed deck timbers shall be a minimum of 1/8-inch and a maximum of 3/8-inch. As much as possible, deck timbers shall be evenly spaced. CONTRACTOR shall determine total number of deck boards required to achieve the spacing requirements indicated above, and shall layout deck boards along length of float prior to nailing of timbers. Aesthetics are important for deck timbers; consequently, CONTRACTOR shall ensure deck material has minimal amount of wane. Deck timbers containing wane shall be installed with wane facing down and top face rough cut per specifications.

D. Fabricated metal weldments and miscellaneous steel plates and shapes shall be ASTM A36, galvanized per ASTM A123 or A153, and comply with Section 05120 - Metal Fabrication.

E. Bolts and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication.

F. All UHMW polyethylene shall be manufactured from virgin polyethylene materials, be U.V. stabilized and shall be partially cross-linked. UHMW components shall be black in color.

G. HDPE pipe shall be of the thickness indicated on the Plans and conform to the material requirements of Section 02601-Water System.

H. Rubber pads shall be "Williams AASHTO Grade Neoprene Bearing Pad" or ENGINEER approved equal, Durometer Hardness of 60, black in color.

I. Marine deck plates shall be model number BEC DP62W as manufactured by Beckson (www.jamestowndistributors.com) or ENGINEER approved equal. The deck plates shall be white, screw-out, with non-skid top surface

J. All materials shall conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.2 FIELD TREATMENT COMPOUNDS

A. Treatment compounds for holes and cuts to treated timber shall be the following: Copper napthenate solutions in concentrations as specified by AWPA M-4 and/or asphaltic mastic applied per manufacturer's instructions.

B. Mastic shall be asphaltic coal tar mastic complying with ASTM D450.

2.3 DELIVERY, STORAGE, AND PROTECTION

A. All timber shall be protected during transportation to and from treatment facilities. There shall be no mechanical damage to timbers from steel banding, handling, etc. Timber shall be stored above ground on pallets, platforms or other supports.

B. All other materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports, and be protected from excessive exposure to moisture prior to fabrication.

PART 3 - EXECUTION

3.1 CONSTRUCTION

A. All floating dock modification Work shall be accurately constructed and installed as described herein and as detailed on the Plans and/or to the highest industry standards if not fully shown on the Plans.

B. Field confirm all existing conditions and measurements required to complete WORK prior to installation. Notify ENGINEER of any discrepancies prior to installation.

C. Minor and incidental modifications may be directed by the ENGINEER to field-fit modifications to existing floating dock.

D. All welding shall be in accordance with Section 05120 – Metal Fabrication. No welding through galvanized coatings or urethane paint coatings will be permitted. The galvanizing and/or urethane paint within 1" of the weld shall be removed prior to welding, and repaired after welding, according to these Specifications.

E. Field Repair Procedure of Painted Steel Components shall be per Section 09900 – Coatings. This repair procedure applies to field-welds where new galvanized components are welded to the existing painted pipe pontoons. CONTRACTOR shall submit repair procedure for ENGINEER approval.

F. Repair of galvanized steel components shall be in accordance with Section 05120-Metal Fabrication. This repair procedure applies to all pre-fabricated galvanized steel components. This repair procedure does not apply to field-welds where new galvanized steel components are welded to the existing structure. Follow Field Repair Procedure of Painted Steel Components at these locations.

G. Provide temporary support to existing structural elements designated to remain during erection of new structure

H. HDPE ballast tanks shall be installed by flooding the tanks, installing them into their specified position and then pumping the water out incrementally to achieve freeboard. The allowable freeboard shall be determined on-site once the gangway is in position on floating dock.

I. Construction methods and products not specifically mentioned in these Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all work and products not specifically mentioned 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 02885 – LETNIKOF COVE FLOAT REFURBISHMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK in this Section shall include all labor, materials, tools and equipment necessary for fabrication and installation of existing steel pipe moorage float refurbishment items at LETNIKOF COVE consisting of replacing timber rubboards, cleats, steel deck grating, anchor chains, modifying hinge connection, hardware, field measurements prior to manufacture of materials, and other similar and related WORK in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

A. AWPA (American Wood Preservers Association), 2002 Standards.

B. WWPA (Western Wood Products Association) Western Lumber Grading Rules, 1998.

C. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction (ASD).

D. ASTM (American Society of Testing Materials) Specifications.

1.3 SUBMITTALS

A. Timber layout, assembly and fabrication shop drawings.

B. Timber grading and pressure treatment certifications.

C. Structural steel submittals per Section 05120 – Metal Fabrication.

D. Steel Cleats - Submit manufacturer’s published literature for specific product, including manufacturer’s recommended attachment details.

E. Float anchor chain replacement plan and procedure. Provide narrative and illustrations to fully describe the complete anchor chain removal and replacement plan. The plan shall address, as a minimum, all equipment, labor, survey control, temporary float support systems, sequence, method of determining existing chain length, and method of installation.

F. All float anchor chain replacement components and material certifications.

G. Steel Deck Grating. Submit manufacturer’s published literature for specific product, including manufacturer’s recommended anchor/attachment details.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All sawn timber for replacement rubboards shall be surfaced four sides (S4S), unless

otherwise noted on the plans, and conform to No. 1 and better Coastal Region Douglas Fir, according to WCLIB Grading Rules. No individual timber shall fall outside the specified grade. Each piece of lumber shall be stamped with a grade mark, which identifies the grading and certification, and shall be so marked as to be legible after pressure treatment. Rubboards shall be pressure treated with ACZA per AWPA C-2 to a net dry salt retention of not less than 0.6 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Bolt holes shall be 1/8 inch oversized.

B. Steel deck grating shall be serrated galvanized steel grating with welded joints as manufactured by "*Grating Pacific*", of Tukwila, WA, or approved equal. Grating shall be Type W-19-4 with 1 1/4" x 3/16" bearing bars spaced 1 3/16" on center, cross bars shall be 1/4" twisted square bar spaced 4" on center. Manufacturer shall provide complete fabrication shop drawings illustrating entire deck layout, identifying all deck panel types and dimensions, gap distance between panels, cut-outs to fit around existing steel cleat bases, and manufacturer's recommended panel attachment details.

C. Miscellaneous steel plates and shapes shall be ASTM A36, galvanized per ASTM A123 or A153, and shall comply with Section 05120 - Metal Fabrication.

D. Fabricated steel weldments and assemblies shall comply with Section 05120 - Metal Fabrication.

E. Bolts and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication.

F. All materials shall also conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.2 DELIVERY, STORAGE, AND PROTECTION

A. All timber shall be protected during transportation to and from treatment facilities. There shall be no mechanical damage to timbers from steel banding, handling, etc. Timber shall be stored above ground on pallets, platforms or other supports.

B. All other float materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports.

C. Protect float timber during handling and transport to jobsite.

PART 3 – EXECUTION

3.1 EXISTING CONDITIONS

A. The Contractor shall visit the site and review available asbuilt information to ascertain the existing conditions of all steel pipe float and anchoring system components prior to bid.

B. Existing steel pipe float and anchoring system components shown on the plans are

derived from State of Alaska Department of Transportation and Public Facilities (AKDOT&PF) design and as built drawings, K39189, dated September 28, 1979 and are available on the AKDOT&PF website. Actual conditions found in the field may vary from those shown on the plans. The Contractor shall make minor modifications as required to fit actual conditions found in the field.

3.2 INSTALLATION

A. The Contractor shall field measure and verify all required timber rubboard, steel deck grating and steel cleat dimensions, drill hole patterns and other requirements to fit new materials to the existing pipe float in a manner similar to existing conditions. Contractor shall field verify all fabrication measurements prior to manufacture. Contractor shall field treat all bore holes and cuts in treated timbers per AWPA M-4.

B. Steel Deck Grating: Remove and dispose of all existing steel deck grating designated for replacement as shown on the plans. Removal of existing steel deck grating will require removal of existing welds connecting grating to steel pipe float structures by grinding wheel or other approved method and without causing damage to existing steel pipe moorage float structures designated to remain. Remove and reinstall existing steel cleats as required to install new steel deck grating.

C. Anchor Chain Replacement Procedure:

1. Prior to replacing any anchor chains the Contractor shall establish the location of the (4) exterior pipe float corners by survey measurement at Mean High Water and Mean Low Water as shown on the plans and during winds below 10 knots. Freeboard measurements to the nearest 1/2” at each of the (4) float corners at the time of survey shall also be recorded. Provide survey data and float freeboard measurements to the Engineer within 24 hours.
2. Remove and replace each of the (6) existing float anchor chains matching the exact length of each in-place chain. One chain shall be removed and replaced in its entirety prior to removing any other chains. The Contractor shall submit method for determining the in-place chain length for Engineer approval and shall subsequently submit the field measured length of each chain prior to replacement.
3. Upon replacement of all (6) anchor chains in their existing length the (4) exterior pipe float corners shall be located and freeboard measured as described above. Provide survey data and float freeboard measurements to the Engineer within 24 hours.
4. The Contractor shall make adjustments to the in-place length of up to all (6) of the anchor chains as necessary and as directed by the Engineer and the survey and freeboard measurement procedure described above shall be repeated. This adjustment procedure shall be repeated up to two times with the Contractor making a total of up to (12) individual chain adjustments. The adjustment procedure is intended to locate the float within 6” in all directions of its initial surveyed position. The Contractor shall supply an adequate number of chain adjusting links as required to make the described adjustments. Additional adjustments directed by the Engineer will be made at a negotiated cost.
5. Following approval of the chain adjustments all excess chain shall be removed

and disposed.

D. All new structural steel and hardware shall be fabricated and installed in accordance with Section 05120 – Metal Fabrication. Repair galvanizing in accordance with Section 05120 – Metal Fabrication.

E. All carpentry shall be performed by qualified workmen and shall be done in a professional, workman-like manner.

F. Construction methods and products not specified in these Contract Documents shall be utilized using reasonable care and the highest quality of 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 02894 - GANGWAY

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under the Base Bid in this Section shall include all labor, materials, tools and equipment necessary for fabrication, transport, delivery, and installation of the complete aluminum gangway at PORT CHILKOOT consisting of the gangway structure, metal roofing and skirting, transition plate assemblies, hinge assemblies, shore mount weldment, guide angles, skid plates and all other miscellaneous appurtenances and hardware in accordance with the requirements of the Contract Documents and as indicated on the Plans.

B. The WORK under Additive Alternate A in this Section shall include all labor, materials, tools and equipment necessary for installation of the salvaged aluminum gangway at LETNIKOF COVE, and shall include transition plate refurbishments, hinge assemblies, approach dock mounting angle assembly, UHMW components, rubber pads, guide angles and all other miscellaneous appurtenances and hardware in accordance with the requirements of the Contract Documents and as indicated on the Plans.

1.2 REFERENCES

A. ASTM (American Society of Testing Materials) Specifications

1.3 SUBMITTALS

A. Fabrication Shop Drawings for all fabricated aluminum and steel items, prior to fabrication, per Section 05120 – Metal Fabrication.

B. Aluminum Submittals per Section 05120 – Metal Fabrication.

C. Structural Steel Submittals per Section 05120 – Metal Fabrication.

D. Welding Procedures and Welder Certifications per Section 05120 – Metal Fabrication.

E. UHMW (Ultra High Molecular Weight) Polyethylene - Submit material specifications and Fabrication Shop Drawings for each type of fabricated UHMW piece.

F. Rubber Pads - Submit manufacturer’s published literature for specific product, including manufacturer’s specifications, physical characteristics, performance and dimensional tolerance data.

G. Gangway Roofing and Skirting - Submit (2) samples along with manufacturer’s published literature for specific product and accessories, as applicable, including manufacturer’s specifications, physical characteristics, load capacity data, color charts and product warranty for ENGINEER approval.

1.4 QUALITY ASSURANCE

A. Quality Assurance requirements shall be per Section 05120 – Metal Fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials for gangway components shall conform to the Contract Documents and 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.

B. Miscellaneous steel plates and shapes shall be ASTM A36, galvanized per ASTM A123 or A153, and comply with Section 05120 – Metal Fabrication.

C. All aluminum plate and shapes shall comply with Section 05120 – Metal Fabrication.

D. All bolts, piano hinge connection rods, and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication

E. All Ultra High Molecular Weight (UHMW) Polyethylene components shall be manufactured from virgin polyethylene material, be U.V. stabilized and shall be partially cross-linked. UHMW components shall be black in color, unless otherwise noted. Transition plate nosings shall be yellow in color.

F. Non-Skid Coating shall be per Section 09900 Coatings. Top surface of transition plates and gangway deck plate shall be non-skid coated as identified on the Plans.

G. Gangway metal roof shall be 4” Box Rib Aluminum, 0.032” minimum thickness, 3004-H36 or equivalent (28 ksi yield strength) aluminum alloy conforming to ASTM B 209. Paint finish shall be factory applied, and have a twenty (20) year warranty covering chalking, cracking, checking, chipping, blistering, peeling, flaking and fading. Exterior finish color shall be dark blue and interior color shall be white. All flashing and trim shall be of the same material, gauge, finish and color as the roof and skirt panels and fabricated in accordance with standard SMACNA procedure and details. As much as possible, all panels, flashing and trim shall be of the required dimensions, directly from the manufacturer. All field cuts shall be treated per manufacturer’s recommendations. Fasteners shall have a combination metal and EPDM washer. Fastener type, fastener spacing, and all installation methods shall be per manufacturer’s recommendations to achieve watertight covering on gangway without waves, warps buckles or other distortions.

H. All materials shall conform to good workmanship, acceptable industry standards and manufacturer’s recommendations.

2.2 DELIVERY, STORAGE, AND PROTECTION

2.3 Delivery, Storage, and Protection shall be per Section 05120 – Metal Fabrication.

PART 3 - EXECUTION

3.1 FABRICATION

A. The complete gangway assembly shall be fabricated and constructed in conformance with the Contract Documents and as shown on the Plans. Any gangway materials damaged during transport and delivery and/or during handling and fabrication operations shall be repaired or replaced by the Fabricator, at the discretion of the ENGINEER, and at no additional cost to the OWNER.

B. Fabricator shall coordinate with all material suppliers to ensure that fit-up and fabrication of all gangway components comply with the Plans and Specifications.

C. All gangway tube and pipe elements shall be completely sealed by welding or other ENGINEER approved methods. Fabricator shall provide weep holes as indicated on the Plans.

3.2 TRANSPORT AND DELIVERY

A. The CONTRACTOR shall assume full responsibility for any damage or losses resulting from the handling or transporting of the gangway and all associated components during loading, shipping, transport and delivery to the project sites as well as the subsequent handling required on site for installation.

B. Damage that occurs during transport and delivery and/or during other handling operations prior to final acceptance shall be repaired or replaced by the CONTRACTOR at the discretion of the ENGINEER, and at no additional cost to the OWNER.

3.3 INSTALLATION

A. The complete gangway assembly shall be installed as indicated on the Plans and/or to the highest industry standards if not fully shown on the Plans.

B. Verify final location for guide assemblies at bottom of gangway through several extreme tide cycles before final anchoring to float. Confirm final location of guide assembly with ENGINEER. Following complete installation of gangway and all other associated WORK, CONTRACTOR shall lubricate gangway skids, as directed by the ENGINEER, with an ENGINEER approved, graphite-based lubricant.

C. Construction methods and products not specifically mentioned in these Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all WORK and products not specifically mentioned 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.

3.4 LETNIKOF COVE GANGWAY REQUIREMENTS

A. Contractor shall transport the salvaged gangway from PORT CHILKOOT DOCK to LETNIKOF COVE. Damage that occurs during transport and delivery and/or during other handling operations prior to final acceptance shall be repaired or replaced by the CONTRACTOR at the discretion of the ENGINEER, and at no additional cost to the OWNER.

B. The salvaged gangway shall be modified as specified on the plans. Contractor shall field verify all dimensions prior to fabrication of new assemblies.

C. Connect salvaged gangway to new approach dock addition. Install per Section 3.3 above.

END OF SECTION

SECTION 02895 - TIMBER FLOATS

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 the complete timber float system at Letnikof Cove, consisting of the gangway landing float and all timber segmental float units along with the associated connecting 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. AWPA (American Wood Preservers Association), 2002 Standards

1. WWPA (Western Wood Products Association) Western Lumber Grading Rules, 1998

B. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction (ASD).

C. ASTM (American Society of Testing Materials) Specifications

1.3 SUBMITTALS

A. Timber Fabrication and Assembly Shop Drawings for all fabricated timber items.

B. Timber Float Assembly Drawings. Timber float Assembly Drawings shall illustrate and demonstrate all elements (timbers, steel weldments, assemblies, hardware, foam billets) that make up each typical type of float module, as well as the location and position of the elements on the float.

C. Timber Grading and Pressure Treatment Certification for all timbers utilized for fabrication of float components.

D. Timber Treatment product for field treatment of float timbers. Submit product specifications from the manufacturer for field treating of both ACZA treated timbers and creosote treated timbers.

E. Structural Steel Submittals per Section 05120 – Metal Fabrication. Steel fabrication drawings must be approved by the ENGINEER prior to cutting, drilling and treatment of timbers. CONTRACTOR shall coordinate shop drawing submittals between float fabricator and steel fabricator so as to submit both timber and steel fabrication shop drawings simultaneously.

F. Coated Polystyrene Flotation Billet Shop Drawings. Submit complete shop drawings illustrating geometry, chamfers, and any required notches for each billet type.

G. UHMW (Ultra High Molecular Weight) Polyethylene - Submit product specific material specifications and Fabrication Shop Drawings for each type of UHMW piece.

H. Steel Pipe Hinge Assembly – Submit rubber bushing material specifications and a completely assembled hinge assembly sample consisting of a rubber bushing with UHMW sleeve and a galvanized steel pipe hinge segment. Critical fit up tolerances will be verified with this sample.

I. Non-Skid Coating - Submit manufacturer's published literature for specific product along with a sample which will demonstrate coarseness of applied product.

J. Billet Coating Product Data – Provide technical data on billet coating product. Data shall include product description, color, performance characteristics and limitations.

K. Steel Chain and Shackle – Submit product material specifications.

L. Rubber Fender – Submit technical data and material specifications.

M. Float Handling Plan - CONTRACTOR shall coordinate with the float fabricator and all transport companies to submit a float handling plan for review and approval, by the ENGINEER, prior to handling and transporting of any float units. Plan shall describe all lifting equipment and devices as well as proposed transport configuration of multiple float units.

N. Float Fabricator's Quality Assurance Program - Submit copy of quality assurance program float fabricator proposes to use during the float fabrication process.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All materials for float components shall conform to the Design Contract Documents and as shown on the Design Plans. Purchase orders shall contain all necessary information to ensure that materials purchased will comply with the fore mentioned 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 on the design documents if the proposal for a substitution is not approved by the ENGINEER.

B. All glued-laminated members shall be manufactured with Coast Region Douglas Fir that conforms to AITC Standard No. 117-87 specifications and shall be manufactured in balanced combinations having equal design values for both the positive and negative bending. The glulam members shall have an industrial finish, shall be for exterior use

and have design values equal to or exceeding the following when loaded perpendicular to the widest faces of the laminations.

1. Bending (Fb) = 2,200 psi
2. Horizontal Shear (Fv) = 165 psi
3. Modulus of Elasticity (E) = 1,700,000 psi

C. Unless otherwise noted, all glued-laminated timbers shall be pressure treated with creosote per AWPA C-28 to a minimum retention of 12 pounds per cubic foot. Fabrication and drilling of timber shall be completed as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Glued-laminated timber ends that have been field cut after treatment shall be scatter nailed with 3-inch copper nails at 2 inches on-center each way in addition to field treatment. Bolt holes shall be 1/8 inch oversized.

D. All sawn timber shall be surfaced four sides (S4S), unless otherwise noted on the Plans, and conform to No. 1 and better Coastal Region Douglas Fir, according to WCLIB Grading Rules. No individual timber shall fall outside the specified grade. Each piece of lumber shall be stamped with a grade mark, which identifies the grading and certification, and shall be so marked as to be legible after pressure treatment. All sawn timber shall be pressure treated. Sawn timber located above the waterline shall be pressure treated with ACZA per AWPA C-2 to a net dry salt retention of not less than 0.6 pounds per cubic foot. Sawn timber located below the waterline shall be pressure treated with creosote per AWPA C-28 to a minimum retention of 12 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field drilled holes, cuts and minor damaged areas shall be field treated per AWPA M-4, with an ENGINEER approved treatment product. Bolt holes shall be 1/8 inch oversized.

E. Deck timbers shall be S1S2E, kerfed as shown on the plans, with 1/8-inch chamfered top edges. Only whole, full-width and full length deck timbers shall be installed on any float unit. Upon arrival to project site (Haines, Alaska), gap widths between installed deck timbers shall be a minimum of 1/8-inch and a maximum of 3/8-inch. As much as possible, deck timbers shall be evenly spaced along entire length of float unit. CONTRACTOR shall determine total number of deck boards required to achieve spacing requirements indicated above, and shall layout deck boards along entire length of each float unit prior to nailing of timbers. Aesthetics are important for deck timbers; consequently, fabricator should ensure deck material has minimal amount of wane.

F. All bullrail glulams shall have 1/2-inch radius chamfered edges.

G. Flotation billets shall be closed-cell, expanded polystyrene, in accordance with ASTM C578. Minimum requirements shall be as follows:

1. Density – between 0.9 and 1.0 pounds per cubic foot
2. Contain not greater than 5% regrind material
3. Compressive Strength - 10 psi minimum at 10% deformation

4. Flexural Strength - 25 psi minimum
5. 4% maximum water absorption by volume as tested by ASTM C-272
6. All floatation billets shall be coated on all sides with "Polyshield SS-100", or approved equal, coating of sixty-five (65) mils in thickness, minimum. Coating shall be spray applied and cured per manufacturer recommendations. Alternative coatings shall either meet or exceed the characteristics of this material and be acceptable to the governing agencies for construction in the marine environment.

H. All floatation billets shall be of one piece, as shown on the Plans, without laminations or glued joints. Billet dimensional tolerances shall be as follows: (Submit billet geometry for ENGINEER review)

1. Width – Maximum of 1/4-inch gap between billet and adjacent, glulam beam.
2. Length – Maximum of ½-inch gap between billet and adjacent, glulam diaphragm.

I. Miscellaneous steel plates and shapes shall be ASTM A36, galvanized per ASTM A123 or A153, and comply with Section 05120 - Metal Fabrication.

1. Fabricated metal weldments and assemblies including pipe hinges, piano-hinged transition plates and pile hoops shall comply with Section 05120 - Metal Fabrication.

2. Bolts, pipe hinge connection rods, and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication.

J. All Ultra High Molecular Weight (UHMW) Polyethylene components shall be manufactured from virgin polyethylene material, be U.V. stabilized and shall be partially cross-linked. UHMW components shall be black in color, unless otherwise noted, and edges chamfered as shown on Plans.

K. Pipe Hinge Rubber Bushings and pile hoop liners shall comply with the following requirements:

Property	**Requirement**	**ASTM Test**
Min. Tensile Strength	2000 psi Min.	ASTM D412
Hardness-Shore A Durometer	70 +/- 5	ASTM D2240
Ultimate Elongation	300%	ASTM D412
Compression Set	25% max.	ASTM D395, Method B
Ozone Resistance	No Cracks	ASTM D1171, Method B
Water Resistance	10% Max. Swell	ASTM D471
Low Temp. Resistance	Non-Brittle	ASTM D2137, Method A
Heat Resistance		ASTM D573
1. Max. Change in Hardness	+10 pts.	
2. Max. Change in Tensile Strg	-25%	
3. Max. Change in Ult. Elong.	-25%	

Tear Resistance	200 ppi Min.	ASTM D624

L. Physical Constraints. - Fit-up of each pipe hinge connection is critical. Pipe hinge rubber bushings must fit snugly into pipe segments to not allow appreciable movement within the pipe. Contractor shall coordinate with bushing manufacturer and metal fabricator to produce sample bushings and a sample hinge assembly, complete with galvanized coating, and using pipe from the single batch of pipe proposed to be used for the project. This sample assembly shall be used to determine final bushing outside diameter required to achieve a fit that is snug-tight within the galvanized pipe. Initially fabricated bushings may need to be turned down, on a lathe, to achieve the final fit-up requirements. A sample bushing of the dimensions as determined by the method described above, complete with the required, pressed-fit UHMW sleeve, shall be submitted to the ENGINEER for approval prior to fabrication of bushings to be used for this project.

M. Non-Skid Coating – Metal surfaces specified to be Non-Skid shall be thermal arc-sprayed with TH604 and/or TH605, as manufactured by Thermion, to achieve a very aggressive surface profile. Blast surface and prep as required by Non-Skid coating manufacturer, prior to Non-Skid coating application.

N. All materials shall conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.2 DELIVERY, STORAGE, AND PROTECTION

A. All timber shall be protected during transportation to and from treatment facilities. There shall be no mechanical damage to timbers from steel banding, handling, etc. Timber shall be stored above ground on pallets, platforms or other supports.

B. All other float materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports.

C. Protect float timber and flotation billets during handling and transport to jobsite.

PART 3 - EXECUTION

3.1 FABRICATION

A. Quality Assurance. The float Fabricator must have an ongoing quality assurance program approved by a qualified, independent source. At the option of the ENGINEER, the Fabricator shall submit a copy of their operational quality assurance program, and shall not fabricate any floats 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.

B. 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.

C. Fabricator shall provide, to the ENGINEER, suitable documentation showing a minimum of three (3) previously successful float fabrication projects, including current names, addresses and contact numbers of the corresponding float owners.

D. Fabrication Facility. The fabrication facility shall provide the proper environment and physical conditions necessary for construction of high quality timber float units. The facility shall provide adequate work space, equipment, level working surfaces, and protection from direct sunlight, wind, and moisture. The Fabricator shall have the capability to carry out the following work in-house or on a contract basis:

1. Design of lifting and erection devices not shown on the Drawings.
2. Preparation of Shop Fabrication Drawings.
3. Receiving, checking and storing of materials for the floats.
4. Dimensional checking and verification.
5. Resolution of non-conformities.
6. Documentation of all stages of work with capability of tracing all major components.
7. Handling, storing, shipping and delivery.

E. The float units shall be assembled as shown on the Plans. All float units shall be clearly identified with the date of manufacture, and specific float designation per Plans. Any float materials damaged during transport and delivery and/or during handling and fabrication operations shall be repaired or replaced by the Fabricator, at the discretion of the ENGINEER, and at no additional cost to the OWNER.

F. Walking surfaces of installed float units shall be level and flush with adjoining float units. Maximum height variation between adjoining surfaces shall be 1/8-inch.

G. Deck of overall float unit shall be within the following level tolerances under design dead load:

1. Maximum transverse freeboard differential for float units shall be one inch.
2. Maximum longitudinal freeboard differential for float units shall be one inch.

H. The ENGINEER will randomly cut a 2-inch-by-2-inch sample of approximately 5 to 10 percent of the coated flotation billets to check for adequate thickness of coating. If thickness is insufficient, the manufacturer shall be prepared to apply more layers as necessary to obtain the required minimum thickness. The manufacturer is responsible for repairing the coating after samples have been taken. Repairs shall be accomplished by reapplication of coating to the exposed area.

I. The manufacturer shall be required to perform quality control of the coated flotation billets, checking for adequate coating thickness and for the presence of any holes in the coating which expose the polystyrene. Application of the coating shall be accomplished with multiple layers or in such a manner as to minimize holes caused from trapped gases within the polystyrene.

3.2 TRANSPORT AND DELIVERY

A. The CONTRACTOR shall assume full responsibility for any damages or losses resulting from the handling or transporting of float units and/or any float components during loading, shipping, transport and delivery to the fabrication and/or project site as well as the subsequent handling required on site for installation.

B. Any float unit and/or float components damaged during transport and delivery and/or during any other handling operations prior to final acceptance shall be repaired or replaced by the CONTRACTOR at the discretion of the ENGINEER and at no additional cost to the OWNER.

3.3 INSTALLATION

A. All float units shall be installed as shown in the Plans and/or to the highest industry standards if not fully shown on the Plans. All float connections are designed to accommodate the required vessel loads only when installed as a complete float system, as shown on the Plans. Damage to the float connection hardware and float structure will occur if floats are installed and left in place without the proper support and support structures around them. The CONTRACTOR shall repair and/or replace, at the OWNER's preference, and at no additional cost to the OWNER, any float unit and/or float components damaged due to improper support during installation.

B. Steel anchor piles shall be installed through assembled float unit pile hoops as specified under SECTION 02896 – Steel Pipe Piles and as shown on the Plans. Float units shall be secured in true straight alignment prior to pile installations.

C. Gangway landing float connection chains shall be installed taut so that no slack exists in the links and the landing float is flush against the pipe moorage float with no gaps between the UHMW rubstrip and the rubber fender. The rubber fender shall not be compressed more than ½" after the gangway landing float is installed. Submit installation plan to ENGINEER for approval.

D. Construction methods and products not specifically mentioned in these Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all work and products not specifically mentioned 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 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 dock support piles, float mooring piles, gangway support piles, dolphin piles, pile frames, batter pile guide weldments, all pile driving tips, spin fins, drilled pile sockets, pile splices, fiberglass caps, bird wire and all miscellaneous 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. Steel Structures Painting Council (SSPC) - Steel Structures Painting Manual

C. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products

D. AWS D1.1 - Structural Welding Code - Steel

1.3 SUBMITTALS

A. Manufacturer's Mill Certificate: Steel Certification including chemistry, yield strength, and mill numbers.

B. Shop Drawings for all fabricated items per Section 05120 – Metal Fabrication.

C. Welding Procedures: All weld metal proposed to be used in the shop or in the field shall be submitted and approved for use prior to construction. The submittal shall contain all required information and the manufacturer’s recommendations for the use of the product on this project.

D. Welder Certificates: Certify welders employed in the WORK with AWS qualifications within the previous 12 months.

E. Pile Installation and Socketing Plan: Provide narrative and illustrations to fully describe complete installation (and socketing plan when sockets are applicable). The plan shall address, as a minimum, all equipment, labor, temporary pile support and template systems, survey control, sequence, pile clean-out methods, and method of installation. The CONTRACTOR shall not mobilize hammers, drill equipment, or any other pile installation related equipment prior to receiving written approval, from the ENGINEER, for the Pile Installation and Socketing Plan.

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.

H. Fiberglass pile caps. Submit manufacturer’s product data sheet along with proposed

attachment method.

I. Bird Wire: Submit manufacturer product data sheet along with proposed attachment method.

J. Silt Boom: Submit silt boom installation plan to be used during pile socketing operations at Letnikof Cove. Silt boom cross section must follow general geometry shown on the Plans and must be of sufficient length to completely contain silt discharged from pile during pile socketing work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All steel pipe piles shall be seamless or straight seam pipe conforming to ASTM A252, Grade 3, with ASTM A36 chemistry. Carbon Equivalency shall not exceed 0.45.

Spiral weld pipe may be used provided it conforms to ASTM A-252, Grade 3, modified to include testing of production weld test specimens in accordance with ASTM A-139, Section 14.2. In lieu of acceptable quality assurance pertaining to coil butt splices, coil butt splices shall be removed. Carbon Equivalency shall not exceed 0.45.

B. All steel pipe piles shall be hot-dip galvanized, full length, in accordance with ASTM A123, unless otherwise noted on the Plans.

C. All piles shall be supplied in the lengths specified, complete with driving shoe pile tips, as indicated on the Plans. Piles shall be delivered full length or field spliced, in accordance with approved welding and galvanizing repair procedures. Galvanized coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired per Section 05120 – Metal Fabrication.

D. Gangway support pile frame assembly shall conform to the requirements of Section 05120-Metal Fabrication and shall be hot-dipped galvanized per Section 09900 – Coatings. Pile frame pipe shall conform to steel pipe pile requirements above.

E. Miscellaneous steel plates, shapes and fabricated metal assemblies and weldments shall be ASTM A36, hot-dip galvanized per ASTM A123 or A153, and shall conform to the requirements of Section 05120-Metal Fabrication.

F. Bird wire shall be Mega Spike 2204 PN# BBG2001-MS7 as manufactured by Bird-Be-Gone, Inc. 1 (800) 392- 6915, or approved equal, and shall be designed to deter large birds. A marine grade polyurethane adhesive, clear in color shall be used to secure bird spikes to steel components.

PART 3 - EXECUTION

3.1 PREPARATION

A. The CONTRACTOR shall become familiar with the site conditions and any available geotechnical information prior to bid. It is recommended that the CONTRACTOR visit

the site, prior to bid, to assess the site conditions, particularly during a minus tide.

3.2 INSTALLATION

A. The CONTRACTOR shall submit a detailed narrative plan for all pile installation. The plan shall include pile hammer types and sizes- including driving method for all pile types, as well as manufacturers' recommendations and information on hammer cushion, drill equipment, and a written description of means and methods for all pile installation work. The CONTRACTOR shall not mobilize hammers or any other related pile installation equipment prior to receiving written approval of the plan. The CONTRACTOR should allow one week for review of the plan by the ENGINEER. All driving methods shall meet the requirements of the PERMITS issued for this project.

B. An impact hammer suitably sized for the pile installation shall be utilized for final driving and acceptance of all piles. Impact hammer shall have a minimum rated energy of 30,000 ft-lbs. for 16"diameter piles and a minimum rated energy of 60,000 ft-lbs. for 24"diameter piles. Piles shall be driven to the minimum required pile capacities and minimum embedment as indicated on the Plans. Acceptance of a driven pile and determination of pile refusal shall be made solely by the ENGINEER. Any hammer that causes damage to the piles during driving operations shall be substituted with an acceptable, alternate hammer at no additional expense to the OWNER. Impact hammers shall be supplied with new cap block cushions, which shall be changed at the manufacturer's recommended cycle.

C. Drilled pile sockets shall be installed to the depth requirements specified on the Plans. Prior to drilling of pile sockets, piles shall initially be installed completely through existing overburden, and seated into any weathered and/or fractured rock, until refusal is obtained as determined by ENGINEER. Drilled pile socket diameter shall be a maximum of 17 inches for a 16-inch diameter pile. Piles shall be driven to bedrock refusal, at the bottom of the drilled pile socket following completion of drilling and removal of drilling equipment.

D. Piles shall be installed within 0.5% of specified vertical alignment and within 1 inch of specified location at cutoff. Misaligned or mislocated piles shall be extracted by the CONTRACTOR and shall be reinstalled at no additional cost to the OWNER. The CONTRACTOR shall have suitable equipment on site to extract piles that do not meet the location tolerances specified.

E. 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.

F. All float mooring piles shall be installed at planned locations, through the pile hoops to assure that the float moves freely along the piles throughout the entire tidal range. Any pile installed in a manner that causes binding between the pile and pile hoop shall be extracted and re-driven at no additional cost to the OWNER. Forcing of anchor piles to achieve required alignment will not be allowed. Minimum pile lengths and embedment requirements shall be as specified on the Plans. If a vibratory hammer is utilized for driving, and refusal occurs prior to complete embedment being achieved, the

CONTRACTOR shall drive the remaining pile to desired embedment with an impact hammer having a minimum rated energy of 30,000 ft-lbs, or as otherwise approved by the ENGINEER.

G. Install gangway support pile frames and all associated appurtenances in accordance with the requirements of the Contract Documents and as shown on the Plans. All materials fabrication, welding and steel coating repairs shall be per Section 05120-Metal Fabrication.

H. The CONTRACTOR shall furnish and install new fiberglass cap in accordance with the manufacturer's recommendations for each float mooring pile as indicated on the Drawings.

I. Silt boom must be used during pile installation operations when soil from within the pile is removed (i.e. during pile socket installation). Silt boom shall be of depth indicated on the Plans and of adequate length to achieve complete containment.

J. All steel pipe pile cutoffs greater than five feet in length shall become the property of the OWNER. The CONTRACTOR shall remove the pipe from the project site and shall neatly stack the pipe, as approved by the OWNER, at a location within five miles of the site.

3.3 PREDRILLED PILE SOCKETS

A. Pile installations at LETNIKOF COVE will require pre-drilled pile sockets. The CONTRACTOR shall be paid on a Unit Price basis for each pre-drilled pile socket required to achieve design penetrations as shown on the plans. The CONTRACTOR shall coordinate with the ENGINEER prior to installing all pile sockets.

B. Pile socketing shall be performed to avoid displacement of the overburden. Excessive overburden displacement shall require replacement of the overburden by the CONTRACTOR at no additional cost.

C. The approved socketing method and required penetration depths are as described in the Plans.

D. Following pile installation within the drilled socket, and annulus space between the pile and the edge of the socket shall be filled with 3/8" minus aggregate. No additional compensation will be provided for the fill material.

3.4 CONTINGENCY SPLICES

A. The WORK under this paragraph is contingent and includes providing all labor, materials, tools, and equipment necessary to perform pile splicing that is imperative due to unforeseen site conditions. This section does not include pile splices that make up the pile lengths shown in the pile schedule. This contingency item is only for pile lengths that are longer than shown in the pile schedule on the Plans. All WORK for contingency splices shall be performed in accordance with the requirements of the Contract Documents and as indicated on the Plans.

3.5 MOORING DOLPHIN CAP AND BOLLARD

A. The Work under this paragraph includes providing all labor, material, tools, and equipment necessary to fabricate and install the Mooring Dolphin Cap and Bollard. All WORK shall be performed in accordance with the requirements of the Contract Documents and as indicated on the plans. All materials fabrication, welding and steel coating repairs shall be per Section 05120 – Metal Fabrication.

END OF SECTION

SECTION 02897 – FLOAT TRANSITION PLATES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK in this Section shall include all labor, materials, tools and equipment necessary for fabrication, transport, delivery, and installation of the complete float transition plate assemblies, all miscellaneous appurtenances and hardware, and all other related Work in accordance with the requirements of the Contract Documents and as indicated on the Plans.

1.2 REFERENCES

A. ASTM (American Society of Testing Materials) Specifications

1.3 SUBMITTALS

A. Fabrication Shop Drawings for all fabricated steel and aluminum items, prior to fabrication, per Section 05120 – Metal Fabrication.

B. Structural Steel Submittals per Section 05120 – Metal Fabrication.

C. Aluminum Submittals per Section 05120 – Metal Fabrication.

D. Welding Procedures and Welder Certifications per Section 05120 – Metal Fabrication.

E. Non-Skid Coating - Submit manufacturer's published literature for specific product along with a sample which will demonstrate coarseness of applied product.

F. UHMW (Ultra High Molecular Weight) Polyethylene - Submit material specifications and Fabrication Shop Drawings.

1.4 QUALITY ASSURANCE

A. Quality Assurance shall be per Section 05120 – Metal Fabrication.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Miscellaneous steel plates and shapes shall comply with Section 05120 – Metal Fabrication.

B. All aluminum plate and shapes shall comply with Section 05120 – Metal Fabrication.

C. Bolts, piano hinge connection rods, and miscellaneous hardware shall comply with Section 05120 – Metal Fabrication

D. All Ultra High Molecular Weight (UHMW) Polyethylene components shall be

manufactured from virgin polyethylene material, be U.V. stabilized and shall be partially cross-linked. UHMW components shall be black in color, unless otherwise noted. Transition plate nosings shall be yellow in color.

E. Non-Skid Coating – Metal surfaces specified to be Non-Skid shall be thermal arc-sprayed with TH604 and/or TH605, as manufactured by Thermion, to achieve a very aggressive surface profile. Blast surface and prep as required by Non-Skid coating manufacturer, prior to Non-Skid coating application.

F. All materials shall conform to good workmanship, acceptable industry standards and manufacturer's recommendations.

2.2 DELIVERY, STORAGE, AND PROTECTION

A. Delivery, Storage, and Protection shall be per Section 05120 – Metal Fabrication.

PART 3 - EXECUTION

3.1 FABRICATION – Per Section 05120 – Metal Fabrication.

A. The complete float transition plate assemblies shall be constructed as shown on the Plans. Any materials damaged during transport and delivery and/or during handling and fabrication operations shall be repaired or replaced by the Fabricator, at the discretion of the ENGINEER, and at no additional cost to the OWNER.

3.2 TRANSPORT AND DELIVERY

A. The CONTRACTOR shall assume full responsibility for any damages or losses resulting from the handling or transporting of the float transition plate assemblies during loading, shipping, transport and delivery to the project site as well as the subsequent handling required on site for installation.

B. Damage that occurs during transport and delivery and/or during other handling operations prior to final acceptance shall be repaired or replaced by the CONTRACTOR at the discretion of the ENGINEER and at no additional cost to the OWNER.

3.3 INSTALLATION

A. The complete float transition plate assemblies shall be installed as shown in the Plans and/or to the highest industry standards if not fully shown on the Plans.

B. Construction methods and products not specifically mentioned in these Contract Documents shall be utilized using reasonable care and the highest quality construction practices. Final inspection and acceptance of all work and products not specifically mentioned 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 02996 –ANODES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK in this Section shall include all labor, materials, tools and equipment necessary to install anodes onto existing steel pipe float pontoons 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. Welding-Diver Qualifications and Qualified Welding Procedures in accordance with AWS D3.6 for any welding performed under water.

D. Documentation for proposed welder-diver personnel showing experience of similar underwater anode installation projects. Include current names and contact numbers of corresponding project owners.

E. Galvanized coatings repair procedure and product data.

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 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. Minimum of 10% of the number of each anode type shall be weighed to confirm compliance.

PART 3 - EXECUTION

3.1 ANODE INSTALLATION

A. All anodes shall be field welded to pontoons, 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, pipe pontoon 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 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.

D. Electrical Characteristics: Welding shall be accomplished using direct current. The electrode shall be negative for mild steel electrodes.

E. Pipe pontoon coatings removed prior to anode welding shall be repaired by coating the welded area with Carboline KOP-COAT A-788 Splash Zone Mastic, or approved equal, per manufacturer's recommendation.

3.2 CONTINUITY TESTING AND POTENTIAL READINGS

A. After installation of anodes, a random 10% of all anodes shall be digitally photographed and tested 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 pipe pontoon 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/identified on plan drawing and correspond with 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.

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:

Delete section on deleterious substances and substitute the following:

The amount of deleterious substances shall not exceed the following limits:
Friable particles percent by weight .....5 max.
Coal and Lignite, percent by weight using a liquid of 1.95 specific gravity. Only material that is brownish- black shall be considered as coal or lignite .....0.5 max.
Material passing the No. 200 sieve, percent by weight .....3.0 max.

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:

Delete section on deleterious substances and substitute the following:

The amount of deleterious substances shall not exceed the following limits:
Coal and Lignite, percent by weight (only material that is brownish-black or black shall be considered coal or lignite.)..... 1.0 max.
Material passing the No. 200 sieve..... 1.0 max.
Thin-elongated pieces, percent by weight.
(Length greater than 5 times average thickness)..... 15 max.
Sticks and roots, percent by weight ..... 0.10 max.
Friable Particles, percent by weight..... 0.25 max.
Maximum loss from AASHTO T 96 shall be 50 percent.
Maximum loss from AASHTO T 104 shall be 12 percent.

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.

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. Hot-poured sealants for concrete and asphaltic pavements shall conform to ASTM D 3405.

E. Hot-poured elastomeric type sealant for concrete pavements shall conform to ASTM D 3406.

F. Cold-poured silicone type sealant for concrete pavements shall conform to Federal Specification TT-S-1543, Class A. The sealant shall be a one part, low-modulus silicone rubber with an ultimate elongation of 1,200 percent.

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:

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, grade 60. 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

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:

Minimum cement content 6 1/2 sacks (611 lb.) per C.Y.
Maximum water/cement ratio 5.75 gal/sack (0.51 #/#)
28 day compressive strength (f'c) shall be 4000 psi.
Slump 3" $\pm$ 1"
Entrained Air 4 to 7%
Coarse Aggregate AASHTO M 43, Gradation No. 67
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.

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.
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:

For walls with R not exceeding 7 feet per hour:

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

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

For walls with R greater than 7 feet per hour:

$$P = 150 + \frac{43{,}400}{T} + \frac{2800R}{T}$$, but not more than 2000 p.s.f. or 150 h, whichever is less.

Where:
P = lateral pressure for design of wall forms, p.s.f.
R = rate of placement, feet per hour
T = temperature of concrete in forms, °F
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 re-entrant 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.

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.

PART 3 - EXECUTION

3.1 GENERAL

A. All concrete shall be placed before it has taken its initial set and, in any case, within 30 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.

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.

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.

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

A. Concrete in columns shall be placed in one continuous operation unless otherwise permitted. The concrete shall be allowed to set a 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.

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.

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 EXPANSION JOINTS

A. Expansion 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, expansion joints shall be constructed with pre-molded expansion 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 expansion 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.

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. Expansion 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 expansion 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 expansion 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.

3.11 PIPES, CONDUITS, AND DUCTS

A. 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

A. 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.

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.

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.

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 – Sidewalk, 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 to a smooth but not slippery finish.

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. These materials shall remain in place for the full curing period or they may be removed when the concrete has hardened sufficiently to prevent marring and the surface immediately covered with sand, earth, straw, or similar materials.

2. In either case the materials shall be kept thoroughly wet for the entire curing period. All other surfaces, if not protected by forms, shall be kept thoroughly wet, either by sprinkling or by the use of wet burlap, cotton mats, or other suitable fabric, until the end of the curing period. 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. 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 construction joints.

3.18 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.

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.

3.19 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 03304 – CONCRETE ABUTMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section shall include all labor, materials, tools and equipment necessary for installation of the trestle abutment, all miscellaneous 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 SUBMITTALS

A. Test results and certifications for all materials.

B. Detailed concrete mix design with laboratory testing results.

C. Structural steel submittals per Section 05120 – Metal Fabrication.

D. Certifications for Galvanized Reinforcement.

PART 2 - PRODUCTS

2.1 CONCRETE

A. All concrete requirements shall comply with Section 03301 Structural Concrete.

B. The design mix shall meet the following:

1. Minimum cement content 7 sacks (658 lb.) per C.Y.
2. Maximum water/cement ratio 5.0 gal/sack (0.45 #/#)
3. 28 day compressive strength - 6000 psi.
4. Slump 3" $\pm$ 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

2.2 HARDWARE

A. All reinforcing steel shall be hot-dip galvanized. Galvanized reinforcing steel shall conform to ASTM A767, Class I, with steel conforming to: ASTM A706 Grade 60 for bent or welded bars; and ASTM A615 Grade 60 for straight bars. Galvanizing shall be performed after fabrication.

B. Miscellaneous structural steel shall conform to ASTM A36 and Section 05120 – Metal Fabrication.

C. All other miscellaneous materials and cold weather concrete requirements shall conform to Section 03301 – Structural Concrete.

PART 3 - EXECUTION

3.1 FABRICATION

A. Trestle abutment shall be cast in place within the following tolerances:

1. Depth: ± 1/8 inch
2. Width: ± 1/8 inch
3. Length: ± 1/2 inch

3.2 INSTALLATION

A. Replace defective concrete at no additional cost to the OWNER.

B. All execution requirements shall comply with Section 03301 Structural Concrete.

C. Abutment shall be constructed on compacted D-1 base course installed as indicated on the Plans and in accordance with section 02204 – Base Course.

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 to fabricate and install all structural steel and aluminum in accordance with the requirements of the Contract Documents and as indicated 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 A6 – General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Steel.

D. ASTM A36/A36M - Structural Steel.

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 A572 – High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.

L. ASTM F593 – Stainless Steel Bolts, Hex Cap Screws, and Studs.

M. ASTM F594 – Stainless Steel Nuts.

N. ASTM A673 – Sampling Procedure for Impact Testing of Structural Steel.

O. ASTM A27 – Steel Castings, Carbon, for General Application.

P. AWS D1.1 - Structural Welding Code - Steel.

Q. The Aluminum Association – Aluminum Design Manual: Specifications and Guidelines for Aluminum Structures.

R. ASTM B209 – Standard Specifications for Aluminum and Aluminum-Alloy Sheet and Plate.

S. ASTM B210 – Standard Specifications for Aluminum and Aluminum-Alloy Drawn Seamless Tube.

T. ASTM B221 – Standard Specifications for Aluminum and Aluminum-Alloy Bar, Rod, Wire, Profiles and Tubes.

U. ASTM B241 – Standard Specifications for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Tube.

V. ASTM B308 – Standard Specifications for Aluminum and Aluminum-Alloy 6061-T6 Standard Structural Profiles.

W. AWS D1.2 - Structural Welding Code - Aluminum.

X. SSPC (Steel Structures Painting Council) – Painting Manual

Y. SSPC Guide 23 for Spray Metalizing.

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.
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. Welding Procedures.

F. Welders Certificates: Certify welders employed in the work, verifying AWS qualification within the previous 12 months.

G. 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.

H. Manufacturer’s certification for steel castings.

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. Installer Qualifications: Engage an experienced Installer who has completed structural steel work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

D. 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.

E. Quality Assurance. The metal fabricator must have an ongoing quality assurance program approved by a qualified, independent source. At the option of the ENGINEER, 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.

F. 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.

G. 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:

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

H. Fabricator Qualifications: Fabricator must have completed metal fabrication work similar in material, design, and extent to that indicated for this Project, and with a record of successful in-service performance.

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

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

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.

1. Store fasteners in a protected place. Clean and re-lubricate bolts and nuts that become dry or rusty before use.

2. 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

A. 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.

B. All steel shapes and all plate steel shall be ASTM A36, hot-dip galvanized after fabrication in accordance with ASTM A123, unless otherwise noted.

C. Square and rectangular HSS shall be ASTM A500, Grade B, hot-dip galvanized, unless otherwise noted.

D. Steel pipe less than 12-inch diameter shall be 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.

E. Bolts and Miscellaneous Hardware: Unless otherwise noted, all bolts shall be ASTM A307, hot-dip galvanized. Round plate washers shall be hot-dip galvanized and shall be used in all areas where the bolt head or nut bear against wood, except under economy head bolts. Round plate washers shall have an outside diameter at least 4 times the diameter of the bolt with which it is used. All bolts called out as ASTM A325 shall be hot-dip galvanized. A325 bolts shall be installed per AISC turn-of-nut method, unless otherwise indicated on the plans. Washers shall be used in all areas where the bolt head or nut shall bear against oversized holes in steel (i.e. more than 1/16 inch larger than bolt diameter). Nuts shall conform to ASTM A563 and shall be galvanized in accordance with ASTM A153, unless otherwise noted.

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

G. All nails shall be hot-dip galvanized common nails conforming to Federal Specification FF-N-105B, unless otherwise specified.

H. 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 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

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.

F. Welding: All welding shall be in accordance with AWS D1.1 or AWS D1.2, current edition, as applicable. All welders shall be qualified per AWS for the type of welding anticipated. 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.

G. Galvanize Repair: Galvanizing and thermal sprayed metalizing coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired by using the following hot-applied repair stick method:

1. 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.
2. Remove welding slag by chipping hammer and clean weld or damaged area by vigorous wire brushing.
3. 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.
4. Wire brush surface again.
5. Apply coating by rubbing bar of the alloy over the heated surface while it is hot enough to melt the alloy.
6. Spread the molten alloy by briskly wire brushing or rubbing with a flat edge strip of steel or palette knife.
7. Remove flux residues by wiping with a damp cloth or rinsing with water.

8. Brush apply two coats 95% zinc rich paint, ZRC or equal (cold galvanize repair).

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 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.

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 metal coatings for all project components specified to be coated. 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.

PART 2 - PRODUCTS

2.1 GALVANIZING

A. All steel components shall be hot-dip galvanized, unless otherwise noted. Galvanizing shall be per ASTM A123 or A153, as appropriate.

2.2 THERMAL SPRAY METALLIC COATING

A. Shall conform to SSPC Guide No. 23.

B. Thermal Spray Metallic Coating shall be with 85%zinc/15%aluminum to a minimum dry coating thickness of 12 mils.

2.3 FIELD REPAIR PROCEDURE OF PAINTED STEEL COMPONENTS

A. CONTRACTOR shall prepare steel surfaces per manufacturer's recommendation.

B. Paint shall be Moisture-Cured Urethane as manufactured by *Sherwin-Williams,* or approved equal. Fabricator may submit alternate paint system for ENGINEER review. If alternate paint system is not approved, the following paint system shall be used:

C. First Coat: First Coat shall be *Sherwin-Williams Corothane I Mio-Zinc Primer*, or approved equal, to a minimum dry film thickness (DFT) of 3 mils.

D. Second Coat: Second Coat shall be *Sherwin-Williams Corothane I Coal Tar*, or approved equal, to a minimum dry film thickness (DFT) of 6 mils.

E. Third Coat: Third Coat shall be *Sherwin-Williams Corothane I Coal Tar*, or approved equal, to a minimum dry film thickness (DFT) of 6 mils. Color shall be black.

F. CONTRACTOR shall submit complete repair procedure for ENGINEER approval.

2.4 NON-SKID

A. Metal surfaces specified to be Non-Skid shall be thermal arc-sprayed with TH604 and/or TH605, as manufactured by *Thermion*, to achieve a very aggressive surface profile. Blast surface and prep as required by Non-Skid coating manufacturer, prior to Non-Skid coating application.

PART 3 - EXECUTION

3.1 PREPARATION AND APPLICATION

A. Galvanizing shall be per ASTM A123 or A153, as appropriate. 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. Preparation and application of Thermal Spray Metallic Coatings shall conform to SSPC Guide No. 23, having a minimum dry film coating thickness of 12 mils. Thermal Spray Metallic Coating damaged from shipping, handling, welding or by other means shall be repaired in accordance with Sub-Section 3.2.

C. All steel surfaces to be painted shall be prepared according to the paint manufacturers recommendations. Paint systems must be applied strictly according to the manufacturer's recommendations, and correct application must be warranted by the paint manufacturer.

3.2 COATING REPAIRS

A. Paint Coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired per manufacturer's recommendations. CONTRACTOR shall have sufficient amount of *Sherwin-Williams* product available on site for coating repairs.

B. CONTRACTOR shall submit metal coating repair methods and procedures for review and approval by the ENGINEER, prior to fabrication or mobilization of any equipment and materials. Galvanized and/or Thermal Spray Metallic Coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired using the following hot-applied repair per Section 05120, Subsection 3.2, paragraph G.

END OF SECTION

SECTION 16060 - GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Grounding systems and equipment.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Stainless steel, sectional type; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install stranded conductors for No. 12 AWG and larger unless otherwise indicated.

B. Conductor Terminations and Connections:

1. Equipment Grounding Conductor Terminations: Bolted connectors.
2. Connections to Ground Rods: Bolted connectors.
3. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

END OF SECTION

SECTION 16073 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.; a division of Cooper Industries.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Tyco International, Ltd.
g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; galvanized.

E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) Hilti Inc.
2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

   a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

      1) Cooper B-Line, Inc.; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti Inc.
      4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

   1. Secure raceways and cables to these supports with single-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To Existing Concrete: Expansion anchor fasteners.
3. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
4. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
5. To Light Steel: Sheet metal screws.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 16075 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Identification for conductors.
2. Equipment identification labels.
3. Miscellaneous identification products.

1.3 ACTION SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

B. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.

C. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around conductor it identifies. Full shrink recovery at a maximum of 200 deg F (93 deg C). Comply with UL 224.

D. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.2 EQUIPMENT IDENTIFICATION LABELS

A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

2.3 CABLE TIES

A. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black.

2.4 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

E. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.

3.2 IDENTIFICATION SCHEDULE

A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded feeder and branch-circuit conductors.

a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 208/120-V Circuits:

1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.

c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

B. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

a. Outdoor Equipment: Engraved, laminated acrylic or melamine label .
b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
c. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
b. Enclosures and electrical cabinets.
c. Enclosed switches.

END OF SECTION

SECTION 16120 - CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Alcan Products Corporation; Alcan Cable Division.
2. Alpha Wire.
3. Belden Inc.
4. Encore Wire Corporation.
5. General Cable Technologies Corporation.
6. Southwire Incorporated.

B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type XHHW-2.

2.2 CONNECTORS AND SPLICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
2. Gardner Bender.
3. Hubbell Power Systems, Inc.

4. Ideal Industries, Inc.
5. Ilsco; a branch of Bardes Corporation.
6. NSi Industries LLC.
7. O-Z/Gedney; a brand of the EGS Electrical Group.
8. 3M; Electrical Markets Division.
9. Tyco Electronics.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SYSTEM DESCRIPTION

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Stranded copper.

B. Branch Circuits: Stranded copper.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Feeders: Type XHHW-2, single conductors in raceway.

B. Exposed Branch Circuits: Type XHHW-2, single conductors in raceway

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Complete raceway installation between conductor and cable termination points according to Section 16130 "Raceways and Boxes" prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Support cables according to Section 16073 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice, termination, and tap for all conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 16075 "Electrical Identification."

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
2. Perform each visual and mechanical inspection and electrical insulation test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

B. Test and Inspection Reports: Prepare a written report to record the following:

1. Procedures used.
2. Results that comply with requirements.
3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION

SECTION 16130 - RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Nonmetallic conduit and fittings.
3. Metal wireways and auxiliary gutters.
4. Boxes, enclosures, and cabinets.

1.3 DEFINITIONS

A. GRC: Galvanized rigid steel conduit.

B. IMC: Intermediate metal conduit.

1.4 ACTION SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
2. Allied Tube & Conduit; a Tyco International Ltd. Co.
3. Anamet Electrical, Inc.
4. Electri-Flex Company.
5. O-Z/Gedney; a brand of EGS Electrical Group.
6. Picoma Industries, a subsidiary of Mueller Water Products, Inc.
7. Republic Conduit.
8. Robroy Industries.
9. Southwire Company.
10. Thomas & Betts Corporation.

11. Western Tube and Conduit Corporation.
12. Wheatland Tube Company; a division of John Maneely Company.

B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. GRC: Comply with ANSI C80.1 and UL 6.

D. IMC: Comply with ANSI C80.6 and UL 1242.

E. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Expansion Fittings: Steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

F. Joint Compound for IMC or GRC.: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.
6. Condux International, Inc.
7. Electri-Flex Company.
8. Kraloy.
9. Lamson & Sessions; Carlon Electrical Products.
10. Niedax-Kleinhuis USA, Inc.
11. RACO; a Hubbell company.
12. Thomas & Betts Corporation.
13.

B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. LFNC: Comply with UL 1660.

D. Fittings for LFNC: Comply with UL 514B.

E. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper B-Line, Inc.
2. Hoffman.
3. Mono-Systems, Inc.
4. Square D.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 4x, Stainless Steel, 304, unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Flanged-and-gasketed type, unless otherwise indicated.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Adalet.
2. Cooper Technologies Company; Cooper Crouse-Hinds.
3. EGS/Appleton Electric.
4. Erickson Electrical Equipment Company.
5. FSR Inc.
6. Hoffman; a Pentair company.
7. Hubbell Incorporated; Killark Division.
8. Kraloy.
9. Milbank Manufacturing Co.
10. Mono-Systems, Inc.
11. O-Z/Gedney; a brand of EGS Electrical Group.
12. RACO; a Hubbell Company.
13. Robroy Industries.
14. Spring City Electrical Manufacturing Company.
15. Stahlin Non-Metallic Enclosures; a division of Robroy Industries.
16. Thomas & Betts Corporation.
17. Wiremold / Legrand.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

D. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.

E. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 4 with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

F. Cabinets:

1. NEMA 250, Type 4x with drip shield with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Metal barriers to separate wiring of different systems and voltage.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC or IMC.
2. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
3. Boxes and Enclosures, Aboveground: NEMA 250, Type 4x.

B. Minimum Raceway Size**:** 3/4-inch (21-mm) trade size.

C. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
2. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter.

B. Complete raceway installation before starting conductor installation.

C. Comply with requirements in Section 16073 "Hangers and Supports for Electrical Systems" for hangers and supports.

D. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.

E. Support conduit within 12 inches (300 mm)of enclosures to which attached.

F. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

G. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

H. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

I. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

J. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

K. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

L. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

M. Expansion-Joint Fittings:

1. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
3. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
4. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.

N. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFNC in damp or wet locations not subject to severe physical damage.

O. Fasten junction and pull boxes to or support from structure. Do not support boxes by conduits.

3.3 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION

SECTION 16140 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Twist-locking receptacles.
3. Weather-resistant receptacles.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand (Pass & Seymour).

B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:

1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
2. Devices shall comply with the requirements in this Section.

2.3 STRAIGHT-BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A, marine grade: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; 5351 (single), CR5362 (duplex).
b. Hubbell; HBL5351 (single), HBL5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5361 (single), 5362 (duplex).

2.4 GFCI RECEPTACLES

A. General Description:

1. Straight blade, non-feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; VGF20.
b. Hubbell; GFR5352L.
c. Pass & Seymour; 2095.
d. Leviton; 7590.

2.5 TWIST-LOCKING RECEPTACLES

A. Single Convenience Receptacles: Comply with NEMA WD 1, NEMA WD 6 Configuration as illustrated in the Drawings and UL 498.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; CWL520R.
b. Hubbell; HBL2310.
c. Leviton; 2310.
d. Pass & Seymour; L520-R.

2.6 TOGGLE SWITCHES

A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

1. Switches, 120/277 V, 20 A:

a. Single Pole:

i. Cooper; AH1221.
ii. Hubbell; HBL1221.
iii. Leviton; 1221-2.
iv. Pass & Seymour; CSB20AC1.

2.7 WALL PLATES

A. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant thermoplastic with lockable cover.

2.8 FINISHES

A. Device Color:

1. Wiring Devices Connected to Normal Power System: Yellow, unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.

B. Coordination with Other Trades:

1. Protect installed devices and their boxes.

C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.

5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

C. Wiring device will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION

SECTION 16145 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Photoelectric switches.
2. Outdoor motion sensors.
3. Lighting contactors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 OUTDOOR PHOTOELECTRIC SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper Industries, Inc.
2. Intermatic, Inc.
3. NSi Industries LLC; TORK Products.
4. Tyco Electronics; ALR Brand.

B. Description: Solid state, with SPST dry contacts rated for 1000 VA, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Light-Level Monitoring Range: 1.5 to 10 fc (16.14 to 108 lux), with an adjustment for turn-on and turn-off levels within that range.
3. Time Delay: Fifteen second minimum, to prevent false operation.
4. Surge Protection: Metal-oxide varistor.

5. Mounting: Twist lock complies with NEMA C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

2.2 OUTDOOR MOTION SENSORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Bryant Electric; a Hubbell company.
2. Cooper Industries, Inc.
3. Hubbell Building Automation, Inc.
4. Leviton Mfg. Company Inc.
5. Lithonia Lighting; Acuity Lighting Group, Inc.
6. NSi Industries LLC; TORK Products.
7. RAB Lighting.
8. Sensor Switch, Inc.
9. Watt Stopper.

B. General Requirements for Sensors: Solid-state outdoor motion sensors.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. PIR type, weatherproof. Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm). Comply with UL 773A.
3. Switch Rating:

    a. Lighting-Fixture-Mounted Sensor: 500W.
    b. Separately Mounted Sensor: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.

4. Switch Type: SP
5. Voltage: 120-V type.
6. Detector Coverage:

    a. Long Range: 180-degree field of view and 110-foot (34-m) detection range.

7. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc (108 to 1600 lux). The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
8. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and help eliminate false "off" switching.
10. Operating Ambient Conditions: Suitable for operation in ambient temperatures ranging from minus 40 to plus 130 deg F (minus 40 to plus 54 deg C), rated as "raintight" according to UL 773A.

2.3 LIGHTING CONTACTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Allen-Bradley/Rockwell Automation.
2. ASCO Power Technologies, LP; a division of Emerson Electric Co.
3. Eaton Corporation.
4. General Electric Company; GE Consumer & Industrial - Electrical Distribution; Total Lighting Control.
5. Square D; a brand of Schneider Electric.

B. Description: Electrically operated and electrically held, combination-type lighting contactors, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices as indicated on Drawings, matching the NEMA type specified for the enclosure.

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.2 CONTACTOR INSTALLATION

A. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.3 WIRING INSTALLATION

A. Wiring Method: Comply with Section 16120 "Conductors and Cables." Minimum conduit size is 1/2 inch (13 mm).

B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

C. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.4 IDENTIFICATION

A. Identify components and power and control wiring according to Section 16075 "Electrical Identification."

1. Identify controlled circuits in lighting contactors.

B. Label contactors with a unique designation.

3.5 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Lighting control devices will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION

SECTION 16442 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

A. SVR: Suppressed voltage rating.

B. TVSS: Transient voltage surge suppressor.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
6. Include wiring diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

B. Panelboard Schedules: For installation in panelboards.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation according to NECA 407.

1.9 PROJECT CONDITIONS

A. Environmental Limitations:

1. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

    a. Ambient Temperature: Not exceeding minus 22 deg F (minus 30 deg C) to plus 104 deg F (plus 40 deg C).
    b. Altitude: Not exceeding 6600 feet (2000 m).

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.
2. Altitude not exceeding 6600 feet (2000 m).

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Enclosures: Surface-mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Outdoor Locations: NEMA 250, Type 4x, Stainless Steel 304.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions.
3. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.

B. Incoming Mains Location: Bottom.

C. Phase, Neutral, and Ground Buses:

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

D. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Mechanical type.
3. Ground Lugs and Bus-Configured Terminators: Mechanical type.

E. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

F. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: lugs only.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
3. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
4. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.
b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
c. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
d. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NECA 407.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install panelboards and accessories according to NECA 407.

B. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

C. Install overcurrent protective devices and controllers not already factory installed.

D. Install filler plates in unused spaces.

E. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

F. Comply with NECA 1.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 16075 "Electrical Identification."

B. Create a directory to indicate installed circuit loads. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 16075 "Electrical Identification."

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
3. Perform the following infrared scan tests and inspections and prepare reports:

    a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
    b. Instruments and Equipment:

1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION

SECTION 16475 – POWER PEDESTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this section.

1.2 SUMMARY

A. This Section includes fittings, enclosures, conductors, circuit breakers, and receptacles for electrical wiring.

1.3 SUBMITTALS

A. Product Data: For enclosures, wiring devices, metering, and circuit breakers.

B. Shop Drawings: For each pedestal and related equipment.

1. Dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings. Include the following:

   a. Enclosure types and details.

2. Wiring Diagrams: Diagram power, signal, and control wiring and differentiate between manufacturer-installed and field-installed wiring. Label each wire to coordinate with factory-installed identification.

C. Maintenance Data: For pedestals and components to include in operation and maintenance manuals.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Eaton Corporation, Marina Power & Lighting.

2.2 GENERAL

A. Provide power pedestals with features as illustrated in the drawings and specified herein. The pedestals shall include circuit breakers, receptacles, meters sockets, internal wiring, and feeder terminals.

B. The pedestals shall be configured to accept connection of single phase feeders. The pedestals shall be internally wired 208Y/120 volt; as illustrated in the drawings.

2.3 ENCLOSURE

A. NEMA Type 3R construction, fabricated from 316 stainless steel.

B. All hardware shall be 316 stainless steel. Exterior doors and covers shall be pad-lockable.

C. Hinged covers over receptacles. Allow cover to close on receptacles with shore tie cords connected. Provide locking hasps for covers. Constructed of the same material as housing.

D. Finish: Units shall be powder coat painted off-white.

2.4 INTERNAL WIRING

A. XHHW or USE insulated 600V rated copper conductors.

B. Rated for minimum capacity of 100 amperes to each pedestal, except as noted in the drawings.

C. Power terminal block for feeders and conductors to circuit breakers. Isolated Neutral terminal. Terminals for ground conductors with bond to the enclosure.

D. Tape markers for wire identification.

2.5 RECEPTACLES

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand (Pass & Seymour)
5. Cooper Crouse-Hinds.
6. EGS/Appleton Electric.
7. Killark; Division of Hubbell Inc.

B. Single "Twist Lock" Receptacles: 125 V, 30 A Configuration L5-30R; and 125/250 V, 50 A. Comply with NEMA WD 1, NEMA WD 6, and UL 498. .

C. Receptacles shall be marine grade rated for corrosive, wet environment. Allow space in the enclosure for a minimum of two receptacles for each shore tie.

D. Receptacles shall be angled downward to minimize precipitation intrusion

2.6 CIRCUIT BREAKERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
3. Bolt-in type.

PART 3 - EXECUTION

3.1 ASSEMBLY

E. Coordinate the pedestal features with the special requirements illustrated in the drawings.

F. Provide tape identification marker at termination of each wire.

G. Provide de-oxidizing compound on all internal wiring terminations and bare conductive parts to minimize corrosion.

3.2 INSTALLATION

A. Connect the pedestals as illustrated in the drawings to equalize voltage drops and loads between phases.

B. Mount and support pedestals as illustrated in the drawings.

C. Terminations: Coat all exposed terminations with de-oxidizing compound to minimize corrosion.

D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

3.3 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each pedestal bus, component, connecting supply, and feeder.
2. Test continuity of each circuit.

B. Testing: After installing pedestals and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1. Procedures: Perform each visual and mechanical inspection indicated in NETA ATS, Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

END OF SECTION

SECTION 16521 - EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps and ballasts.
2. Luminaire-mounted photoelectric relays.
3. Poles and accessories.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. LER: Luminaire efficacy rating.

D. Luminaire: Complete lighting fixture, including ballast housing if provided.

E. Pole: Luminaire support structure, including tower used for large area illumination.

F. Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.

B. Live Load: Single load of 500 lbf (2224 N), distributed as stated in AASHTO LTS-4-M.

C. Ice Load: Load of 3 lbf/sq. ft. (145 Pa), applied as stated in AASHTO LTS-4-M Ice Load Map.

D. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.

1. Basic wind speed for calculating wind load for poles exceeding 49.2 feet (15 m) in height is 100 mph (45 m/s).

a. Wind Importance Factor: 1.0.
b. Minimum Design Life: 50 years.

c. Velocity Conversion Factors: 1.0.

1.5 ACTION SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
2. Details of attaching luminaires and accessories.
3. Details of installation and construction.
4. Luminaire materials.
5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.

    a. Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

6. Photoelectric relays.
7. Drivers, including energy-efficiency data.
8. Materials, dimensions, and finishes of poles.
9. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Warranty: Sample of special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

1.8 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Comply with NFPA 70.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store poles on decay-resistant-treated skids at least 12 inches (300 mm) above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

B. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.

1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
4. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings..

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.

1. LER Tests LED Fixtures: Where LER is specified, test according to NEMA LE 5A.

B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

C. Metal Parts: Free of burrs and sharp corners and edges.

D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.

E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

G. Exposed Hardware Material: Stainless steel.

H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

J. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

K. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

L. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
2. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

M. Factory-Applied Labels: Comply with UL 1598. Include recommended drivers and sensors. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

2.3 DRIVERS FOR LED SOURCED LUMINAIRES

A. General Requirements for Electronic Drivers:

1. Comply with UL and ANSI C82.11.
2. Exterior Environmental Protection: IP66 outdoor rated.
3. Designed for type and quantity of lamps served.
4. Drivers shall be designed for full light output unless dimmer control is indicated.

5. Drivers shall operate at 60 Hz.
6. Sound Rating: Class A.
7. Output Voltage Regulation: 1 percent Line and 5 percent Load.
8. Total Harmonic Distortion Rating: Less than 20 percent.
9. Current Crest Factor: 1.5, maximum.
10. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
11. Lower operating frequencies are available but may interfere with default ballasts when used in proximity of infrared sensors.
12. Efficiency: 90 percent, or higher.
13. Power Factor: 0.90, or higher.

2.4 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

A. Structural Characteristics: Comply with AASHTO LTS-4-M.

1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.

B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
3. Anchor-Bolt Template: Plywood or steel.

D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.

2.5 STEEL POLES

A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet (12 m) in height with access handhole in pole wall.

1. Shape: Square, straight.
2. Mounting Provisions: Butt flange for bolted mounting on strucure.

B. Brackets for Luminaires: Detachable, cantilever, without underbrace.

1. Adapter fitting welded to pole, allowing the bracket to be bolted to the pole mounted adapter, then bolted together with **s**tainless-steel bolts.

2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire.
3. Match pole material and finish.

C. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Section 16060 "Grounding and Bonding," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.

D. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

B. Adjust luminaires and sensors that require field adjustment or aiming.

3.2 POLE INSTALLATION

A. Alignment: Align poles for optimum directional alignment of luminaires and their mounting provisions on the pole.

B. Raise and set poles using web fabric slings (not chain or cable).

3.3 CORROSION PREVENTION

A. Steel Conduits: Comply with Section 16130 "Raceways and Boxes." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4 GROUNDING

A. Ground metal poles and support structures according to Section 16060 "Grounding and Bonding."

1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.5 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

1. Verify operation of sensors and controls.

END OF SECTION