PETERSBURG BOROUGH

CRANE DOCK APPROACH WIDENING
PROJECT MANUAL

PLANS
CONTRACT DOCUMENTS &
TECHNICAL SPECIFICATIONS

Prepared By:

PND ENGINEERS, INC.

9360 Glacier Highway, Suite 100
Juneau, Alaska 99801
(907) 586-2093

January 2014

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

MASTER INDEX

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

I INVITATION TO BID

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

INVITATION TO BID

Notice is hereby given that the Petersburg Borough will receive sealed bids for the Crane Dock Approach Widening Project. This project generally consists of a Base Bid and one Additive Alternate. Base Bid Work includes demolition and salvage, steel walers, bullrail, steel pipe piles, minor grading and paving, precast concrete deck panels, concrete abutment, net launching platform, electrical and other miscellaneous work. Additive Alternate A includes replacement of access ladders. The estimated construction cost for all Work is between $600,000 and $700,000. The earliest allowed field start date is September 15, 2014 and all Work shall be completed by January 25, 2015.

Sealed bids will be received by the Petersburg Borough, Post Office Box 329, Petersburg, Alaska 99833, located in the Municipal Building, No. 12 South Nordic Drive, Petersburg, Alaska 99833 until 2:00 p.m. prevailing time on Tuesday, February 25, 2014 at which time the bids will be publicly opened and read aloud in the Borough Assembly Chambers.

The Bid and Contract Documents, including one set of reduced scale drawings, may be obtained in hard copy from the Petersburg Borough Harbor Department at 223 Harbor Way, (907) 772-4688. A non-refundable fee of $50.00 made payable to the Petersburg Borough is required for each set of Contract Documents. 2012 Petersburg Standard Specifications (CPSS) may be obtained in hard copy for an additional fee of $60.00 made payable to the Petersburg Borough. Additional charges will be required for special handling or delivery of the documents by means other than first class mail.

Digital downloads of CPSS, Bid and Contract Documents are available in PDF format free of charge at www.ci.petersburg.ak.us. Downloading Contract Documents from the Petersburg Borough website requires completing a bid advertisement form to receive changes or addenda. Failure to fill out the form may adversely affect your proposal.

Each bid shall be accompanied by a bid bond, cashier's check or certified check made payable to the Petersburg 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 Petersburg on Wednesday, February 12, 2014 beginning at 12:00 PM at the Assembly Chambers. Attendance by teleconference will be available by calling 1-800-315-6338. Callers will need to enter the following access code: #4688. Technical questions regarding this project shall be directed to Harbormaster Glorianne Wollen at the Harbor Department, (907) 772-4688.

The Petersburg 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: Steve Giesbrecht, Borough Manager

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

II BIDDER'S CHECKLIST

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

BIDDER'S CHECKLIST

I. INSTRUCTIONS TO BIDDER:

Bidders are advised that notwithstanding any instructions or interferences elsewhere in this Invitation to Bid, only the documents shown and detailed on this sheet need be submitted with and made part of their bid. Other documents may be required to be submitted after bid time, but prior to award. Bidders are hereby advised that failure to submit the documents shown and detailed on this sheet shall be justification for rendering the bid non-responsive.

II. REQUIRED DOCUMENTS FOR BID:

NOTE:	The following listed items are required to be completely filled out and submitted with the bid.
1.	Bid proposal consisting of pages **BP-1 through BP-3. BP-3** must be manually signed.
2.	The person signing the bid must initial erasures or other changes made to the Bid Proposal Sheet.
3.	Bid Bond, certified check, cashier's check, money order, or cash shall be submitted with the bid in the amount indicated.
4.	Non-Collusion Affidavit
5.	All Addenda issued shall be acknowledged in the space provided on the Bid Proposal sheet or by manually signing the Addenda sheet and submitting it prior to the bid.
6.	Equal Employment Opportunity Statement of Acknowledgement

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

III BID PROPOSAL

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING
BID PROPOSAL

BASE BID

Item No.	Pay Item Description	Pay Unit	Approx. Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
1505.1	Mobilization	LS	All Reqd	Lump	Sum	$	
2060.1	Demolition, Salvage and Disposal	LS	All Reqd	Lump	Sum	$	
2200.1	Upland Modifications	LS	All Reqd	Lump	Sum	$	
2702.1	Construction Survey Measurement	LS	All Reqd	Lump	Sum	$	
2726.1	Timber Fender System	LS	All Reqd	Lump	Sum	$	
2896.1	Furnish & Install Steel Pipe Vertical Pile, 12.75" Dia. X 0.500" Thick	EA	6	$		$	
2896.2	Furnish & Install Steel Pipe Batter Pile, 12.75" Dia. X 0.500" Thick	EA	2	$		$	
3304.1	Concrete Abutment	LS	All Reqd	Lump	Sum	$	
3420.1	Precast Concrete Deck Panels	LS	All Reqd	Lump	Sum	$	
3601.1	Concrete Deck Panel Grout	LS	All Reqd	Lump	Sum	$	
5120.1	Approach Dock Steel Framing	LS	All Reqd	Lump	Sum	$	
5120.2	Modify & Install Salvaged Steel Walers	LS	All Reqd	Lump	Sum	$	
5120.3	Modify & Install Salvaged Steel Bullrail	LS	All Reqd	Lump	Sum	$	
5120.4	Net Launching Platform	LS	All Reqd	Lump	Sum	$	
16000.1	Power to Existing Cranes & Lights	LS	All Reqd	Lump	Sum	$	

TOTAL BASE BID AMOUNT (In Figures): $_____

TOTAL BASE BID AMOUNT (In Words):

_____

BIDDER NAME: _____

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING
BID PROPOSAL

ADDITIVE ALTERNATE A

Item No.	Pay Item Description	Pay Unit	Approx. Quantity	Unit Price		Amount	
				Dollars	Cents	Dollars	Cents
5120.5A	Remove & Replace Access Ladder	EA	7	$		$	

TOTAL ADDITIVE ALTERNATE A AMOUNT (In Figures): $_____

TOTAL ADDITIVE ALTERNATE A AMOUNT (In Words):

_____

BIDDER NAME: _____

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING
BID PROPOSAL

(CERTIFICATION)

TO: PETERSBURG BOROUGH _____, 2014
NO. 12 SOUTH NORDIC DRIVE
POST OFFICE BOX 329
PETERSBURG, ALASKA 99833

SUBJECT: Project Title: **CRANE DOCK APPROACH WIDENING**

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

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

The bidder acknowledges receipt of the following addenda:

Addenda No. _____ Date of Addenda _____
Addenda No. _____ Date of Addenda _____
Addenda No. _____ Date of Addenda _____
Addenda No. _____ Date of Addenda _____

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

Type of Business Organization

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

_____ _____
Bidder/Company Name Bidder Phone Number

_____
Bidder Address

_____ _____
Alaska Contractor's License Number Employer's Tax Identification Number

_____ _____
Signature Name/Title

PETERSBURG BOROUGH
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IV BID BOND

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned_____

_____as Principal and _____

_____as Surety, are held and firmly bound unto the PETERSBURG BOROUGH, as Owner in the penal sum of _____Dollars, for payment of which sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. Signed this _____ day of _____, 20_____.

The condition of the above obligation is such that whereas the Principal has submitted to the Petersburg Borough, Alaska a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for :

CRANE DOCK APPROACH WIDENING

NOW, THEREFORE

a.) If said Bid shall be rejected, or in the alternate,

b.) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his/her faithful performance of said contract, and a bond for the payment of all persons performing labor, furnishing materials or furnishing equipment in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety of any and all claims thereunder shall in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said surety and its bond shall be in no way impaired or affected by an extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

BID BOND – PAGE 2

IN WITNESS WHEREOF, the Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, and day and year first set forth above.

_____
Principal

_____

BY:_____

_____
Surety

_____

BY:_____

(SEAL)

_____ _____
Principal Surety

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

V EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

I. The CONTRACTOR shall not discriminate against any employee or applicant for employment on the basis of race, religion, color, national origin, age, physical handicap, sex, marital status, changes in marital status, pregnancy or parenthood in the performance of this contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or other legally available remedies.

II. Bidders are required to comply with Equal Opportunity Employment reporting requirements. Each bidder and proposed subcontractors as indicated must submit the following with their bid;

   a. Equal Employment Opportunity Statement of Acknowledgement

III. The CONTRACTOR shall include the provisions of this section in every contract and subcontract the CONTRACTOR enters into relating to the WORK such that the provisions herein are binding upon all parties involved in the WORK.

IV. This Contract is subject to state and federal debarment certification requirements.

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

EQUAL EMPLOYMENT OPPORTUNITY STATEMENT OF ACKNOWLEDGEMENT

This statement of acknowledgement is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b)(1)) and must be completed by each Bidder and proposed Subcontractor participating in this contract.

PLEASE CHECK THE APPROPRIATE BOXES

THE ☐ Bidder ☐ proposed Subcontractor **hereby CERTIFIES:**

PART A. Bidders and proposed subcontractors with 50 or more employees and a federal contract amounting to $50,000 or more are required to submit one federal EEO-1 report during each year the two conditions (50 employees and a $50,000 federal contract) exist.

The company named below (Part C) is exempt from the requirements of submitting an EEO-1 report this year.

☐ NO (go to PART B) ☐ YES (go to PART C)

PART B. The company named below (Part C) has submitted an EEO-1 report this year, or intends to at this time.

☐ NO ☐ YES

NOTE: On-line EEO-1 report filing may be accessed at the following web address:

https://egov.eeoc.gov/eeo1/eeo1.jsp

EEO-1 reporting and instructions may be obtained by writing or e-mail to:

EEO-1 Joint Reporting Committee
P.O. Box 78040
Washington, DC 20013-8040
Telephone 1-866-286-6440
Email: e1.techassistance@eeoc.gov

PART C.

_____ _____
Signature of Authorized Representative of Company Date

_____ (_____) _____
Name of Company Telephone No.

_____ _____
Address of Company Zip Code

_____ _____
Project Name Contract Number

Joint Reporting Committee
- Equal Employment Opportunity Commission
- Office of Federal Contract Compliance Programs (Labor)

EQUAL EMPLOYMENT OPPORTUNITY

EMPLOYER INFORMATION REPORT EEO—1

Standard Form 100
REV. 01/2005

O.M.B. No. 3046-0007
EXPIRES 01/2009
100-214

Section A—TYPE OF REPORT

Refer to instructions for number and types of reports to be filed.

1. Indicate by marking in the appropriate box the type of reporting unit for which this copy of the form is submitted (MARK ONLY ONE BOX).

(1) ☐ Single-establishment Employer Report

Multi-establishment Employer:
(2) ☐ Consolidated Report (Required)
(3) ☐ Headquarters Unit Report (Required)
(4) ☐ Individual Establishment Report (submit one for each establishment with 50 or more employees)
(5) ☐ Special Report

2. Total number of reports being filed by this Company (Answer on Consolidated Report only)_____

Section B—COMPANY IDENTIFICATION *(To be answered by all employers)*

1. Parent Company			OFFICE USE ONLY
a. Name of parent company (owns or controls establishment in item 2) omit if same as label			a.
Address (Number and street)			b.
City or town	State	ZIP code	c.

2. Establishment for which this report is filed. (Omit if same as label)

a. Name of establishment					
					d.
Address (Number and street)	City or Town	County	State	ZIP code	e.
b. Employer identification No. (IRS 9-DIGIT TAX NUMBER)					f.

c. Was an EEO–1 report filed for this establishment last year? ☐ Yes ☐ No

Section C—EMPLOYERS WHO ARE REQUIRED TO FILE *(To be answered by all employers)*

☐ Yes ☐ No 1. Does the entire company have at least 100 employees in the payroll period for which you are reporting?

☐ Yes ☐ No 2. Is your company affiliated through common ownership and/or centralized management with other entities in an enterprise with a total employment of 100 or more?

☐ Yes ☐ No 3. Does the company or any of its establishments (a) have 50 or more employees AND (b) is not exempt as provided by 41 CFR 60–1.5, AND either (1) is a prime government contractor or first-tier subcontactor, and has a contract, subcontract, or purchase order amounting to $50,000 or more, or (2) serves as a depository of Government funds in any amount or is a financial institution which is an issuing and paying agent for U.S. Savings Bonds and Savings Notes?

If the response to question C–3 is yes, please enter your Dun and Bradstreet identification number (if you have one): ☐☐☐☐☐☐☐☐☐

NOTE: If the answer is yes to questions 1, 2, or 3, complete the entire form, otherwise skip to Section G.

Section D-EMPLOYMENT DATA

Employment at this establishment – Report all permanent full- and part-time employees including apprentices and on-the-job trainees unless specifically excluded as set forth in the instructions. Enter the appropriate figures on all lines and in all columns. Blank spaces will be considered as zeros.

Job Categories	Number of Employees (Report employees in only one category)														
	Race/Ethnicity														
	Hispanic or Latino		Not-Hispanic or Latino												Total Col A - N
			Male						Female						
	Male	Female	White	Black or African American	Native Hawaiian or Other Pacific Islander	Asian	American Indian or Alaska Native	Two or more races	White	Black or African American	Native Hawaiian or Other Pacific Islander	Asian	American Indian or Alaska Native	Two or more races	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Executive/Senior Level Officials and Managers 1.1															
First/Mid-Level Officials and Managers 1.2															
Professionals 2															
Technicians 3															
Sales Workers 4															
Administrative Support Workers 5															
Craft Workers 6															
Operatives 7															
Laborers and Helpers 8															
Service Workers 9															
TOTAL 10															
PREVIOUS YEAR TOTAL 11															

1. Date(s) of payroll period used: _____ (Omit on the Consolidated Report.)

Section E - ESTABLISHMENT INFORMATION (Omit on the Consolidated Report.)

1. What is the major activity of this establishment? (Be specific, i.e., manufacturing steel castings, retail grocer, wholesale plumbing supplies, title insurance, etc. Include the specific type of product or type of service provided, as well as the principal business or industrial activity.)

Section F - REMARKS

Use this item to give any identification data appearing on the last EEO-1 report which differs from that given above, explain major changes in composition of reporting units and other pertinent information.

Section G - CERTIFICATION

Check one
1 ☐ All reports are accurate and were prepared in accordance with the instructions. (Check on Consolidated Report only.)
2 ☐ This report is accurate and was prepared in accordance with the instructions.

Name of Certifying Official	Title	Signature	Date
Name of person to contact regarding this report	Title	Address (Number and Street)	
City and State	Zip Code	Telephone No. (including Area Code and Extension)	Email Address

All reports and information obtained from individual reports will be kept confidential as required by Section 709(e) of Title VII.
WILLFULLY FALSE STATEMENTS ON THIS REPORT ARE PUNISHABLE BY LAW, U.S. CODE, TITLE 18, SECTION 1001

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

VI NON-COLLUSION AFFIDAVIT

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

NON-COLLUSION AFFIDAVIT

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

I, _____of _____

_____, being duly sworn, so depose and state:

That I, or the firm, association or corporation of which I am a member, a bidder on the contract to be awarded, by the Assembly of the Petersburg Borough for the construction of the certain construction project designated as:

CRANE DOCK APPROACH WIDENING

Located in Petersburg, Alaska

in the State of Alaska, have not, either directly or indirectly, entered into any agreement, participate in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

_____
(Bidder)

Subscribed and sworn to this _____day of _____, 20_____.

Notary Public_____ _____

My Commission Expires:_____

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

VII OWNER-CONTRACTOR AGREEMENT

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

OWNER-CONTRACTOR AGREEMENT

AGREEMENT made as of the _____ day of_____ in the year of 2014.

BETWEEN the Owner:	Petersburg Borough P.O. Box 329 Petersburg, Alaska 99833
and the Contractor:	
The Project:	Petersburg Borough Crane Dock Approach Widening
Owner's Representative:	Steve Giesbrecht, Borough Manager Petersburg Borough

The Owner and the Contractor agree as set forth below:

Article 1 The Contract Documents

The Contract Documents constitute the entire agreement between the Owner and the Contractor. The Contract Documents consist of the following:

1. Petersburg Borough, Crane Dock Approach Widening, Owner - Contractor Agreement
2. City of Petersburg Standard Specifications (CPSS), 2012, all inclusive.
3. CPSS Special Provisions
4. Supplemental Technical Specifications
5. Crane Dock Approach Widening, Project Manual, all inclusive
6. Crane Dock Approach Widening, Design Drawings
7. Addenda numbers _____ to _____, inclusive.
8. Change Orders which may be issued after the effective date of this Agreement
9. EEO provisions
10. Bid Proposal
11. Bid Bond
12. Performance and Payment Bonds
13. State of Alaska Laborer's and Mechanic's Minimum Rates of Pay, latest edition 10 days prior to bid opening date.
14. Notice of Award
15. Notice to Proceed

These form the Contract, and all are as full a part of the Contract as if attached to this Agreement or repeated herein.

Article 2 The Work

The Contractor shall perform all Work required by the Contract Documents for furnishing all labor, materials, equipment, tools, transportation and supplies necessary. All Work shall be in accordance with the project plans and specifications.

Article 3 Times of Commencement and Completion

The Work to be performed under this Contract shall be commenced within ten (10) days following receipt of a written Notice to Proceed.

The Contractor shall complete all the WORK in accordance with the following schedule:

WORK DESCRIPTION	COMPLETION DATE
Substantial Completion	January 15, 2015
All WORK under the Contract Documents	January 25, 2015

_____, the Contractor, and his Sureties shall be liable for and shall pay the Owner the sum of one thousand dollars ($1,000.00) per calendar day of delay beyond the Substantial Completion date stipulated above

Article 4 Contract Sum

The Owner shall pay the Contractor in U.S. funds for the performance of the Work, subject to additions and deductions by change order as provided in the Contract Documents, the contract sum of _____ ($_____).
The contract sum is determined as the total amount bid as shown on the bid proposal attached hereto.

Article 5 Payments

Payments shall be made in accordance with Division 10, Section 10.07 of CPSS.

Article 6 Miscellaneous Provisions

A. Terms used in this Agreement, which are defined in the Conditions of the Contract, shall have the meanings designated in those Conditions.

This Agreement entered into as of the day and year written above.

OWNER: Petersburg Borough
P. O. Box 329
Petersburg, Alaska 99833

Signed: _____

Title: _____

Date: _____

Notary's Acknowledgment: _____
Notary Public - State of Alaska
My Commission Expires: _____

SEAL

CONTRACTOR:

Signed: _____

Title: _____

Date: _____

Notary's Acknowledgment: _____
Notary Public - State of Alaska

SEAL My Commission Expires: _____

END OF SECTION

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

VIII CONTRACT PERFORMANCE AND PAYMENT BONDS

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we_____, a
(name of contractor)

_____hereinafter called "Principal" and
(Corporation, Partnership, Individual)

_____ of _____, State of

_____hereinafter called the "Surety " are held and firmly bound
(Surety)
unto _____ of _____
(Owner)

hereinafter called "Owner", in the penal sum of_____

_____dollars($_____)
in lawful money of the united States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally firmly by these presents.

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

CRANE DOCK APPROACH WIDENING

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all 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 affects 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 the specifications.

PERFORMANCE BOND – PAGE 2

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

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this the _____day of _____ , 20_____.

ATTEST:

_____
(Principal)

_____ BY:_____
(Principal's) Corporate Secretary

(Affix CORPORATE SEAL if applicable) _____
(Address - Zip Code)

_____
Witness as to Principal

_____
Address - Zip Code

_____
(Surety)

ATTEST: BY:_____
Attorney -in- fact

_____
(Surety) Secretary

_____
Address - Zip Code

(Affix SURETY'S SEAL)

_____
Witness as to Surety

_____
Address - Zip Code

Note: if principal is partnership, <u>all</u> partners must execute bond

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we_____, a
(name of contractor)

_____hereinafter called "Principal" and
(Corporation, Partnership, Individual)

_____ of _____, State of
(Surety)
_____hereinafter called the "Surety " are held and firmly bound

unto The Petersburg Borough hereinafter called "Owner", in the penal

sum of _____ dollars

($_____) in lawful money of the united States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally firmly by these presents.

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

CRANE DOCK APPROACH WIDENING

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 affects its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alternation or addition to the terms of the contract or to the work or to the specifications.

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

PAYMENT BOND – PAGE 2

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

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this the _____day of _____ , 20_____.

ATTEST:

_____
(Principal)

_____ BY:_____
(Principal's) Corporate Secretary

(Affix CORPORATE SEAL if applicable) _____
(Address - Zip Code)

_____
Witness as to Principal

_____
Address - Zip Code

_____
(Surety)

ATTEST: BY:_____
Attorney -in- fact

_____
(Surety) Secretary

_____
Address - Zip Code

(Affix SURETY'S SEAL)

_____
Witness as to Surety

_____
Address - Zip Code

Note: if principal is partnership, <u>all</u> partners must execute bond

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

IX MINIMUM RATES OF PAY

ALASKA LABOR STANDARDS, REPORTING AND PREVAILING WAGE DETERMINATION

I. General: The Contractor shall be responsible to pay all workers the minimum state wage rates listed herein.

II. Alaska Statutes AS 36.05.010, AS 36.05.040, AS 36.05.045, State of Alaska, Department of Labor and Workforce Development, Laborers' and Mechanics' Minimum Rates of Pay, Title 36. Public Contracts AS 36.05. and AS 36.10 Wage and Hour Administration Pamphlet No. 600, the latest edition published by the State of Alaska, Department of Labor and Workforce Development all inclusive, are made a part of this Contract by reference.

A. The current state prevailing rate of wages is that contained in the latest determination of prevailing rate of wages issued by the Department of Labor and Workforce Development 10 days before the final date for submission of bids for the contract. The rate shall remain in effect for the life of the contract or for 24 calendar months, whichever is shorter. At the end of the initial 24-month period, if new wage determinations have been issued, the latest wage determination shall become effective for the next 24-month period or until the contract is completed whichever occurs first. This process shall be repeated until the contract is completed.

B. The Contractor is responsible for contacting the Alaska Department of Labor to determine compliance with current regulations prior to bid.

III. Minimum Required Reporting During Contract (to be reported by every Contractor and Subcontractor):

A. Before Friday each week, each Contractor and Subcontractor must file Certified Payrolls with Statements of Compliance for the preceding 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 to:

Labor Standards & Safety, DOLWD
P. O. Box 111149
1111 W. 8th Street, Rm 302
Juneau, AK 99811-1149
(907) 465-4842 Fax: (907) 465-3584

Petersburg Borough
Borough Manager
P.O. Box 329
Petersburg, Alaska 99833
(907) 772-4511

B. Within 10 days of Notice of Award/Notice to Proceed the Contractor shall file a notice of work with the Department of Labor and Workforce Development and the Petersburg Borough at the addresses listed above. The notice of work must list work to be performed by each contractor and subcontractor who will perform any portion of work on the contract and the contract price being paid to each contractor. Include subcontractor's names, addresses, phone numbers and estimated start and finish dates.

C. Upon completion of all Work the Contractor shall file with the Department of Labor and Workforce Development a notice of completion as per AS 36.05.045.

D. As part of the final payment request package, provide the following:

1. Alaska Department of Labor and Workforce Development issued notification of compliance with AS 36.05.045.

2. A completed Compliance Certificate and Release form from every Contractor and Subcontractor.

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

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

X CPSS SPECIAL PROVISIONS

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

SPECIAL PROVISIONS

GENERAL INFORMATION

1. LOCATION AND SCOPE

All proposed Work is located on Mitkof Island in the vicinity of Petersburg, Alaska. A vicinity map is provided on the plans. The Work included under this Contract consists of furnishing all labor, materials, equipment, supervision, and other facilities necessary to successfully complete the Work set forth in the Contract Documents. It shall be the responsibility of the Bidder to prepare his/her bid so that all Work shall conform to the intent of the Contract Documents.

2. REFERENCE TO CITY OF PETERSBURG STANDARD SPECIFICATIONS (CPSS)

This Contract is subject to and hereby incorporates by reference the City of Petersburg Standard Specifications: Streets - Drainage - Utilities - Parks, dated 2012, hereafter referred to as **CPSS**. These Special Provisions amend the CPSS. Standard Details (CPSD) contained in the CPSS are also to be considered a part of this contract. Supplemental technical specifications shall govern over all CPSS Divisions unless otherwise noted. Details shown on the plans shall govern over any like standard details contained in the CPSS unless otherwise noted.

MODIFICATIONS AND/OR ADDITIONS TO THE CITY OF PETERSBURG STANDARD SPECIFICATIONS

Subsequent to the publishing of the CPSS the City of Petersburg became a borough within the State of Alaska and is now known and legally recorded as the Petersburg Borough. Hence all references to the City, the City of Petersburg, or any variation thereof shall be modified to read Petersburg Borough in the form consistent with the reference thereto.

The following provisions of CPSS are hereby amended:

DIVISION 10 - GENERAL PROVISIONS

SECTION 10.02 BIDDING REQUIREMENTS AND CONDITIONS

Article 2.4 Bid Guarantee

Replace the words “ten percent (10%)” with the words “five percent (5%)” in the first sentence.

SECTION 10.03 AWARD AND EXECUTION OF CONTRACT

Article 3.1 General

Add the following paragraph after the first paragraph:

> Pursuant to Petersburg Borough Ordinance #2013-10, Chapter 4.04 - Purchasing, Section 4.04.050 - Bid Preference for Residents, Paragraph B; resident bidder preference shall not apply to the evaluation of bids for this contract if the lowest responsible nonresident bid exceeds $500,000.

Article 3.2 Receipt and Opening of Bids

Add the following to the end of the second paragraph:

Telegraphic modifications shall be received by Fax at Ph. (907) 772-3759.

Article 3.4 Action on Bids

Delete the last sentence of the fourth paragraph.

Article 3.6 Execution of Contract

Replace the words “five (5)” with the words “ten (10)” in the first sentence

SECTION 10.04 SCOPE OF WORK

Article 4.15 Temporary Erosion Control and Storm Water Pollution Prevention Plans for Construction

Replace the words “the Special Provisions.” with the words “Section 01025-Measurement and Payment.” in the last sentence of the last paragraph.

SECTION 10.05 CONTROL OF WORK

Article 5.4 Non-Working Hours, Holidays, Saturdays, and Sundays

Delete the second paragraph in its entirety.

Article 5.22 Time for Completion of Work

Replace the first sentence in the first paragraph with the following:

> The Contract Commencement and Completion Dates are stipulated in Article 3 of the Owner-Contractor Agreement.

Article 5.27 Liquidated Damages

Replace the words “the Special Provisions” with “Article 3 of the Owner-Contractor Agreement” at three locations of the first paragraph.

SECTION 10.06 LEGAL RELATIONS AND RESPONSIBILITIES

Article 6.9 Insurance

Replace the last sentence of the first paragraph with the following:

> All insurance policies required under this Article shall name the Borough and the Engineer as additional insured for the purposes of the Project and shall contain waivers of subrogation against each.

SECTION 10.07 MEASUREMENT AND PAYMENT

Article 7.1 Method of Measurement

Delete all paragraphs except the first paragraph.

DIVISIONS 15-70

All articles titled; "**MEASUREMENT**" and "**BASIS OF PAYMENT**" shall be deleted in their entirety. Measurements and payments shall be made as described in the supplemental technical specification **SECTION 01025 MEASUREMENT AND PAYMENT.** Applicable sections within the CPSS for which there is no direct reference within Section 01025, Measurement and Payment shall be considered incidental to other pay items.

DIVISION 20 EARTHWORK

SECTION 20.01 GENERAL

Article 1.5 Compaction Standards

Add the following paragraphs subsequent to the definition of variables for the corrected lab density equation:

Material compaction shall be achieved by performing a minimum level of compactive effort over the complete coverage area of any given lift with equipment provided by the CONTRACTOR suitably equipped by the manufacturer for compacting the material.

1. For classified fill materials the minimum level of compactive effort shall be defined as 4 complete coverage passes with a 10-ton vibratory steel drum roller suitably equipped by the manufacturer for compacting shot rock materials.

2. For bedding and leveling course materials the minimum level of compactive effort shall be established by performing in place density tests in accordance with ATM 213-WAQTC FOP for AASHTO T-310 on a representative sample of compacted material. The initial density test for any class of 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 material, shall be paid for by the CONTRACTOR.

3. If, in the opinion of the ENGINEER, an area appears to have sub-standard compaction or the minimum level of compactive effort requires re-evaluation due to changing site or material conditions additional density tests may be called for by the ENGINEER. The initial density test for such areas 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 material, shall be paid for by the CONTRACTOR.

DIVISION 30 PORTLAND CEMENT CONCRETE

Delete this section in its entirety. Concrete specifications shall be provided in the supplemental technical specifications as they apply.

END OF SECTION

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

XI SUPPLEMENTAL TECHNICAL SPECIFICATIONS

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

INDEX TO SUPPLEMENTAL TECHNICAL SPECIFICATIONS

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. This Project generally consists of widening the pile supported approach to an existing crane dock. Base Bid Work includes the salvage and installation of existing steel walers, bullrail and hardware; steel pipe piles; upland modifications with minor embankment, grading and paving; precast concrete deck panels, concrete abutment, steel net launching platform; electrical utilities and other miscellaneous and incidental work. Work under Additive Alternate A includes replacing access ladders.

1.3 SITE OF THE WORK

A. The site of the WORK is located in Petersburg, Alaska in South Harbor at the existing crane dock.

1.4 BEGINNING AND COMPLETION OF THE WORK

A. Time is the essence of the contract. In accordance with the provisions of Article 3 of OWNER-CONTRACTOR AGREEMENT, the CONTRACTOR shall begin the WORK on the date specified in the written Notice to Proceed from the OWNER.

B. The Contractor shall complete all the WORK in accordance with the following schedule:

C.

	WORK DESCRIPTION	COMPLETION DATE
1.	Earliest Field Start	September 15, 2014
2.	Substantial Completion	January 15, 2015
3.	All WORK under the Contract Documents	January 25, 2015

D. Any additional schedule requirements for completing specific items of WORK are listed on the Plans.

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. The CONTRACTOR shall coordinate with the OWNER to utilize a portion of the existing work pad as a staging area until such time that the new work pad is constructed as detailed in the Plans. Staging and operations shall be coordinated with the Owner at all times.

1.8 OWNER USE OF THE PROJECT SITE

A. The WORK occurs at an active harbor facility which will remain open to the public and fully operational throughout the WORK necessitating regular coordination of construction activities with the OWNER. 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. Closures of the approach dock to vehicles shall be coordinated in advance with the OWNER. The approach dock shall remain open to pedestrians accessing South harbor at all times.

B. The CONTRACTOR shall cooperate and coordinate with the OWNER 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.

4. The CONTRACTOR should be prepared to discuss all of the items listed below:

a. Status of CONTRACTOR'S insurance and bonds.

b. CONTRACTOR's tentative schedules.

c. Transmittal, review, and distribution of CONTRACTOR's Submittals.

d. Processing applications for payment.

e. Maintaining record documents.

f. Critical Work sequencing.

g. Field decisions and Change Orders.

h. Use of Project site, office and storage areas, security, housekeeping, and OWNER'S needs.

i. Major equipment deliveries and priorities.

j. CONTRACTOR's assignments for safety and first aid.

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

6. The CONTRACTOR and its Subcontractors should plan on the conference taking no less than 4 hours. It will cover the items listed in paragraph 3, a review of the Plans and Specifications, in extensive detail, with the ENGINEER and the OWNER. A site visit will be conducted.

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:

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

B. **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.

C. **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.

D. **Installer** - a person or firm engaged by the CONTRACTOR or its Subcontract or any Subcontractor for the performance of installation, erection, or application work at the site. Installers must be expert in the operations they are engaged to perform.

E. **Provide** - is defined as furnish and install, ready for the intended use.

PART 1 - PRODUCTS (Not Used)

PART 2 - 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. Transport, shipping and delivery of all materials to the project site; undamaged in new and serviceable condition.
3. Re-vegetating areas disturbed during construction.
4. Preservation and/or re-bedding of existing utilities encountered within the fill prism.
5. Any quarrying development activity.
6. Removal of water by aeration of material to obtain required moisture content.
7. Temporary shoring of trenches or bracing of existing facilities as required for constructing any/all improvements.
8. Maintenance of all services through the Project area, including water, storm, garbage pickup, mail delivery, other deliveries and emergency vehicles.
9. All traffic control, including flaggers and preparation of satisfactory Traffic Control Plans with submittals to required agencies.
10. Minor grading of fill materials as required to match existing grades and maintain positive surface drainage.
11. Minor changes in grades as directed by the engineer to fit field conditions.
12. Miscellaneous connecting and attachment hardware as required for installing new equipment.
13. Excavating, bedding, crushed aggregate drain rock, and backfilling for all electrical equipment including, panel posts, junction boxes, vaults, and conduit.
14. Excavating, bedding and crushed aggregate drain rock for all bollards, posts, signs, footings, walls, and other bedded structures.

PART 2 – PAYMENT DIVISIONS

DIVISION 1 - GENERAL REQUIREMENTS

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

A. Measurement for payment for Mobilization shall be based upon the completion of the entire WORK as a Lump Sum Pay unit, complete, all in accordance with the requirements of the Contract Documents.

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

C. 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, 95% 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 remaining will be paid.

DIVISION 2 – SITE WORK

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

A. Measurement for payment for Demolition, Salvage and Disposal shall be based upon the completion of the entire WORK as a Lump Sum, Pay Unit, complete, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Demolition, Salvage and Disposal under the Base Bid shall be made at the amount shown on 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.

2.2 UPLAND MODIFICATIONS (Pay Item No. 2200.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Upland Modifications shall be based on the completion of the entire WORK as a Lump Sum unit, complete, in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Upland Modifications shall be made at the amount shown on the Bid Schedule under Pay Item No. 2200.1, which payment shall constitute full compensation for all WORK described in Section 02200– Upland Modifications, as shown on the Plans and as directed by the ENGINEER.

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

A. Measurement for payment for Construction Survey Measurement shall be based on the completion of the entire WORK as a Lump Sum unit, including preparation and submission of as built drawings, complete, all in accordance with the requirements of the Contract Documents.

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

2.4 TIMBER FENDER SYSTEM (Pay Item No. 2726.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Timber Fender System shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Timber Fender System shall be made at the amount shown on the Bid Schedule under Pay Item No. 2726.1, which payment shall constitute full compensation for all WORK described in Section 02726 – Timber Fender System, as shown on the Plans and as directed by the ENGINEER.

2.5 FURNISH & INSTALL STEEL PIPE VERTICAL PILE, 12.75” DIA. X 0.500” THICK (Pay Item No. 2896.1) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Furnish & Install Steel Pipe Vertical Pile, 12.75” Dia. X 0.500” Thick shall be 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 Steel Pipe Vertical Pile, 12.75” Dia. X 0.500” Thick 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.

2.6 FURNISH & INSTALL STEEL PIPE BATTER PILE, 12.75” DIA. X 0.500” THICK (Pay Item No. 2896.2) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Furnish & Install Steel Pipe Batter Pile, 12.75” Dia. X 0.500” Thick shall be 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 Steel Pipe Batter Pile, 12.75” Dia. X 0.500” Thick 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.

DIVISION 3– CONCRETE

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

A. Measurement for payment for Concrete Abutment shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Concrete Abutment shall be made at the amount shown on 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.

3.2 PRECAST CONCRETE DECK PANELS (Pay Item No. 3420.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Precast Concrete Deck Panels based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Precast Concrete Deck Panels shall be made at the amount shown on the Bid Schedule under Pay Item No. 3420.1, which payment shall constitute full compensation for all WORK described in Section 03420 – Precast Concrete Deck Panels, as shown on the Plans and as directed by the ENGINEER.

3.3 CONCRETE DECK PANEL GROUT (Pay Item No. 3601.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Concrete Deck Panel Grout shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans.

B. Payment for Concrete Deck Panel Grout shall be made at the amount shown on the Bid Schedule under Pay Item No. 3601.1, which payment shall constitute full compensation for all WORK described in Section 03601 – Deck C.I.P. Concrete and Grout, as shown on the Plans and as directed by the ENGINEER.

DIVISION 5 – METAL FABRICATION

5.1 APPROACH DOCK STEEL FRAMING (Pay Item No. 5120.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Approach Dock Steel Framing shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans. WORK includes fabrication and installation of all pile caps, steel beams, miscellaneous steel plates and shapes, batter pile weldments, pile cap plates, shear studs, steel connectors, and all miscellaneous associated connection hardware as shown on the Plans.

B. Payment for Approach Dock Steel Framing shall be made at the amount shown on the Bid Schedule under Pay Item No. 5120.1, which payment shall constitute full compensation for all WORK described in Section 05120 – Metal Fabrication, as shown on the Plans and as directed by the ENGINEER.

5.2 MODIFY AND INSTALL SALVAGED STEEL WALERS (Pay Item No. 5120.2) PRICE BASED ON LUMP SUM

A. Measurement for payment for Modify and Install Salvaged Steel Walers shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans. WORK includes fabrication and/or modification and installation of all miscellaneous steel plates and shapes, and all miscellaneous associated connection hardware as shown on the Plans.

B. Payment for Modify and Install Salvaged Steel Walers shall be made at the amount shown on the Bid Schedule under Pay Item No. 5120.2, which payment shall constitute full compensation for all WORK described in Section 05120 – Metal Fabrication, as shown on the Plans and as directed by the ENGINEER.

5.3 MODIFY AND INSTALL SALVAGED STEEL BULLRAIL (Pay Item No. 5120.3) PRICE BASED ON LUMP SUM

A. Measurement for payment for Modify and Install Salvaged Steel Bullrail shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans. WORK includes fabrication and/or modification and installation of all miscellaneous steel plates and shapes, handrail, and all miscellaneous associated connection hardware as shown on the Plans.

B. Payment for Modify and Install Salvaged Steel Bullrail shall be made at the amount shown on the Bid Schedule under Pay Item No. 5120.3, which payment shall constitute full compensation for all WORK described in Section 05120 – Metal Fabrication, as shown on the Plans and as directed by the ENGINEER.

5.4 NET LAUNCHING PLATFORM (Pay Item No. 5120.4) PRICE BASED ON LUMP SUM

A. Measurement for payment for Net Launching Platform shall be based on the completion of the entire WORK as a Lump Sum unit, complete in place, all in accordance with the requirements of the Contract Documents and as shown on the Plans. WORK includes fabrication and installation of all miscellaneous steel plates and shapes, and all miscellaneous associated connection hardware as shown on the Plans.

B. Payment for Net Launching Platform shall be made at the amount shown on the Bid Schedule under Pay Item No. 5120.4, which payment shall constitute full compensation for all WORK described in Section 05120 – Metal Fabrication, as shown on the Plans and as directed by the ENGINEER.

5.5 REMOVE AND REPLACE ACCESS LADDER (Pay Item No. 5120.5A) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment for Remove and Replace Access Ladder shall be per each, complete in place, including demolition of existing ladder and installation of new ladder, all in accordance with the requirements of the Contract Documents and as shown on the Plans. WORK includes fabrication and installation of all miscellaneous steel plates and shapes, and all miscellaneous associated connection hardware as shown on the Plans.

B. Payment for Remove and Replace Access Ladder under Additive Alternate A shall be made at the amount shown on the Bid Schedule under Pay Item No. 5120.5A, which payment shall constitute full compensation for all WORK described in Section 05120 – Metal Fabrication, as shown on the Plans and as directed by the ENGINEER.

DIVISION 16 – ELECTRICAL

16.1 POWER TO EXISTING CRANES & LIGHTS (Pay Item No. 16000.1) PRICE BASED ON LUMP SUM

A. Measurement for payment for Power to Existing Cranes and Lights shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place, all in accordance with the requirements of the Contract Documents.

B. Payment for Power to Existing Cranes and Lights shall be made at the amount shown on the Bid Schedule under Pay Item No. 16000.1, which payment shall constitute full payment for all WORK described in Division 16 - Electrical, as shown on the Plans, and as directed by the ENGINEER.

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 01700 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 This specification is supplemental to CPSS Division 10- General Provisions and is intended to provide specifications not directly covered in the CPSS. Nothing in this specification shall be construed as authorization to deviate from the provisions of CPSS Division 10.

1.2 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 cleanup of the Project site.

1.3 CLOSEOUT TIMETABLE

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

1.4 FINAL SUBMITTALS

A. The CONTRACTOR, prior to requesting final payment, shall obtain and submit the following items to the ENGINEER for transmittal to the OWNER:

1. Written guarantees, where required
2. Maintenance stock items; spare parts; special tools, where required
3. Completed record Drawings
4. Certificates of inspection and acceptance by local governing agencies having jurisdiction
5. Releases from all parties who are entitled to claims against the subject Project, property, or improvement pursuant to the provisions of law
6. Completed Certificate of Compliance and Release signed by the CONTRACTOR.
7. A final Subcontractor list complete with final subcontract amounts and including all equipment rentals (with operators)
8. Original documents for items 6 and 7 above shall be delivered to Glo Wollen, Harbor Master.

B. Before final payment can be made, the CONTRACTOR shall supply a copy of the "Notice of Completion of Public Works" form approved by Wage and Hour Administration of the Labor Standards and Safety Division of the Alaska Department of Labor and Workforce Development.

1.5 WARRANTY AND GUARANTEE

A. The CONTRACTOR shall comply with the warranty and guarantee requirements contained in CPSS Division 10.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

COMPLIANCE CERTIFICATE AND RELEASE FORM

PROJECT: **CRANE DOCK APPROACH WIDENING**

The CONTRACTOR must complete and submit this to the Petersburg Borough with respect to the entire contract.

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

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

- All WORK has been performed, materials supplied, and requirements met in accordance with the applicable Drawings, Specifications, and Contract Documents.
- All Suppliers and Subcontractors have been paid in full with no claims for labor, materials or other services outstanding. If all Subcontractors and suppliers are not paid in full, please explain on a separate sheet.
- All employees have been paid not less than the current prevailing wage rates set by the State of Alaska or U.S. Department of Labor, whichever is higher.
- All equal employment opportunity, certified payroll and other reports have been filed in accordance with the conditions of the Contract Documents.
- The attached list of Subcontractors is complete (required from CONTRACTOR). The Petersburg Borough was advised and approved of all Subcontractors before WORK was performed and has approved any substitutions of Subcontractors.
- All DBE firms listed as a precondition of the prime contract award must have performed a commercially useful function in order for the WORK to count to a DBE goal. All DBE firms performed the WORK stated and have received at least the amount claimed for credit in the Contract Documents.
- All DBE Subcontractors must attach a signed statement of the payment amount received, the nature of WORK performed, whether any balance is outstanding, and indicate that no rebates are involved.
- If the amount paid is less than the amount originally claimed for DBE credit, the CONTRACTOR has attached approval from the Petersburg Borough for underutilization.

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

_____
Firm Name

_____	_____	_____
Signed	Printed Name and Title	Date

Return completed form to the Petersburg Borough Port and Harbor Office.

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 shown on the Plans, or as otherwise required to complete all WORK. Demolition and disposal methods shall meet all local, state and federal regulations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DEMOLITION, SALVAGE AND DISPOSAL

A. The CONTRACTOR shall visit the site to ascertain existing conditions and to determine the complete scope of demolition, salvage and disposal WORK prior to bidding.

B. The CONTRACTOR shall conduct demolition and salvage work so as to minimize interference with adjacent structures/facilities and interruption to public services. The CONTRACTOR shall coordinate with OWNER and all tenants to minimize service interruptions and plan construction activities around schedule for typical operations at the dock.

C. The CONTRACTOR shall remove and salvage and/or dispose of all items indicated on the Plans including ACP, pavement markings, signage, parking bumpers, guardrail, dock timber fender pile system, steel waler system, steel bullrail and railing system, steel ladders, and all miscellaneous associated hardware and appurtenances.

D. Electrical demolition scope and requirements shall be per Electrical Plans and Specifications.

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

F. Place construction signs and barricades, as required, to prevent public entry into Work area. CONTRACTOR shall provide approved Traffic Control Plan in advance of any upland demolition WORK.

G. Demolition and disposal of all items within the uplands demolition limits/scope shall conform to applicable sections of the CPSS, except as explicitly stated on the Plans, Special Provisions, or as otherwise directed by the ENGINEER.

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

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

END OF SECTION

SECTION 02200- UPLAND MODIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for the complete upland construction features to the lines, grades details and cross sections indicated in the Plans or as directed by the ENGINEER. The WORK under this section shall include, but may not be limited to: bedding and backfilling of structures, concrete or ACP roadway patching including all excavation, bedding, rebar, finishing, joints, and sealing; rip rap slope construction, placement, grading and compaction of leveling course, and other associated items complete, to the satisfaction of the ENGINEER and in accordance with the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 EXCAVATION. Excavation shall be defined as either Excavation in Traffic Ways, defined by CPSS Section 20.10 or Trench Excavation, defined by CPSS Section 20.13.

2.2 TRENCH BACKFILL. Trench Backfill shall conform to the Requirements of CPSS Section 20.15.

2.3 BEDDING. Bedding shall conform to the Requirements of CPSS Section 20.16.

2.4 FILL AND BACKFILL. Material for fill and backfill shall be either unclassified or classified as defined by CPSS Sections 20.20 and 20.21.

2.5 LEVELING COURSE. Leveling Course shall conform to the Requirements of CPSS Section 20.22.

2.6 RIPRAP. Rip Rap shall Class II Rip Rap conforming to the Requirements of CPSS Section 20.24.

2.7 ASPHALT PATCH. Asphalt Patching shall be Class D and shall conform to the Requirements of CPSS Section 40.06.

2.8 GUARDRAIL. Guardrail Modification shall conform to the Requirement of CPSS Section 70.14 and 70.15.

2.9 CONCRETE PATCH. Concrete Patching shall conform to Section 03301 Structural Concrete.

PART 3 - EXECUTION

3.1 Execution of all WORK in this section shall conform to the applicable section of the CPSS or supplemental technical specification except as explicitly stated in the Plans, Special Provisions, or elsewhere in the Contract Documents, or as directed by the Engineer within the limits of the CPSS General Conditions.

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 OWNER will supply information relative to the approximate locations of monuments and corners, but final responsibility for locations, referencing, and restoration shall rest with the CONTRACTOR.

C. In the event the CONTRACTOR does not replace the survey monuments and property corners disturbed by the CONTRACTOR's operations, the OWNER may, after first notifying the CONTRACTOR, replace the monuments in question and the cost of such replacements shall be deducted from payments to the CONTRACTOR.

D. The CONTRACTOR shall provide the OWNER with a copy of all surveyor's notes, 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.

E. The CONTRACTOR shall provide the OWNER with a copy of all surveyors' notes, prior to the request for final payment, and include the information on the record drawings.

F. The CONTRACTOR shall obtain all information necessary for as-built plan production from actual measurements and observations made by the CONTRACTOR's own personnel, including Subcontractors, and submit this information to the ENGINEER.

G. The CONTRACTOR shall use competent, qualified personnel and suitable equipment for the layout WORK required and shall furnish all stakes, templates, straightedges and other devices necessary for establishing, checking and maintaining the required points, lines and grades.

H. The CONTRACTOR shall perform all staking necessary to delineate clearing and/or grubbing limits; all cross sections necessary for determination of excavation, embankment, 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.

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

J. The ENGINEER may randomly spot-check the CONTRACTOR's surveys, staking, and computations at the ENGINEER's discretion. After the survey, or staking, has been completed, the CONTRACTOR shall provide the ENGINEER with a minimum of 72 hours notice prior to performing any WORK, and shall furnish the appropriate data as required to allow for such random spot-checking. The OWNER assumes no responsibility for the accuracy of the WORK.

K. The ENGINEER may make minor adjustments in grades and locations of improvements based on the staking information provided by the CONTRACTOR. The CONTRACTOR shall adjust the grade stakes as required to accommodate minor changes at no additional cost to the OWNER.

END OF SECTION

SECTION 02726 – TIMBER FENDER SYSTEM

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 timber fender piles, timber chocking, all associated connection hardware, and all other 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), 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. Pile Installation Plan: Provide narrative and illustrations as required to fully describe complete installation plan. The plan shall address, as a minimum, all equipment, labor, temporary pile support and template systems, sequence and method of installation.

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

C. Timber Treatment product for field treatment of timbers. Submit product specifications from the manufacturer for field treatment of piles.

D. Manufacturer’s information on pile hammers intended for use, complete with satisfactory data to ensure properly suited for installation of wood piles.

PART 2 – PRODUCTS

2.1 MATERIALS - All materials shall conform to the Contract Documents and as shown on the Plans. Purchase orders shall contain all necessary information to ensure that materials purchased will comply with the fore mentioned documents. The fabricator shall inspect all materials, upon arrival, for conformance with the purchase orders, and the fabricator shall confirm that 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.

A. Round Timber Piles: Piles shall be Southern Pine or Coastal Douglas Fir and shall conform

to ASTM D 25, unused, clean peeled, uniformly tapered, one piece from butt to tip.

1. Fender Piles: Minimum diameter and tip circumference as specified on the Plans.

B. Pressure Treatment: Pressure treatment for timber piles shall be in accordance with AWPA U1 – 02, use category UC5A for Marine Use in Northern Waters and WWPI Best Management Practices for the Use of Treated Wood in Aquatic Environments.

1. Treat piles by the full-cell pressure process to a minimum creosote retention of 20 pcf.

C. All sawn timber chocking 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. All sawn timber 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. Bolt holes shall be 1/8 inch oversized.

D. Field applied preservative: Treat cuts, holes, and other penetrations in accordance with AWPA M4 and these Contract Documents. The following products shall be used:

1. Copper Naphthenate: Shall be *Woodline* "*Creocote*" wood preservative, color black or ENGINEER approved equal.
2. Mastic Sealer: Use "*Koppers Bitumastic Super Service Black"*, "*Chevron Wet Plastic Cement", "ATCO 1714 Plastic Fibre Seal"*, *"Seal Tight 158 Rubber Asphalt Sealer"*, or ENGINEER approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. The CONTRACTOR shall submit a plan for pile driving. The plan shall include pile hammer type and driving method, as well as manufacturers' recommendations and information on hammer cushions. The CONTRACTOR shall not mobilize hammers and related 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. All fender piles shall be driven full length with either and impact hammer or vibratory hammer, as necessary to achieve alignment and embedment requirements indicated on the Plans.

C. 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.

D. All pile installations shall be conducted with the ENGINEER present. The CONTRACTOR shall assist the ENGINEER as necessary to facilitate monitoring the pile driving.

E. The CONTRACTOR shall install steel banding to pile top to prevent splitting where hard driving is anticipated or encountered.

F. Piles shall be driven tip first (small end down) to the minimum embedment identified on the Plans. The CONTRACTOR should drive piles to cutoff elevation to avoid cutting treated timber pile. In cases where piles become damaged through driving, or the pile cannot be driven to the cutoff elevation, the CONTRACTOR may cut the pile to elevation. The CONTRACTOR shall remove cutoffs from the site and legally dispose.

G. Installation of timber chocking and all associated connection hardware shall be as indicated on the Plans.

3.2 PRESERVATIVE TREATMENT

A. Piles cut off to elevation identified on the Plans shall be field treated by repeated (minimum of 3) heavy application of preservative by the CONTRACTOR until visible evidence of further penetration has ceased. The top of pile shall then be sealed with a heavy application of mastic sealer.

B. Holes bored in the field shall be field treated by flooding the hole with preservative for at least 5 minutes to ensure complete penetration. Repeat this procedure (minimum of 3 times) until visible evidence of further penetration has ceased. After preservative treatment, CONTRACTOR shall coat both hole interior surface and bolt or dowel completely with mastic sealer, and install per the Contract Documents. The CONTRACTOR shall schedule hole boring operations to prevent unsealed holes from becoming submerged by the tide. The CONTRACTOR shall submit a plan for flooding horizontal bolt holes prior to the start of construction.

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 approach dock support piles, driving shoes, and all other related WORK in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

A. ASTM A252 - Welded and Seamless Steel Pipe Piles.

B. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products

C. 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 for use 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 Plan: Provide narrative and illustrations as required to fully describe complete installation plan. The plan shall address, as a minimum, all equipment, labor, temporary pile support and template systems, survey control, sequence and method of installation.

F. Manufacturer’s information on 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.

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 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. Miscellaneous steel plates, shapes and fabricated metal weldments shall be ASTM A36, hot-dip galvanized per ASTM A123 or A153, and comply with Section 05120 – Metal Fabrication.

PART 3 – EXECUTION

3.1 INSTALLATION

A. The CONTRACTOR shall submit a detailed narrative plan, along with illustrations as necessary, to fully describe the complete pile installation plan. The plan shall address, as a minimum, all equipment, labor, temporary pile support and template systems, survey control, sequence and means and methods of installation. The plan shall include manufacturer's information on the specific pile hammer type and model intended for use, as well as the manufacturers' recommendations and information on the hammer's cap block cushion. The CONTRACTOR shall not mobilize hammers and related 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. The CONTRACTOR shall provide a marine mammal observer who shall be qualified to accurately identify Steller sea lions. The marine mammal observer shall be on site prior to and during all pile driving activities to conduct observations as outlined under the Department of Army Letter of Permission, dated September 24, 2013, included in these contract documents. The CONTRACTOR shall follow all stipulations outlined in the permit documents.

C. An impact hammer suitably sized for the pile installation shall be utilized for final driving and acceptance of all bearing piles. The impact hammer shall have a minimum rated energy of 30,000 ft-lbs for 12.75" diameter steel piles. The minimum required pile tension and/or bearing loads are 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.

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.

D. Batter piles shall be driven using a fixed template, firmly secured to a substantial support. The template, or suitable temporary bracing, shall remain in place until the pile is welded into place. Damaged coatings shall be repaired in accordance with Section 05120-Metal Fabrication.

E. The CONTRACTOR shall remove any armor rock and/or debris materials as required to install piles. Removed armor rock shall be replaced as close to its original position as possible, unless otherwise noted on the Plans. Removal and replacement of armor rock slope protection and/or debris shall be considered incidental work and shall not be measured directly for payment.

F. 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.

G. All steel pipe pile cutoffs less than five feet in length shall become the property of the CONTRACTOR and shall be removed from the site. All steel pipe pile cutoffs greater than five feet in length shall become the property of the OWNER. The CONTRACTOR shall remove the OWNER's surplus 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.

END OF SECTION

SECTION 03301 - STRUCTURAL CONCRETE

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 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:

A. 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.

B. Delete paragraph 4.2 of AASHTO M 6.

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

A. Delete section on deleterious substances and substitute the following:

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, percent by weight ..... 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.

B. Add the following: AASHTO T-104 shall be performed using sodium sulfate solution.

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

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

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" shall be modified by adding the following:

1. 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 City/Borough potable water system.

2.8 REINFORCING STEEL. Unless specified otherwise, reinforcing shall be galvanized and conform to ASTM A767, Grade 60, excluding the requirement for chromating. Welded wire

fabric shall conform to AASHTO M 55. 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 7 sacks (658 lb.) per C.Y.
Maximum water/cement ratio = 0.50
28 day compressive strength (f'c) 4000 psi unless otherwise noted.
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. The CONTRACTOR shall retain an independent agency, acceptable to the OWNER and ENGINEER, to sample and test concrete 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. 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.

D. 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.

E. 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.

F. 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.

G. 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.

H. Forms shall be inspected immediately prior to the placing of concrete. Dimensions shall be checked carefully and any bulging or warping shall be remedied. 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.

I. Forms shall be constructed true to line and grade. Clean-out ports shall be provided at construction joints.

J. All forms shall be installed in accordance with approved fabrication and erection plans.

K. All porous forms shall be treated with non-staining form oil or saturated with water immediately before placing concrete.

L. 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.

M. 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.

N. 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.

O. To facilitate finishing, forms used on exposed vertical surfaces shall be removed in not less than 12 nor more than 48 hours, depending upon weather conditions.

P. 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.

Q. 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 PIPES, CONDUITS, AND DUCTS. Pipes, conduits, and ducts that are to be encased in concrete shall be installed in the forms by the CONTRACTOR before the concrete is placed. Unless otherwise indicated, they shall be standard, lightweight cast-iron water pipe or wrought iron. They shall be held rigidly so they will not be displaced during concrete placement.

3.11 FINISHING CONCRETE SURFACES. All concrete surfaces exposed in the completed WORK shall receive an Ordinary Finish, as described below, unless otherwise noted on the Plans or in other Specification sections.

3.12 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.

3.13 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.

3.14 CONCRETE DECKS

A. A smooth riding surface of uniform texture, true to the required grade and cross section, shall be obtained on all decks. The CONTRACTOR may use hand tools or finishing machines, or a combination of both, conforming to the requirements specified herein for finishing deck concrete.

C. The rate of placing concrete shall be limited to that which can be finished before the beginning of initial set.

D. 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. A uniform deck surface true to the required grade and cross section shall be obtained.

E. 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.

F. Longitudinal floats, either hand operated or machine-operated, shall be used with the long axis of the float parallel to the centerline of the deck. 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 have waterproof membranes shall be float finished.

G. 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.

H. Immediately following completion of the deck finishing operations, the concrete in the deck shall be cured as specified in Article 3.15, Curing Concrete, of this Section.

I. 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. 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.

3.15 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.

3.16 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 75% of the ultimate strength (f ’c) shown on the Plans.

3.17 CONCRETE SAMPLING AND TESTING

A. The CONTRACTOR shall retain a qualified inspection and testing agency to sample and test concrete. Inspection shall be by an ACI Concrete Field Technician I or under the direction of a professional Civil Engineer registered in the State of Alaska. Testing shall be performed by an established lab under the direction of a professional Civil Engineer registered in the State of Alaska. The CONTRACTOR shall submit daily reports to Engineer on a weekly basis.

B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M.

a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, CONTRACTOR shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

9. Test results shall be reported in writing to ENGINEER, concrete manufacturer, and CONTRACTOR within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by ENGINEER, but will not be used as sole basis for approval or rejection of concrete.

11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by ENGINEER. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by ENGINEER.

12. Additional testing and inspecting, at CONTRACTOR's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

C. Measure slab flatness and levelness within 24 hours of finishing.

3.18 CLEANING UP. 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 earthwork, base course placement and compaction, rebar, formwork, pipe/conduit penetrations, sleeves, anchors, finishing labor, materials, curing, tools and equipment necessary for construction of the cast-in-place concrete abutment extension, and all other hardware and related 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. ACI (American Concrete Institute) Code

C. AWS (American Welding Society) D1.4 – Reinforcing Steel

D. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

E. ASTM A706 - Low Alloy Steel Deformed Bars for Concrete Reinforcement

F. ASTM A767 – Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

G. ASTM C150 – Portland Cement

H. ASTM C33 – Concrete Aggregates

I. ACI 301 – Structural Concrete for Buildings

J. ACI 304 – Recommended Practice for Measuring, Mixing Transporting and Placing Concrete

K. ACI 306R – Cold-Weather Concreting

L. ACI 308 – Standard Practice for Curing Concrete

M. ACI 309 – Standard Practice for Consolidation of Concrete

N. ACI 318 – Building Code Requirements for Reinforced Concrete

O. ACI 347 – Recommended Practice for Concrete Formwork

1.3 SUBMITTALS

A. Concrete Mix Design.

B. Reinforcement Fabrication Drawings.

C. Galvanizing Certification for Reinforcement.

D. Structural Steel submittals per Section 05120 – Metal Fabrication

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with applicable ACI requirements.

B. Acquire cement and aggregate from the same source for all Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete shall conform to the following requirements:

- Minimum 28 day compressive strength f'c = 6,000 psi
- Minimum cement content = 7.0 sacks per cubic yard
- Maximum water cement ratio = 0.40
- Slump range (before plasticizer) = 4" max.
- Air Entrainment = 4% to 7%
- Cement conform to ASTM C150 Type II, or Type I or III with tri-calcium aluminate content below 8%.
- Aggregate conform to ASTM C33 with maximum size of 3/4 inch.
- Water shall be potable, and free from amounts of oil, acid, alkali, and organic materials detrimental to the concrete.

B. Reinforcing steel shall be new billet stock ASTM A615, Grade 60. Bent or welded bars shall be ASTM A706, Grade 60. All reinforcing steel shall be galvanized in accordance with ASTM A767. Galvanizing shall be performed after fabrication.

C. Miscellaneous structural steel shall be ASTM A36, hot-dip galvanized and conform to Section 05120 – Metal Fabrication.

D. All other miscellaneous materials shall conform to Section 03301 – Structural Concrete.

2.2 FORMWORK

A. Forms shall be designed and constructed to be removed without injuring the concrete. They shall be free of bulge and warp, and constructed so the finished concrete will be of the form and dimensions shown on the Plans, and true to line and grade. Forms for concrete containing a retarding admixture shall be designed for a lateral pressure equal to that exerted by a fluid weighing 150 pounds per cubic foot.

PART 3 – EXECUTION

3.1 FABRICATION

A. Abutment extension shall be cast in place within the following tolerances:

Depth:	± 1/8 inch
Width:	± 1/8 inch
Length:	± 1/2 inch

3.2 INSTALLATION

A. Excavation, backfill and compaction of material around/under abutment shall be considered incidental to abutment construction/installation Work.

B. Defective concrete shall be removed and replaced at no additional cost to the OWNER.

C. All execution requirements shall comply with Section 03301 Structural Concrete.

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 03420 – PRECAST CONCRETE DECK PANELS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section shall include all labor, materials, tools and equipment necessary for fabrication and installation of precast concrete deck panels and all other hardware and related Work, in accordance with the requirements of the Contract Documents and Plans.

1.2 REFERENCES

A. ASTM (American Society of Testing Materials) Specifications

B. ACI (American Concrete Institute) Code

C. AWS (American Welding Society) D1.4 – Reinforcing Steel

D. ASTM A36/A36M - Structural Steel

E. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

F. ASTM A706 - Low Alloy Steel Deformed Bars for Concrete Reinforcement

G. ASTM A767 – Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

H. ASTM C150 – Portland Cement

I. ASTM C33 – Concrete Aggregates

J. ASTM C494 – Chemical Admixtures for Concrete

K. ASTM C260 – Air Entraining Admixtures for Concrete

1.3 SUBMITTALS

A. Precast Concrete Deck Panel Fabrication Shop Drawings – Drawings shall include panel dimensions, size and location of all reinforcing steel, embedded anchors, bearing angle weldments, etc.

B. Reinforcement Fabrication Drawings

C. Certification for Galvanized Reinforcement and Structural Steel

D. Concrete Mix Design

E. Steel Fabrication Shop Drawings – Shop Drawings for all fabricated steel items per Section 05120 - Metal Fabrication.

F. Deck Panel Handling and Placement Plan – Submit plan detailing handling methods and procedures during fabrication, shipping and placement of deck panels at project site.

G. Quality Assurance Program – Submit quality control program that verifies all materials and workmanship incorporated into precast concrete members conform with the Specifications.

PART 2 - PRODUCTS

2.1 CONCRETE

A. Concrete mix design shall be approved by the ENGINEER prior to the manufacturing of any concrete deck panels. In addition, documentation shall be submitted showing a minimum of (3) previously successful precast concrete deck panel projects which utilized the proposed mix design. Previous projects submitted must reside in a cold weather, marine environment similar to this project. Documentation shall include copies of the originally submitted mix design and lab results for the corresponding projects, along with current names, addresses and contact numbers of the corresponding project owners.

B. Concrete shall be a standard weight portland cement concrete and additive composition, appropriately proportioned with admixtures for durability, cold weather and extreme exposure to a marine environment. Concrete mix design shall meet or exceed the following minimum requirements for strength and serviceability:

- Minimum 28 day compressive strength f'c = 6,000 psi
- Minimum cement content = 7.0 sack per cubic yard
- Maximum water cement ratio = 0.40
- Air Entertainment = 4% to 7%

C. Admixtures, if used, including water reducers, retarders, and accelerators, shall conform to ASTM C494. Air entraining mixtures shall conform to ASTM C260.

D. Aggregates shall conform to ASTM C33, with maximum aggregate size of 3/4 inch.

E. Cement shall conform to ASTM C150 Type II, or Type I or III with tri-calcium aluminate content below 8%. Water used for the mixing of concrete shall be potable and be free of foreign materials.

2.2 REINFORCING STEEL

A. Reinforcing steel shall be new billet stock ASTM A615, Grade 60, galvanized in conformance with ASTM A767, unless otherwise noted.

B. All bent or welded reinforcing steel shall be new billet stock ASTM A706, Grade 60, galvanized in conformance with ASTM A767. Galvanizing shall be performed after fabrication.

C. All reinforcing bar welding shall conform to AWS D1.4.

2.3 STRUCTURAL STEEL

A. All steel plate and miscellaneous shapes shall be ASTM A36, hot-dip galvanized per Section 05120 – Metal Fabrication.

PART 3 - EXECUTION

3.1 FABRICATION

A. Quality Assurance. The deck panel fabricator shall have an ongoing quality assurance program approved by a qualified, independent source. The deck panel fabricator shall submit a copy of their quality assurance program, and shall not cast any deck panels until the ENGINEER has approved it. The objectives of the quality assurance program are as follows:

1. To assure that completed products conform to all governing codes and specifications stipulated in the contract documents including the Plans.
2. To assure the quality is an integral part of the ongoing manufacturing activities of the deck panel manufacturer.
3. To assure that properly trained and certified personnel are used to perform the Work.
4. To assure that proper materials testing, layout, fabrication and assembly procedures are followed in the production of final products.

Although the ENGINEER or OWNER may carry out periodic inspections, the purpose of those inspections is to note general conformance to the design documents. It is the responsibility of the deck panel fabricator to produce a high quality product, in complete conformance with the contract documents, and to document and correct any non-conformance issues. All documentation shall be submitted to the ENGINEER and shall be kept on file by the deck panel fabricator for periodic review by the OWNER or ENGINEER.

B. Fabrication Facility. The fabrication facility shall provide the proper environment and physical conditions necessary for high quality concrete deck panel casting. The facility shall provide adequate workspace, equipment, level casting surfaces, and protections from direct sunlight, 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 the deck panels
4. Layout, form set-up, and reinforcing steel placement
5. Mix designs, placing and curing of concrete
6. Sampling, testing, and breaking concrete test cylinders
7. Dimensional checking and verification
8. Resolution of non-conformities
9. Documentation of all stages of work with capability of tracing all major components
10. Proper finishing and curing methods
11. Patching, storing, handling and shipping

C. Quality Control Concrete Testing by Deck Panel Fabricator

1. The deck panel fabricator shall provide quality control testing of all concrete incorporated into the WORK. All concrete testing methods shall be in accordance with the respective ASTM specifications. Testing shall be accomplished under the guidance of personnel certified under American Concrete Institute guidelines. An independent test lab shall perform all quality control testing for the deck panel fabricator unless the deck panel fabricator has certified testing personnel in-house that are qualified to perform the WORK. In the event that in-house personnel are proposed, then independent quality assurance testing shall be provided on a minimum of 10% of the required testing frequency.

2. Four (4) compressive test cylinders shall be taken in accordance with ASTM C-39 for each ½ day's production. Cylinders shall be cured and tested by an approved and certified testing laboratory. Cylinders shall be tested as follows: one (1) at release from forms; one (1) at seven (7) days; and two (2) at twenty-eight (28) days.

3. Entrained air tests shall be taken from the same material samples used for the compressive test cylinders in accordance with ASTM C-173 C-231.

4. Unit weight tests shall be performed per ASTM C-138 at least every other day.

5. Daily concrete cylinder test reports shall be submitted to the ENGINEER.

6. The deck panel fabricator shall provide all quality control concrete testing at no additional cost to the OWNER.

7. The deck panel fabricator shall notify the independent test lab a minimum sufficiently prior to the casting of concrete for the proper scheduling of concrete testing.

D. Concrete Forms.

1. Deck panels shall be cast in forms having a smooth, true surface.

2. Forms shall not cause unsightly finish surfaces or defined lines that could result in crack planes. Any rough edges, form marks, or other visible surface defects shall be cleaned, ground smooth, or patched.

3. Forms shall have a tolerance of not more than 1/8-inch from the dimensions shown on the approved Shop Drawings.

4. Concrete shall be vibrated internally and/or externally to ensure a smooth, dense finish. Placement of concrete shall be such that each deck panel is monolithic, with no cold joints, in any part of the finished deck panel.

5. Concrete shall remain within forms until it has achieved a minimum compressive strength of 4,000 psi and as additionally required to be properly handled without damage.

E. Dimensional Tolerances. Precast concrete deck panels shall conform to the following dimensional tolerances:

1. Panel Length: +/- 1/8” max.
2. Panel Width: + 1/8” - 0”
3. Panel Depth: +/- 1/16” max.
4. Panel Sweep: +/- 1/8” max.
5. Top and bottom panel surfaces shall be parallel, subject to item 6 below.
6. With panel on flat, level surface, elevation of any panel corner shall not vary more than 1/16” from any other panel corner.

F. Finish. Deck panel top surfaces shall have a wire broom finish, applied transverse to primary dock traffic. The deck panel fabricator shall establish finishing methods and procedures to ensure an even and consistent, broomed finish is achieved on all deck panel surfaces. The deck panel fabricator shall use extreme care and qualified craftsmen during finishing operations to prevent over working of the surface or other such actions detrimental to the air void system and long-term durability of the concrete.

G. Surface Defects. Chips and cracks that exceed 0.01 inches in width shall be grooved and patched with an approved non-shrink patching compound. Rock pockets and/or honeycombing exceeding 1” in diameter and/or 3/8” deep shall be patched with an approved non-shrink grout of a color similar to cured concrete. Any pockets that expose the reinforcing steel shall be chipped out, cleaned and filled with an approved epoxy patching compound per the manufacturer’s recommendations. The ENGINEER may entirely reject deck panels that exhibit more severe surface defects.

H. All edges of precast concrete that will be in contact with field installed grout or cast-in-place concrete shall be aggressively sandblasted prior to delivery to the project.

I. Curing, Handling and Storage.

1. Except as otherwise approved, deck panels shall be allowed to cure for a minimum of seven (7) days before transporting, provided that ambient air temperatures between the plant and the project site remain above 35°F. Otherwise deck panels shall be cured for a minimum of 28 days before shipping.

2. The deck panel fabricator shall select the method of initial curing, and shall be responsible for the result. The method shall include being under cover, with suitable protection from direct sunlight, wind and temperature and in accordance with ACI standards.

3. The deck panel fabricator shall establish handling methods to avoid damage to deck panels during form removal, storage, assembly and installation.

4. The storage of deck panels shall be on level surfaces. It shall be the responsibility of the deck panel fabricator to determine how high units may be stacked to avoid damage by over stacking.

5. Deck panels delivered and stored at either the deck panel fabricator’s facility, staging area, or job site, shall be properly stored on suitable dunnage and protected by appropriate means to prevent direct contact with the ground and other individual deck panels.

6. Deck panels shall be protected as necessary against damage, from any cause during curing, handling, storage, shipping, transport and delivery.

3.2 TRANSPORT AND DELIVERY

A. The CONTRACTOR shall assume full responsibility for any damages or losses resulting from the handling or transporting of deck panels during loading, shipping, transport and delivery to the project site as well as the subsequent handling required on site for installation.

B. Any deck panel damaged 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. All deck panels shall be installed as shown on the Plans or to the highest industry standards if not fully shown on the Plans.

B. Prior to grout or cast-in-place concrete placement, sandblasted edges of precast concrete deck panels shall be cleaned of free dust and dirt using high pressure potable water. Proper preparation of sandblasted edges shall be verified with H2SO4 indicator to assure complete removal of all carbonated substrate.

END OF SECTION

SECTION 03601 – DECK C.I.P. CONCRETE AND GROUT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section shall include all labor, materials, tools and equipment necessary for the construction of complete cast-in-place concrete deck closures, deck panel grout joints and all other associated hardware and related 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. ACI (American Concrete Institute) Code

C. AWS (American Welding Society) D1.4 – Reinforcing Steel

D. ASTM A615 – Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

E. ASTM A706 - Low Alloy Steel Deformed Bars for Concrete Reinforcement

F. ASTM A767 – Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

G. ASTM C150 – Portland Cement

H. ASTM C33 – Concrete Aggregates

I. ACI 301 – Structural Concrete for Buildings

J. ACI 304 – Recommended Practice for Measuring, Mixing Transporting and Placing Concrete

K. ACI 306R – Cold-Weather Concreting

L. ACI 308 – Standard Practice for Curing Concrete

M. ACI 309 – Standard Practice for Consolidation of Concrete

N. ACI 318 – Building Code Requirements for Reinforced Concrete

O. ACI 347 – Recommended Practice for Concrete Formwork

1.3 SUBMITTALS

A. Concrete Mix Design.

B. Deck Panel Grout

C. Control Joint Sealant

D. Structural Steel submittals per Section 05120 – Metal Fabrication

1.4 QUALITY ASSURANCE

A. Perform WORK in accordance with applicable ACI requirements.

B. Acquire cement and aggregate from the same source for all WORK.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete shall conform to the following requirements:

- Minimum 28 day compressive strength f'c = 6,000 psi
- Minimum cement content = 7.5 sacks per cubic yard
- Maximum water cement ratio = 0.40
- Air Entrainment = 4% to 7%
- Cement conform to ASTM C150 Type II, or Type I or III with tri-calcium aluminate content below 8%.
- Aggregate conform to ASTM C33 with maximum size of 3/4 inch.
- Water shall be potable, and free from amounts of oil, acid, alkali, and organic materials detrimental to the concrete.

B. Reinforcing steel shall be new billet stock ASTM A615, Grade 60. Bent or welded bars shall be ASTM A706, Grade 60. All reinforcing steel shall be galvanized in accordance with ASTM A767. Galvanizing shall be performed after fabrication.

C. Miscellaneous structural steel shall be ASTM A36, hot-dip galvanized and conform to Section 05120 – Metal Fabrication.

D. Shear studs shall be per Section 05120 – Metal Fabrication.

E. All other miscellaneous materials shall conform to Section 03301 – Structural Concrete.

F. Grout shall be Master Builders Set 45 or Euclid's Eucospeed MP, or approved equal, and shall be placed per manufacturer's recommendations.

G. Deck panel grout joint/control joint sealant shall be hot applied *Crafco Inc. Roadsaver 221* or approved equal.

2.2 FORMWORK

A. Forms shall be designed and constructed to be removed without injuring the concrete. They shall be free of bulge and warp, and constructed so the finished concrete will be of the form and dimensions shown on the Plans, and true to line and grade. Forms for concrete containing a retarding admixture shall be designed for a lateral pressure equal to that exerted by a fluid weighing 150 pounds per cubic foot.

B. Do not use nails or other penetrating fasteners to attach forms to precast concrete deck panels.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Installation of all cast-in-place concrete shall be per Section 03304 – Concrete Abutment.

B. Do not use nails or other penetrating fasteners to attach formwork to precast concrete deck panels.

C. Cast-in-place grout shall be used in all deck panel grout joints between precast concrete deck panels. Grout shall be Master Builders Set 45 or Euclid's Eucospeed MP or approved equal, and shall be placed per manufacturer's recommendations. Deck panel grout joint edges shall have a sandblasted surface, and be clean and dust-free, leaving a non-carbonated substrate. Mix grout with manufacturer's recommended water quantity. Do not add additional water. Grout may be extended by adding up to 30 pounds of clean pea gravel per 50-pound bag of grout. Sample pea gravel shall be sent to grout manufacturer's lab for inspection and approval prior to use on the project.

D. Deck panel grout joint edges shall be aggressively sandblasted prior to deck panel delivery to the project. Prior to placement of grout, clean sandblasted surface free of dust and dirt using high-pressure potable water. Check adequacy of preparation with H2S04 indicator to assure complete removal of carbonated substrate prior to grouting.

E. Avoid allowing air pockets to form while placing grout. Clean all spilled grout from deck surface immediately. Always flow grout in one direction while filling the deck panel grout joints. Vacuum remove standing water encountered while grouting.

F. Install deck joint/control joint sealant per manufacturer's recommendations.

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 A27 – Steel Castings, Carbon, for General Application.

E. ASTM A36/A36M - Structural Steel.

F. ASTM A108 – Steel Bars, Carbon Cold-Finished, Standard Quality.

G. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.

H. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.

I. ASTM A307 – Carbon Steel Bolts.

J. ASTM A325 - High Strength Bolts for Structural Steel Joints.

K. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.

L. ASTM A53 – Steel Pipe.

M. ASTM A572 – High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.

N. ASTM F593 – Stainless Steel Bolts, Hex Cap Screws, and Studs.

O. ASTM F594 – Stainless Steel Nuts.

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.

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.
4. Indicate location and size of all venting holes as required for galvanizing.

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 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. 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

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

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

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

E. Fabricator Qualifications: 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.

F. 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. Keep materials off the ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.

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

A. Miscellaneous steel shapes and all plate steel shall be ASTM A36, hot-dip galvanized.

B. Structural steel tubes shall be ASTM A500 Grade B, hot-dip galvanized.

C. Steel pipe shall be ASTM A53, Grade B, Type E or S, hot-dip galvanized.

D. 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. All bolts, nuts, washers, and miscellaneous hardware called out as Stainless Steel shall be Type 316 Stainless Steel. 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). All nails shall be hot-dip galvanized.

E. Aluminum for gangway shall conform to 6061-T6, unless otherwise noted. Aluminum pipe for gangway rails 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.

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 galvanizing shall be fully repaired per AWS D 1.1, unless otherwise approved by the ENGINEER.

E. The CONTRACTOR shall repair, to the satisfaction of the ENGINEER, any structural components that sustain damage resulting from the fabrication or hot dipped galvanizing process at no additional cost to the OWNER.

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.

F. 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. All welding shall be in accordance with AWS D1.1 or AWS D1.2, 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 performed. The galvanizing within one inch of the weld shall be removed and repaired, after welding, according to these Specifications. All weld 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.

G. Galvanized 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 zinc rich paint, ZRC or equal (cold galvanize repair).

END OF SECTION

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

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 the following electrical materials and methods:

1. Supporting devices for electrical components.
2. Electrical identification.
3. Electrical demolition.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of Section 01300 – CONTRACTOR Submittals.

B. Provide catalog cut sheets providing product data for each type of product specified. Note specifically what component is being submitted when more than one model or version is shown on the cut sheet. Where there is more than one of each type of component (circuit breaker), label the top of each cut sheet with the specific component that the cut sheet applies to.

C. Provide Shop Drawings detailing fabrication and installation of supports and anchorage for electrical items. Show all components of a system and how they relate to each other during installation. Include details of mounting brackets, wiring interconnections, single line diagrams, component layout diagrams for enclosures, materials lists for components in enclosures, wiring schematic diagrams with each wire numbered and each terminal numbered for wiring in enclosures. Provide Shop drawings for the pedestals, light poles, cable support brackets, pedestal mounting plates, power center mounting plates, and light pole base support structures.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70 for components and installation.

B. Listing and Labeling: Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed and Labeled": As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

C. All expose hardware on this project shall either be hot dipped galvanized or stainless steel. All steel components of all electrical equipment and their support brackets and associated equipment, plates, etc. shall be hot dipped galvanized. Strut channel (Unistrut) shall be 316 stainless steel unless it is welded to a structure, then it shall be hot dipped galvanized. All junction boxes and enclosures shall be 316 stainless steel. Size all junction boxes and enclosures as required. All dimensions of enclosures, junction boxes shown are a minimum unless specifically stated as a maximum. Increase dimensions as required.

D. Perform all work as required to provide an operational electrical power and lighting system as shown on the drawings.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate electrical equipment installation with other trades.

B. Arrange for chases, slots, and openings in structure during progress of construction to allow for electrical installations.

C. Coordinate installing required supporting devices and cut slots and holes as required in structural components as they are constructed.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

A. Channel and angle support systems, hangers, anchors, sleeves, brackets, fabricated items, and fasteners are designed to provide secure support from the structure for electrical components.

1. Material: Hot-dip galvanized steel where welded to a structure, otherwise type 316L stainless steel.

B. Steel channel supports have 9/16-inch diameter holes at a maximum of 8 inches o.c., in at least one surface.

1. Fittings and accessories mate and match with channels and are from the same manufacturer.

C. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps or "click"- type hangers.

D. Expansion Anchors: Red Head, Hilti, or equal. Stainless steel.

2.2 ELECTRICAL IDENTIFICATION

A. Manufacturer's Standard Products: Where more than one type is listed for a specified application, selection is Installer's option, but provide single type for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.

B. Raceway and Cable Labels: Conform to ANSI A13.1, Table 3, for minimum size of letters for legend and minimum length of color field for each raceway or cable size.

1. Type: Preprinted, flexible, self-adhesive, vinyl. Legend is overlaminated with a clear, weather- and chemical-resistant coating.
2. Color: Black legend on orange field.
3. Legend: Indicates voltage, panel, and circuit number. Locate every 100 feet in utilidor.

C. Engraved, Plastic-Laminated Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched for mechanical fasteners 1/16-inch minimum thick for signs up to 20 sq. in., 1/8 inch thick for larger sizes. Engraved legend in black letters on white face.

D. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3 TOUCHUP PAINT

A. For Equipment: Provided by equipment manufacturer and selected to match equipment finish.

B. For Nonequipment Surfaces: Matching type and color of undamaged, existing adjacent finish.

C. For Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION REQUIREMENTS

A. Store all materials in dry heated storage prior to installing them on the project. Make arrangements for ENGINEER to inspect all power centers, pedestals, panels, etc. prior to being installed. None of this equipment may be installed without being inspected by the ENGINEER first.

B. Install items level, plumb, and parallel and perpendicular to other structures and components, except where otherwise indicated.

C. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.

3.2 ELECTRICAL SUPPORTING METHODS

A. Hot-dip galvanized materials or 316 stainless steel, or as noted on the drawings. All locations on this Project are considered outdoors.

B. Conform to manufacturer's recommendations for selecting supports.

C. Strength of Supports: Adequate to carry all present and future loads, times a safety factor of at least 4; 200-lb- minimum design load.

3.3 INSTALLATION

A. Install devices to securely and permanently fasten and support electrical components.

B. Raceway Supports: Comply with NFPA 70 and the following requirements:

1. Conform to manufacturer's recommendations for selecting and installing supports.
2. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
3. Provide supports for cables as shown on the drawings. Use nylon cable ties to secure cable to all supports at every support and as shown on the drawing. Only high quality Thomas & Betts, Burndy or equivalent cable ties may be used with a minimum 250 lb tensile strength. All nails shall be hot dipped galvanized. All screws shall be stainless steel.

C. Install identification devices where required and on all circuit breakers, panels, power centers, pedestals, etc. Provide voltage and phase on labels. Submit labels for approval prior to making them.

1. Install labels where indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.
2. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated on the Contract Documents or required by codes and standards. Use consistent designations throughout the Project.
3. Tag or label power circuits for future connection and circuits in raceways and enclosures with other circuits. Identify source and circuit numbers in each cabinet, pull box, junction box, and outlet box. Color coding may be used for voltage and phase indication.
4. For panelboards, provide framed, typed circuit schedules with explicit description and identification of items controlled by each individual breaker.

D. Store all material and equipment in a dry, heated area until it is installed. Keep all material dry and if it has printed circuit boards or any other electronic components, keep it in a dry heated location after it is installed.

3.4 DEMOLITION

A. Where electrical WORK to remain is damaged or disturbed in the course of the WORK, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Keep all existing electrical systems on the Project site fully operational during the course of the WORK. Coordinate outages with ENGINEER and the Harbor Master. Outages are only to be on the portion of the WORK being done at the time. The remainder of the system shall remain energized.

3.5 CUTTING AND PATCHING

A. Cut, channel, chase, and drill surfaces necessary for electrical installations. Perform cutting by skilled mechanics of the trades involved. All cutting, chases, and drilling shall be per structural drawings. If no specific instruction is given on the structural drawings the cutting, chases, and drilling shall be approved by the ENGINEER as to size, location, method, etc. If a float structure or member is cut, drilled, or a chase made through it without the permission of the ENGINEER or in violation with the structural drawings, it shall be replaced at the cost of the CONTRACTOR.

B. Repair disturbed surfaces to match adjacent undisturbed surfaces. Repair all disturbed galvanized surfaces per civil.

3.6 TOUCH-UP PAINTING

A. Thoroughly clean damaged areas and provide primer, intermediate, and finish coats to suit the degree of damage at each location.

B. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes wires and cables and associated connectors, splices, and terminations for wiring systems rated 600 V and less.

1.3 SUBMITTALS

A. Catalog cut sheets for all products used.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the International Electrical Testing Association.

1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Architecting Technologies, to supervise on-site testing specified in Part 3.

B. Listing and Labeling: Provide wires and cables specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

C. Comply with NFPA 70.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver wires and cables according to NEMA WC 26.

1.6 COORDINATION

A. Coordinate layout and installation of cables with other installations.

B. Revise locations and elevations from those indicated, as required to suit field conditions and as approved by ENGINEER.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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. Wires and Cables:

a. American Insulated Wire Corp.; Leviton Manufacturing Co.
b. Carol Cable Co., Inc.
c. Southwire Company.
d. Priority Wire & Cable.

2. Connectors for Wires and Cables:

a. AMP Incorporated.
b. General Signal; O-Z/Gedney Unit.
c. Monogram Co.; AFC.
d. Square D Co.; Anderson.
e. 3M Company; Electrical Products Division.

2.2 WIRES AND CABLES

A. UL-listed wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Wire and Insulation Applications" Article.

B. Rubber Insulation Material: Comply with NEMA WC 3.

C. Thermoplastic Insulation Material: Comply with NEMA WC 5.

D. Cross-Linked Polyethylene Insulation Material: Comply with NEMA WC 7.

E. Ethylene Propylene Rubber Insulation Material: Comply with NEMA WC 8.

F. Conductor Material: Copper. Provide tinned copper in the pedestals and with type G or G-GC cable.

G. Stranding: Solid conductor for No. 10 AWG and smaller; stranded conductor for larger than No. 10 AWG.

H. All cables shall be type G, G-GC, or type SO cord as shown on the drawings. All type G and G-GC cable shall be UL listed and labeled for constant submersion in water. All type G cable shall have ground conductors of sufficient size to comply with the NEC table 250.122 for equipment grounding conductors for the ampacity of the cable, i.e. a cable rated at 75 degrees for 230 amps shall have a min. no. 4 AWG ground or multiple grounds of equivalent total size. All type SO cord shall be UL listed and labeled for wet locations and contact with water.

I. Provide other types of cables as shown on the drawing. Where a part number is provided, a substitute cable shall have the same features as the specified cable. All cables shall be UL listed for direct burial, installation in cable tray, and installation in conduit.

2.3 CONNECTORS AND SPLICES

A. UL-listed, factory-fabricated wiring connectors of size, ampacity rating, material, type, and class for application and service indicated. Comply with Project's installation requirements and as specified in Part 3 "Wire and Insulation Applications" Article.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine cable tray and raceways to receive wires and cables for compliance with requirements for installation tolerances and other conditions affecting performance of wires and cables. Do not proceed with installation until unsatisfactory conditions have been corrected. Pull a mandrel through existing conduit prior to pulling wires or cables.

3.2 WIRE AND INSULATION APPLICATIONS

A. Underground: Type RHW or XHHW, in raceway.

B. Feeders and all exterior wiring in conduit: Type XHHW, in raceway.

C. Float and between enclosures on the approach, bridge, and float: XHHW or Type G or G-GC cable as shown.

D. Pedestals: Provide tinned copper conductors with an insulation rated at 600V and approved for wet locations.

3.3 INSTALLATION

A. Install wires and cables as indicated, according to manufacturer's written instructions and NECA's "Standard of Installation."

B. Pull Conductors: 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 Division 16 Section 16050 - Basic Electrical Materials And Methods. Support cables as shown on the drawings.

E. Identify wires and cables according to Division 16 Section 16050 - Basic Electrical Materials And Methods.

3.4 CONNECTIONS

A. Conductor Splices: Keep to minimum. In float circuits, the only splices shall be in the electrical service equipment, panels, or at the power pedestals, unless otherwise noted.

B. Install splices and tapes that possess equivalent or better mechanical strength and insulation ratings than conductors being spliced. All splices in the floats shall be water-proof using either epoxy or tape that will be waterproof once the installation is complete.

C. Use splice and tap connectors compatible with conductor material.

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 and UL 486B.

3.5 FIELD QUALITY CONTROL

A. Verify all connections are properly tight. Verify no cable has been damaged. Replace any that has.

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1. Raceways include the following:

a. RMC.
b. RNC.

2. Boxes, enclosures, and cabinets include the following:

a. Device boxes.
b. Outlet boxes.
c. Pull and junction boxes.
d. Cabinets and hinged-cover enclosures.

B. Related Sections include the following:

1. Division 16 Section 16050 - Basic Electrical Materials And Methods for raceways and box supports.
2. Division 16 Section 16140 – Wiring Devices for devices installed in boxes.

1.3 DEFINITIONS

A. RMC: Rigid metal conduit.

B. RNC: Rigid non-metallic conduit.

1.4 SUBMITTALS

A. Product Data: For raceways and fittings, boxes, hinged-cover enclosures, and cabinets.

1.5 QUALITY ASSURANCE

A. Listing and Labeling: Provide raceways and boxes specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

B. Comply with NECA's "Standard of Installation."

C. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate layout and installation of raceways and boxes with other construction elements to ensure adequate headroom, working clearance, and access.

PART 2 - PRODUCTS

2.1 MANUFACTURER

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. Metal Conduit and Tubing:

   a. Carol Cable Co., Inc.
   b. Grinnell Co.; Allied Tube and Conduit Div.
   c. Monogram Co.; AFC.
   d. Triangle PWC, Inc.

2. Conduit Bodies and Fittings:

   a. American Electric; Construction Materials Group.
   b. Crouse-Hinds; Div. of Cooper Industries.
   c. Emerson Electric Co.; Appleton Electric Co.
   d. Hubbell, Inc.; Killark Electric Manufacturing Co.
   e. Lamson & Sessions; Carlon Electrical Products.
   f. O-Z/Gedney; Unit of General Signal.
   g. ETCO Speciality Products, Inc.

3. Boxes, Enclosures, and Cabinets:

   a. Butler Manufacturing Co.; Walker Division.
   b. Crouse-Hinds; Div. of Cooper Industries.
   c. Hoffman Engineering Co.; Federal-Hoffman, Inc.
   d. O-Z/Gedney; Unit of General Signal.
   e. Robroy Industries, Inc.; Electrical Division.
   f. Thomas & Betts Corp.

2.2 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: ANSI C80.1.

B. Fittings: NEMA FB 1; compatible with conduit/tubing materials. Provide malleable iron conduit bodies with galvanized coating.

2.3 NONMETALLIC CONDUIT AND TUBING

A. RNC: Schedule 40 or 80 PVC per NEMA TC 2 and applicable standards.

B. Flexible Conduit: All flexible conduit shall be non-metallic UL listed and designed for use where abrasion, physical abuse and constant flexing are a factor. The flexible conduit shall be Anaconda Sealtite Type CNP. Other manufacturers with equal products will be considered during the submittal process. Flexible conduit shall be constructed of smooth inner thermoplastic PVC core and sunlight-resistant PVC cover. Flexible conduit shall have nylon reinforcing layer between the core and outer cover. Flexible conduit shall be assembled with approved fittings with integral stainless steel cable grips to provide a liquid tight raceway for wiring. Flexible conduit shall be UL listed and CSA certified as Type "A" non-mteallic conduit with a temperature range of -4F to +140F. Flexible conduit shall be orange.

2.4 OUTLET AND DEVICE BOXES

A. Stainless Steel, 316L.

2.5 PULL AND JUNCTION BOXES

A. Stainless Steel, type 316L.

2.6 ENCLOSURES AND CABINETS

A. All enclosures and cabinets: Stainless Steel type 316 unless noted otherwise.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive raceways, boxes, enclosures, and cabinets for compliance with installation tolerances and other conditions affecting performance of raceway installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 WIRING METHODS

A. Outdoors: Use the following wiring methods:

1. Exposed: Rigid steel.
2. Underground: Rigid steel, Schedule 80 PVC, or as noted on the drawings. Use Rigid steel within 5 feet of structures including light bases.
3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): Non-metallic flexible conduit.
4. Boxes and Enclosures: NEMA 4X, stainless steel, type 316 unless noted otherwise.
5. Fittings and Conduit Bodies: Malleable iron conduit bodies. Galvanized steel fittings. All cable grips shall be stainless steel with aluminum fittings. Use nm washers and anticorrosion grease where cable grips contact other metals.

3.3 INSTALLATION

A. Install raceways, boxes, enclosures, and cabinets as indicated, according to manufacturer's written instructions.

B. Complete raceway installation before starting conductor installation.

C. Support raceways as specified in Division 16 Section 16050 Basic Electrical Material And Methods.

D. Use temporary closures to prevent foreign matter from entering raceways.

E. Protect conduit from filling with water during construction.

F. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.

G. Use raceway fittings compatible with raceways and suitable for use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings, unless otherwise indicated.

H. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as practical.

I. Join raceways with fittings designed and approved for the purpose and make joints tight.

1. Make raceway terminations tight. Use bonding bushings or wedges at connections subject to vibration. Use bonding jumpers where joints cannot be made tight.
2. Use insulating bushings to protect conductors.

J. Tighten set screws of threadless fittings with suitable tools.

K. Terminations: Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against the box. Where terminations are not secure with 1 locknut, use 2 locknuts: 1 inside and 1 outside the box.

L. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align raceways so the coupling is square to the box and tighten the chase nipple so no threads are exposed.

M. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel 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 the pull wire.

N. Where cable is shown in conduit, the purpose of conduit in this project is to provide physical damage protection to the type SO and type G cable. Size the conduit so the cable can be easily installed and so good air flow can be maintained in the conduit to allow the cable to dissipate heat. Increase conduit sizes as required.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure coatings, finishes, and cabinets are without damage or deterioration at the time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to paint finishes with matching touchup coating recommended by manufacturer.

3.5 CLEANING

A. On completion of installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish, including chips, scratches, and abrasions.

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes receptacles and finish plates.

1.3 SUBMITTALS

A. Product Data: For each product specified including all equipment and materials used in the pedestals.

B. Shop Drawings: For each pedestal configuration.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

B. Comply with NEMA WD 1.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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. Wiring Devices:

    a. Bryant Electric, Inc.
    b. GE Company; GE Wiring Devices.
    c. Hubbell, Inc.; Wiring Devices Div.
    d. Leviton Manufacturing Co., Inc.
    e. Pass & Seymour/Legrand; Wiring Devices Div.

2. Pedestals: Eaton Marina Power or equal.

2.2 RECEPTACLES

A. Straight-Blade and Locking Receptacles: Heavy-Duty grade. 120 volt, 20 amp rated, min. Made for marine installations. Provide commercial specification grade receptacles and switches 20A, 120V rated.

2.3 PEDESTALS

A. Provide pedestals made of the materials and with the features and functions shown on the contract drawings. The pedestals shall be UL listed as a marine pedestal assembly. All substitutions shall have the same features and functions as the pedestals shown on the drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies plumb and secure.

B. Install as shown on the drawings and per the manufacturer's instructions.

3.2 IDENTIFICATION

A. Comply with Division 16 Section 16050 – Basic Electrical Material And Methods.

1. Receptacles: Identify as shown on the drawings.
2. Label receptacles and circuit breakers with voltage and amperage rating with engraved phenolic labels screwed into the pedestal under the door.

3.3 CONNECTIONS

A. Connect wiring device grounding terminal to branch-circuit equipment grounding conductor.

B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturers torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Test wiring devices for proper polarity and ground continuity. Operate each device at least six times.

B. Replace damaged or defective components.

3.5 CLEANING

A. Internally clean devices, device outlet boxes, and enclosures. Replace stained or improperly painted wall plates or devices.

END OF SECTION

SECTION 16452 - GROUNDING

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 grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 16 Section 16120 – Conductors And Cables.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the contract and Division 1 Specification Sections.

B. Product Data for grounding rods, connectors and connection materials, and grounding fittings.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with UL 467.

C. Listing and Labeling: Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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. Ideal Industries, Inc.

2. Burndy
3. O-Z/Gedney Co.
4. Thomas & Betts, Electrical.

2.2 GROUNDING AND BONDING PRODUCTS

A. Governing Requirements: Where types, sizes, ratings, and quantities indicated are in excess of National Electrical Code (NEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

2.3 WIRE AND CABLE GROUNDING CONDUCTORS

A. Comply with Division 16 Section 16120 – Conductors And Cables. Conform to NEC Table 8, except as otherwise indicated, for conductor properties, including stranding.

1. Material: Copper. Use only copper wire.

B. Equipment Grounding Conductors: Insulated with green color insulation.

C. Grounding-Electrode Conductors: Stranded cable.

D. Underground Conductors: Bare, tinned, stranded, except as otherwise indicated.

E. Bare Copper Conductors: Conform to the following:

1. Solid Conductors: ASTM B 3.

2.4 MISCELLANEOUS CONDUCTORS

A. Grounding Bus: Bare, annealed-copper bars of rectangular cross section.

B. Braided Bonding Jumpers: Copper tape, braided No. 30 AWG bare copper wire, terminated with copper ferrules.

C. Bonding Straps: Soft copper, 0.05 inch (1 mm) thick and 2 inches (50 mm) wide, except as indicated.

2.5 CONNECTOR PRODUCTS

A. Pressure Connectors: High-conductivity-plated units.

B. Bolted Clamps: Heavy-duty type.

C. Exothermic-Welded Connections: Provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items.

2.6 GROUND RODS

A. Use copper ground rods in salt water. Provide ¾"x10' ground rods. Use copper clad steel rods in earth.

PART 3 - EXECUTION

3.1 APPLICATION

A. Equipment Grounding Conductors: Comply with NEC Article 250 for types, sizes, and quantities of equipment grounding conductors, except where specific types, larger sizes, or more conductors than required by NEC are indicated.

1. Install equipment grounding conductor with circuit conductors for the items below in addition to those required by Code:

a. Feeders and branch circuits.
b. Lighting circuits.
c. Receptacle circuits.

2. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.

B. Separately Derived Systems: Where NEC requires grounding, ground according to NEC Paragraph 250-26.

C. Metal Poles Supporting Outdoor Lighting Fixtures: Ground pole to a grounding electrode in addition to separate equipment grounding conductor run with supply branch circuit.

D. Ground neutral of all transformers. Provide a ground rod at each transformer and ground per NEC. Connect ground at transformer to enclosure, mounting brackets, grounding conductors in all cables entering power center and ground rod. Note: UHMW is used as an insulating means in this project. Make sure all metallic components including brackets and mounting equipment is grounded.

3.2 INSTALLATION

A. General: Ground electrical systems and equipment according to NEC requirements, except where Drawings or Specifications exceed NEC requirements.

B. Grounding Conductors: Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

C. Float Structure: Ground all steel float structures to electrical grounding system. This includes the new gangways, and other steel on the marine structures and floats. Install lugs on

the steel when grounding or use exothermically welded connections. Repair connections with galvanizing per the ENGINEER.

3.3 CONNECTIONS

A. General: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.
5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Use for connections to structural steel, ground rods, and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Equipment Grounding-Wire Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

D. Noncontact Metal Raceway Terminations: Where metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors, except as otherwise indicated.

E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.

F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

G. Moisture Protection: Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

END OF SECTION

SECTION 16461 - DRY-TYPE TRANSFORMERS

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 dry-type distribution and specialty transformers rated 1000 V and less.

1.3 SUBMITTALS

A. Product Data: Include data on features, components, ratings, and performance for each type of transformer specified. Include dimensioned plans, sections, and elevation views. Show minimum clearances and installed devices and features.

B. Factory Test Reports: Certified copies of manufacturer's design and routine factory tests required by referenced standards.

C. Sound-Level Test Reports: Certified copies of manufacturer's sound-level tests applicable to equipment for this Project.

D. Maintenance Data: For transformers to include in the maintenance manuals specified in Division 1.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the International Electrical Testing Association.

1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.

B. Listing and Labeling: Provide transformers specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

C. Comply with IEEE C2.

D. Comply with NFPA 70.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit throughout periods during which equipment is not energized and is not in a space that is continuously under normal control of temperature and humidity.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Acme Electric Corp.; Transformer Division.
2. Bryant Electric.
3. Cutler-Hammer/Eaton Corp.
4. GE Electrical Distribution & Control.
5. Siemens Energy & Automation, Inc.
6. Sola/Hevi-Duty Electric.
7. Square D; Groupe Schneider.

2.2 TRANSFORMERS, GENERAL

A. Description: Factory-assembled and -tested, air-cooled units of types specified, designed for 60-Hz service.

B. Cores: Grain-oriented, non-aging silicon steel.

C. Coils: Continuous copper windings without splices, except for taps. Windings shall be double dipped and baked with BC346 John Dolph Varnish.

D. Internal Coil Connections: Brazed or pressure type.

E. Enclosure: Class complies with NEMA 250 for the environment in which installed.

F. Low-Sound-Level Units: Minimum of 3 dBA less than NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.

2.3 GENERAL-PURPOSE DISTRIBUTION AND POWER TRANSFORMERS

A. Comply with NEMA ST 20 and list and label as complying with UL 1561.

B. Cores: One leg per phase.

C. Windings: One coil per phase in primary and secondary.

D. Enclosure: 316 Stainless steel, ventilated, dripproof.

E. Insulation Class: 185 or 220 deg C class for transformers 15 kVA or smaller; 220 deg C class for transformers larger than 15 kVA.

1. Rated Temperature Rise: 150 deg C maximum rise above 40 deg C.

F. Taps: For transformers 3 kVA and larger, full-capacity taps in high-voltage windings are as follows:

1. Taps, 15 through 500 kVA: Six 2.5-percent taps, 2 above and 4 below rated high voltage.

G. Floor mount brackets: Manufacturer's standard brackets for transformers up to 75 kVA.

2.4 BUCK-BOOST TRANSFORMERS

A. Units comply with NEMA ST 1 and are listed and labeled as complying with UL 506 or UL 1561.

B. Description: Self-cooled dry type, rated for continuous duty, and connected as autotransformers to provide the percentage of buck or boost indicated.

2.5 CONTROL AND SIGNAL TRANSFORMERS

A. Units comply with NEMA ST 1 and are listed and labeled as complying with UL 506.

B. Ratings: Continuous duty. If rating is not indicated, provide capacity exceeding peak load by 50 percent minimum.

C. Description: Self-cooled, 2 windings.

2.6 FINISHES

A. Indoor Units: Manufacturer's standard paint over corrosion-resistant pretreatment and primer.

B. Outdoor Units: Comply with ANSI C57.12.28. 316 Stainless Steel.

2.7 SOURCE QUALITY CONTROL

A. Factory Tests: Design and routine tests comply with referenced standards.

B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project if specified sound levels are below standard ratings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with safety requirements of IEEE C2.

B. Arrange equipment to provide adequate spacing for access and for circulation of cooling air.

C. Identify transformers and install warning signs according to Division 16 Section 16050 – Basic Electrical Materials and Methods.

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 and UL 486B.

3.2 GROUNDING

A. Separately Derived Systems: Make grounding connections to grounding electrodes and bonding connections to metallic piping as indicated and to comply with NFPA 70.

B. Comply with Division 16 Section 16452 – Grounding for materials and installation requirements.

3.3 FIELD QUALITY CONTROL

A. Tests: Include the following minimum inspections and tests according to manufacturer's written instructions. Comply with IEEE C57.12.91 for test methods and data correction factors.

1. Inspect accessible components for cleanliness, mechanical and electrical integrity, and damage or deterioration. Verify that temporary shipping bracing has been removed. Include internal inspection through access panels and covers.
2. Inspect bolted electrical connections for tightness according to manufacturer's published torque values or, if not available, those specified in UL 486A and UL 486B.
3. Insulation Resistance: Perform megohmmeter tests of primary and secondary winding to winding and winding to ground.

a. Minimum Test Voltage: 1000 V, dc.

b. Minimum Insulation Resistance: 500 megohms.
c. Duration of Each Test: 10 minutes.
d. Temperature Correction: Correct results for test temperature deviation from 20 deg C standard.

B. Test Failures: Compare test results with specified performance or manufacturer's data. Correct deficiencies identified by tests and retest. Verify that transformers meet specified requirements.

3.4 CLEANING

A. On completion of installation, inspect components. Remove paint splatters and other spots, dirt, and debris. Repair scratches and mars on finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

3.5 ADJUSTING

A. After installing and cleaning, touch up scratches and mars on finish to match original finish.

B. Adjust transformer taps to provide optimum voltage conditions at utilization equipment throughout normal operating cycle of facility. Record primary and secondary voltages and tap settings and submit with test results.

C. Adjust buck-boost transformer connections to provide optimum voltage conditions at utilization equipment throughout normal operating cycle of facility.

END OF SECTION

SECTION 16470 - PANELBOARDS

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 power panelboards and associated auxiliary equipment rated 600 V and less.

B. Related Sections include the following:

1. Division 16 Section 16050 – Basic Electrical Materials and Methods for general materials, installation, and labeling methods.

1.3 SUBMITTALS

A. Product Data: For each type of panelboard and switchboard, accessory item, and component specified. Shop drawings for all switchboards.

B. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.

C. Maintenance Data: For panelboard components to include in the maintenance manuals specified in Division 1. Include manufacturer's written instructions for testing circuit breakers.

1.4 QUALITY ASSURANCE

A. Listing and Labeling: Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

C. Comply with NFPA 70.

D. Comply with NEMA PB 1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the WORK include the following:

1. Square D Co.
2. Westinghouse
3. Cutler Hammer.

2.2 PANELBOARD FABRICATION

A. Enclosures: Flush- or surface-mounted cabinets as indicated. NEMA PB 1, Type 1, unless otherwise indicated to meet environmental conditions at installed location.

1. Outdoor Locations: NEMA 250, Type 3R, stainless steel type 316.

B. Front: Secured to box with concealed trim clamps, unless otherwise indicated. Front for surface-mounted panelboards shall be same dimensions as box. Fronts for flush panelboards shall overlap box, unless otherwise indicated.

C. Directory Frame: Metal, mounted inside each panelboard door.

D. Bus: Hard drawn copper of 98 percent conductivity.

E. Main and Neutral Lugs: Compression type.

F. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors. Bonded to box.

G. Service Equipment Approval: Listed for use as service equipment for MDP panelboard.

H. Future Devices: Equip with mounting brackets, bus connections, and necessary appurtenances, for the overcurrent protective device ampere ratings indicated for future installation of devices.

2.3 BRANCH-CIRCUIT PANELBOARDS

A. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

B. Doors: In panelboard front, with concealed hinges. Secure with flush catch and tumbler lock, all keyed alike.

2.4 DISTRIBUTION PANELBOARDS

A. Doors: In panelboard front, except omit in fusible-switch panelboard, unless otherwise indicated. Secure door with vault-type latch with tumbler lock, all keyed alike.

B. Branch-Circuit Breakers: Where overcurrent protective devices are indicated to be circuit breakers, use bolt-on circuit breakers, except circuit breakers 225-A frame size and greater may be plug-in type where individual positive-locking device requires mechanical release for removal.

C. AIC Rating: Provide the AIC rating shown on the drawings. Provide 22,000 symmetrical amps interrupting capacity minimum for panel board interior and all branch circuit breakers minimum at panel H. Provide minimum of 10,000 AIC for panels and circuit breakers in all other locations on the project, unless otherwise noted.

D. Branch Circuit Breaker Mounting: Provide bolt on breakers.

2.5 OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker: NEMA AB 1, handle lockable.

1. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated and interrupting capacity rating to meet available fault current.
2. Application Listing: Appropriate for application.
3. Circuit Breakers, 200 A and Larger: Trip units interchangeable within frame size.
4. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

2.6 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Include tools and miscellaneous items as required for overcurrent protective device test, inspection, maintenance, and operation.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboards and accessory items according to NEMA PB 1.1.

B. Mounting Heights: Mount as shown on drawings. No electrical connections shall be allowed within 12 inches of the base of any power center or within 18” of the float surface.

C. Mounting: Plumb and rigid without distortion of box. Mount flush panelboards uniformly flush with wall finish.

D. Circuit Directory: Type directory to indicate installed circuit loads after balancing panelboard loads. Obtain approval before installing.

E. Install filler plates in unused spaces.

F. Wiring in Panelboard Gutters: Arrange conductors into groups, and bundle and wrap with wire ties after completing load balancing.

3.2 IDENTIFICATION

A. Identify field-installed wiring and components and provide warning signs as specified in Division 16 Section 16050 – Basic Electrical Materials And Methods.

B. Panelboard Nameplates: Label each panelboard with engraved laminated-plastic or metal nameplates mounted with corrosion-resistant screws.

3.3 GROUNDING

A. Make equipment grounding connections for panelboards as indicated.

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals, including grounding connections, according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 CLEANING

A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish.

END OF SECTION

SECTION 16476 - DISCONNECT SWITCHES AND CIRCUIT BREAKERS

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 individually mounted switches and circuit breakers used for the following:

1. Service disconnect switches.
2. Feeder and equipment disconnect switches.
3. Feeder branch-circuit protection.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 16 Section 16140 - Wiring Devices for attachment plugs and receptacles, and snap switches used for disconnect switches.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the contract and Division 1 Specification Sections.

B. Product Data for disconnect switches, circuit breakers, and accessories specified in this Section.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain disconnect switches and circuit breakers from one source and by a single manufacturer.

B. Comply with NFPA 70 for components and installation.

C. Listing and Labeling: Provide disconnect switches and circuit breakers specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering disconnect switches and circuit breakers that may be incorporated into the WORK include, but are not limited to, the following:

1. Molded-Case Circuit Breakers:
   a. American Circuit Breaker Corp.
   b. Eaton Corp.; Cutler-Hammer Products.
   c. General Electric Co.; Electrical Distribution and Control Division.
   d. Klockner-Moeller.
   e. Siemens Energy & Automation, Inc.
   f. Square D Co.
   g. Westinghouse Electric Corp.; Distribution & Control Business Unit.

2.2 DISCONNECT SWITCHES

A. Enclosed, Nonfusible Switch: NEMA KS 1, Type HD, with lockable handle.

B. Enclosed, Fusible Switch, 800 A and Smaller: NEMA KS 1, Type HD, clips to accommodate specified fuses, enclosure consistent with environment where located, handle lockable with 2 padlocks, and interlocked with cover in CLOSED position.

C. Enclosure: NEMA KS 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.

1. Outdoor Locations: Type 4X, type 316 stainless steel.

2.3 ENCLOSED CIRCUIT BREAKERS

A. Enclosed, Molded-Case Circuit Breaker: NEMA AB 1, with lockable handle.

B. Characteristics: Frame size, trip rating, number of poles, and auxiliary devices as indicated and interrupting rating to meet available fault current.

C. Application Listing: Appropriate for application, including switching fluorescent lighting loads or heating, air-conditioning, and refrigerating equipment.

D. Circuit Breakers, 200 A and Larger: Trip units interchangeable within frame size.

E. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

F. Enclosure: NEMA AB 1, Type 1, unless otherwise specified or required to meet environmental conditions of installed location.

1. Outdoor Locations: Type 4X, type 316 stainless steel.

G. AIC Rating: The main circuit breakers at panel H shall have a 22,000 AIC interrupting rating. See Section 16470 for interrupting ratings of circuit breakers in other panelboards.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install disconnect switches and circuit breakers in locations as indicated, according to manufacturer's written instructions.

B. Install disconnect switches and circuit breakers level and plumb.

C. Install wiring between disconnect switches, circuit breakers, control, and indication devices.

D. Connect disconnect switches and circuit breakers and components to wiring system and to ground as indicated and instructed by manufacturer.

1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

E. Identify each disconnect switch and circuit breaker according to requirements specified in Division 16 Section 16050 – Basic Electrical Materials And Methods.

3.4 CLEANING

A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, and abrasions.

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior lighting units with luminaires, lamps, ballasts, poles/support structures, and accessories.

1.3 DEFINITIONS

A. Lighting Unit: A luminaire or an assembly of luminaires complete with a common support, including pole, post, foundation, or other structure, and mounting and support accessories.

B. Luminaire (Light Fixture): A complete lighting device consisting of lamp(s) and ballast(s), when applicable, together with parts designed to distribute light, to position and protect lamps, and to connect lamps to power supply.

1.4 SUBMITTALS

A. Product Data: For each type of lighting unit indicated, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Materials and dimensions of luminaires and poles.
2. Certified results of independent laboratory tests for fixtures and lamps for electrical ratings and photometric data.
3. High-intensity-discharge luminaire ballasts.
4. Provide information on the candela output along the vertical axis for each luminaire to show compliance with the requirements on the drawings.
5. Show glare control features on each luminaire used for ballfield lighting.

B. Shop Drawings: Anchor-bolt templates keyed to specific poles and certified by manufacturer. Shop Drawings of the poles for use by the pole fabricator.

C. If an alternate foundation system is proposed by the CONTRACTOR, submit shop drawings and design calculations for the foundation system.

D. Product Certificates: Signed by manufacturers of lighting units certifying that products comply with requirements.

E. Maintenance Data: For lighting units to include in maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

A. Luminaires and Accessories: Listed and labeled as defined in NFPA 70, Article 100, for their indicated use, location, and installation conditions by a testing agency acceptable to authorities having jurisdiction

B. Comply with ANSI C2.

C. Comply with NFPA 70.

D. FM Compliance: Units for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM.

1.6 DELIVERY, STORAGE, AND HANDLING OF POLES

A. Retain factory-applied pole wrappings on metal poles until just before pole installation. For all poles, handle with web fabric straps.

1.7 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive OWNER of other rights OWNER may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by CONTRACTOR under requirements of the Contract Documents. Provide a general warranty for all materials and workmanship for a period of three years from the date of Substantial Completion.

B. Special Warranty: Written warranty, signed by manufacturer and Installer agreeing to replace external parts of luminaires and poles exhibiting a failure of finish as specified below. This warranty is in addition to, and not a limitation of, other rights and remedies OWNER may have under requirements of the Contract Documents.

1. Protection of Metal from Corrosion: Warranty against perforation or erosion of finish due to weathering.
2. Color Retention: Warranty against fading, staining, and chalking due to effects of weather and solar radiation.
3. Warranty Period: Manufacturer's standard, but not less than five years from date of Substantial Completion.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
2. Glass and Plastic Lenses, Covers, and Other Optical Parts: 1 for every 100 of each type and rating installed. Furnish at least one of each type.
3. Ballasts: 1 for every 100 of each type and rating installed. Furnish at least one of each type.
4. Reflectors, Glare Shields, Globes and Guards: 1 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products indicated on the drawings.

2.2 LUMINAIRES

A. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

B. Metal Parts: Free from burrs, sharp corners, and edges.

C. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.

D. Housings: Stainless Steel. Weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

E. Doors, Frames, and Other Internal Access: Stainless Steel. Smooth operating, free from light leakage under operating conditions, and arranged to permit relamping without use of tools. Arrange doors, frames, lenses, diffusers, and other pieces to prevent accidental falling during relamping and when secured in operating position. Provide for door removal for cleaning or replacing lens. Arrange to disconnect ballast when door opens.

F. Exposed Hardware Material: Stainless steel.

G. Plastic Parts: No plastic parts.

H. Reflecting Surfaces: Minimum reflectance as follows, unless otherwise indicated:

1. White Surfaces: 85 percent.

2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

I. Lenses and Refractors: Materials as indicated. Use heat- and aging-resistant, resilient gaskets to seal and cushion lens and refractor in luminaire doors.

J. Photoelectric Relays: As follows:

1. Contact Relays: Single throw, arranged to fail in the on position and factory set to turn light unit on at 1.5 to 3 fc (16 to 32 lx) and off at 4.5 to 10 fc (48 to 108 lx) with 15-second minimum time delay.
2. Relay Mounting: In electrical enclosures.

K. High-Intensity-Discharge Ballasts: Comply with ANSI C82.4. Constant wattage autotransformer or regulating high-power-factor type, unless otherwise indicated.

1. Ballast Fuses: One in each ungrounded supply conductor. Voltage and current ratings as recommended by ballast manufacturer.
2. Single-Lamp Ballasts: Minimum starting temperature of minus 40 deg C.
3. Open-circuit operation will not reduce average life.
4. High-Pressure Sodium Ballasts: Equip with a solid-state igniter/starter having an average life in pulsing mode of 10,000 hours at an igniter/starter case temperature of 90 deg C.
5. Noise: Uniformly quiet operation, with a noise rating of B or better.
6. Surge Protector: Hard-wired unit external to ballast case, rated for supply circuit line voltage, and encapsulated for circuit and moisture protection. Three-stage surge protection with three suppression modes provides 330-V peak clamping, line to neutral, line to ground, and neutral to ground. Pulse life is 500 3KA-8x20 microsecond impulses, and response time is less than 1 nanosecond. Internal fuse takes device off line on failure and lights a light-emitting diode failure indicator.

L. Lamps: Comply with the standard of the ANSI C78 series that is applicable to each type of lamp. Provide luminaires with indicated lamps of designated type, characteristics, and wattage. Where a lamp is not indicated for a luminaire, provide medium wattage lamp recommended by manufacturer for luminaire.

1. Metal-Halide Color Temperature and Minimum Color-Rendering Index: 3600 K and 70 CRI, unless otherwise indicated.

M. Additional Requirements: As shown on the drawings.

2.3 LUMINAIRE SUPPORT COMPONENTS

A. Description: Comply with AASHTO LTS-3 for pole or other support structures, brackets, arms, appurtenances, base, and anchorage and foundation. Wind loads shall be in accordance with UBC-1997.

B. Wind-Load Strength of Total Support Assembly: Adequate to carry support assembly plus luminaires at indicated heights above grade without failure, permanent deflection, or

whipping with a basic wind speed of 100 mph and with the application of the relevant height, exposure, gust factor, and pressure coefficients. Support assembly includes pole or other support structures, brackets, arms, appurtenances, base, and anchorage and foundation.

1. Strength Analysis: For each pole type and luminaire combination, 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.

C. Finish: Match finish of pole/support structure for arm, bracket, and tenon mount materials.

D. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Will not cause galvanic action at contact points.
2. Mountings: Correctly position luminaire to provide indicated light distribution.
3. Anchor Bolts, Nuts, and Washers: Hot-dip galvanized after fabrication unless stainless-steel items are indicated.
4. Anchor-Bolt Template: Plywood or steel.

E. Pole/Support Structure Bases: See Drawings.

F. Concrete for Pole Foundations: See electrical Drawings and the applicable Specification sections for all concrete & backfill WORK.

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Aluminum: Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

1. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
2. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.
3. 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 606.1 or AAMA 608.1.

a. Color: Light bronze.
b. Color: Medium bronze.
c. Color: Dark bronze.

d. Color: Black.

4. Gold Anodic Finish: AA-M32C22A43 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, impregnated color coating 0.018 mm or thicker) complying with AAMA 611; gold color.

C. Steel: Grind welds and polish surfaces to a smooth, even finish.

1. Galvanized Finish: Hot-dip galvanize after fabrication to comply with ASTM A 123.
2. 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. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
3. Interior: Apply one coat of bituminous paint on interior of pole, or otherwise treat to prevent corrosion.
4. Match finish of pole and support structure on arm, bracket, and tenon mount materials. Provide hot dipped galvanized FINISH.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Luminaire Attachment: Fasten to indicated structural supports.

B. Luminaire Attachment with Adjustable Features or Aiming: Attach luminaires and supports to allow aiming for indicated light distribution.

C. Lamp luminaires with indicated lamps according to manufacturer's written instructions. Replace malfunctioning lamps.

3.2 CONNECTIONS

A. Ground equipment.

1. 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 and UL 486B.

B. Ground metal poles/support structures according to Division 16 Section 16452 – Grounding.

3.3 FIELD QUALITY CONTROL

A. Inspect each installed unit for damage. Replace damaged units.

B. Advance Notice: Give dates and times for field tests.

C. Provide instruments to make and record test results.

D. Tests and Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source, and as follows:

1. Measure light intensities at night if specific illumination performance is indicated. Use photometers with calibration referenced to NIST standards.
2. Check intensity and uniformity of illumination.
3. Check excessively noisy ballasts.

E. Prepare a written report of tests, inspections, observations and verifications indicating and interpreting results.

F. Malfunctioning Fixtures and Components: Replace or repair, then retest. Repeat procedure until units operate properly.

3.4 CLEANING AND ADJUSTING

A. Clean units after installation. Use methods and materials recommended by manufacturer.

B. Adjust luminaires and luminaires with adjustable lamp position to provide required light distributions and intensities.

END OF SECTION

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

XII CONSTRUCTION PERMITS AND EASEMENTS

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
P.O. BOX 6898
JBER, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

SEP 24 2013

Regulatory Division
POA-2013-379

City of Petersburg
Attention: Mr. Steve Giesbrecht
Post Office Box 329
Petersburg, Alaska 99833

Dear Mr. Giesbrecht,

Enclosed is the signed Letter of Permission, file number POA-2013-379, Wrangell Narrows, authorizing the widening of the Petersburg Crane Dock approach. The project site is located within Section 27, T. 58 S., R. 79 E., Copper River Meridian; USGS Quad Map AK-PETERSBURG D-3; Latitude 56.8105., Longitude -132.9617; in Petersburg, Alaska. Also enclosed is a Notice of Authorization which should be posted in a prominent location near the authorized work.

If changes to the plans or location of the work are necessary for any reason, plans must be submitted to us immediately. Federal law requires approval of any changes before construction begins.

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

Additionally, we have enclosed a Notification of Administrative Appeals Options and Process and Request for Appeal form regarding this Department of the Army Letter of Permission (see section labeled "Initial Proffered Permit").

Please contact me via email at Roberta.K.Budnik@usace.army.mil, by mail at the address above, by phone at 907-753-2785, or toll free from within Alaska at (800) 478-2712, if you have questions.

Sincerely,

Roberta K. Budnik

Roberta Budnik
Regulatory Specialist

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
REGULATORY DIVISION
P.O. BOX 6898
JBER, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

SEP 24 2013

Regulatory Division
POA-2013-379

DEPARTMENT OF THE ARMY
LETTER OF PERMISSION

Authorization is hereby granted to the City of Petersburg, to:

Widen the existing Petersburg Crane Dock approach from 20 feet to 35 feet. New 15-foot by 10-foot by 8-inch precast concrete dock panels will be used for the widening. Fifteen (15) timber fender piles will be removed and salvaged. If not salvageable, they will be replaced by new 12-inch diameter timber piles. Nine (9) timber piles will be installed. Eight (8) new 12-inch diameter galvanized steel batter vertical pipe piles will be installed.

The work will be performed in accordance with the enclosed plans, sheets 1-5, dated June 2013, which are incorporated in and made a part of this Letter of Permission.

This action is based upon the recommendation of the Chief of Engineers and under the provisions of Section 10 of the 1899 Rivers and Harbors Act (30 Stat 1151; 33 U.S.C. 403).

This authorization is subject to the following special conditions and the enclosed general conditions and further information (see enclosure entitled: GENERAL CONDITIONS/INFORMATION.

Special Conditions:

1. A marine mammal observer shall be present before and during any and all pile extraction and driving activities. The marine mammal observer shall be able to accurately identify Steller sea lions, and shall observe the area 350 meters from the project area, as shown in the attached "observation/shut down zone" (the zone) map. The observer shall be able to see the entire 350 meter area by whichever means necessary (e.g., platform and binoculars, boat, etc.). For 15 minutes before any pile extraction or pile driving activities take place, the observer shall scan the zone for the presence of any Steller sea lions. If any sea lions are present within the zone, pile extraction or driving activities shall not begin until the animal(s) has left the zone on their own accord. During all pile extraction and driving activity, the observer shall scan the zone for the entrance of any sea lions. If any sea lions enter the zone during these activities, extraction or driving shall cease immediately, and shall not begin again until the animal(s) has left the area on their own accord.

2. All pile driving activities shall be limited to the lowest tidal stages as practicable.

3. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the U.S.

4. You must install and maintain, at your expense, any safety lights and signals prescribed by the U.S. Coast Guard (USCG), through regulations or otherwise, on your authorized facilities. The USCG may be reached at the following address and telephone number: Commander (oan), 17th Coast Guard District, P.O. Box 25517, Juneau, Alaska 99802, (907) 463-2272.

5. The permittee understands and agrees that, if future operations by the U.S. 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 U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

Further, please note that 33 CFR 325.5(b)(2) requires that you submit to the Corps a report of completed work. Enclosed is a form for you to complete and return to us once the work authorized by this Letter of Permission is complete.

Nothing in this authorization shall be construed as excusing you from compliance with other Federal, State, or local statutes, ordinances, or regulations which may affect the proposed work.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

09/24/2013
DATE

Roberta K Budnik
FOR: District Engineer
U.S. Army, Corps of Engineers

GENERAL CONDITIONS/INFORMATION

1. The time limit for completing the work authorized ends five years from the date of this authorization. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must contact the Alaska District Corps of Engineers to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Further Information:

1. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

2. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

3. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

4. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 3 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33Â CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may, in certain situations, (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

5. Extensions. General Condition #1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

US Army Corps of Engineers
Alaska District

Permit Number: POA-2013-379

Name of Permittee: City of Petersburg

Date of Issuance: SEP 24 2013

Upon completion of the activity authorized by this letter of permission and any required mitigation, sign this certification and return it to Ms. Roberta Budnik at the following address:

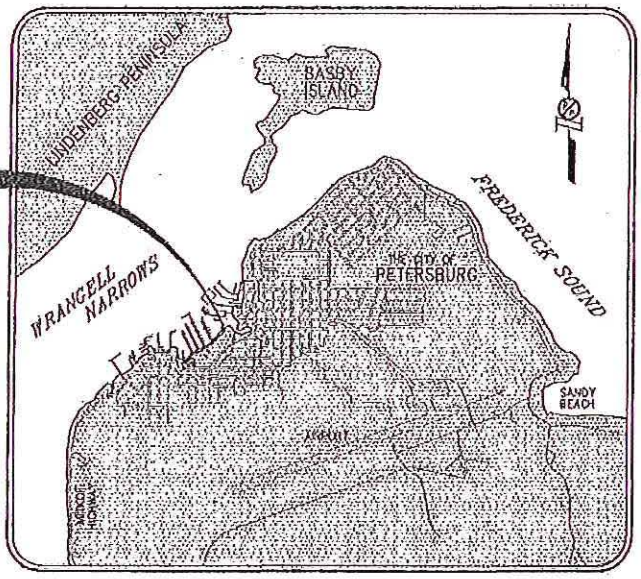
U.S. Army Corps of Engineers
Alaska District
Regulatory Division
Post Office Box 6898
JBER, Alaska 99506-0898

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.

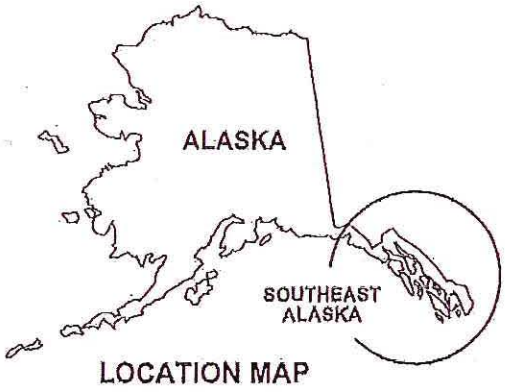
I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit, and required mitigation was completed in accordance with the permit conditions.

_____ _____

Signature of Permittee Date



VICINITY MAP



LOCATION MAP

SOUTHEAST ALASKA

PURPOSE:
TO MITIGATE SAFETY CONCERNS AND IMPROVE ACCESS AT THE CRANE DOCK.

DATUM:
MLLW = 0.0 FT

HTL = 19.5'
MHW = 14.8'
MLLW = 0.0'

PETERSBURG BOROUGH

VICINITY MAP
LOCATION MAP

PND#: 132030.01

APPLICANT: PETERSBURG BOROUGH
FILE NO.: POA-2013-379
WATERWAY: WRANGELL NARROWS
PROPOSED ACTIVITY: DOCK MODIFICATIONS
SEC. 27 T. 58S R. 79E M CRM
LAT.: 56.81057'N LONG.: 132.961733'W

DATE: JUNE 2013 SHEET 1 OF 5

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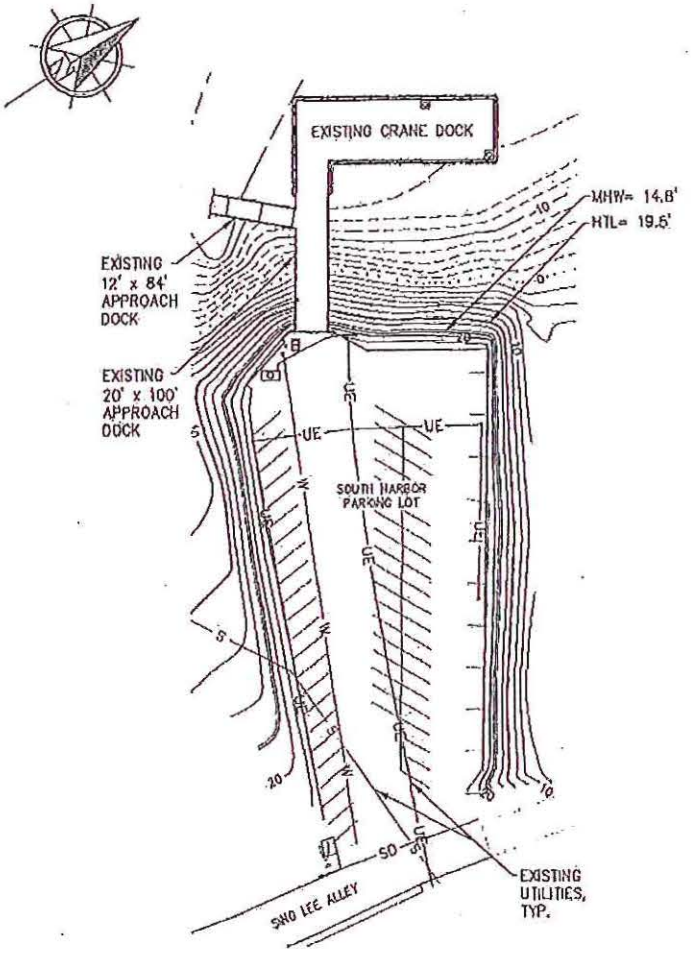
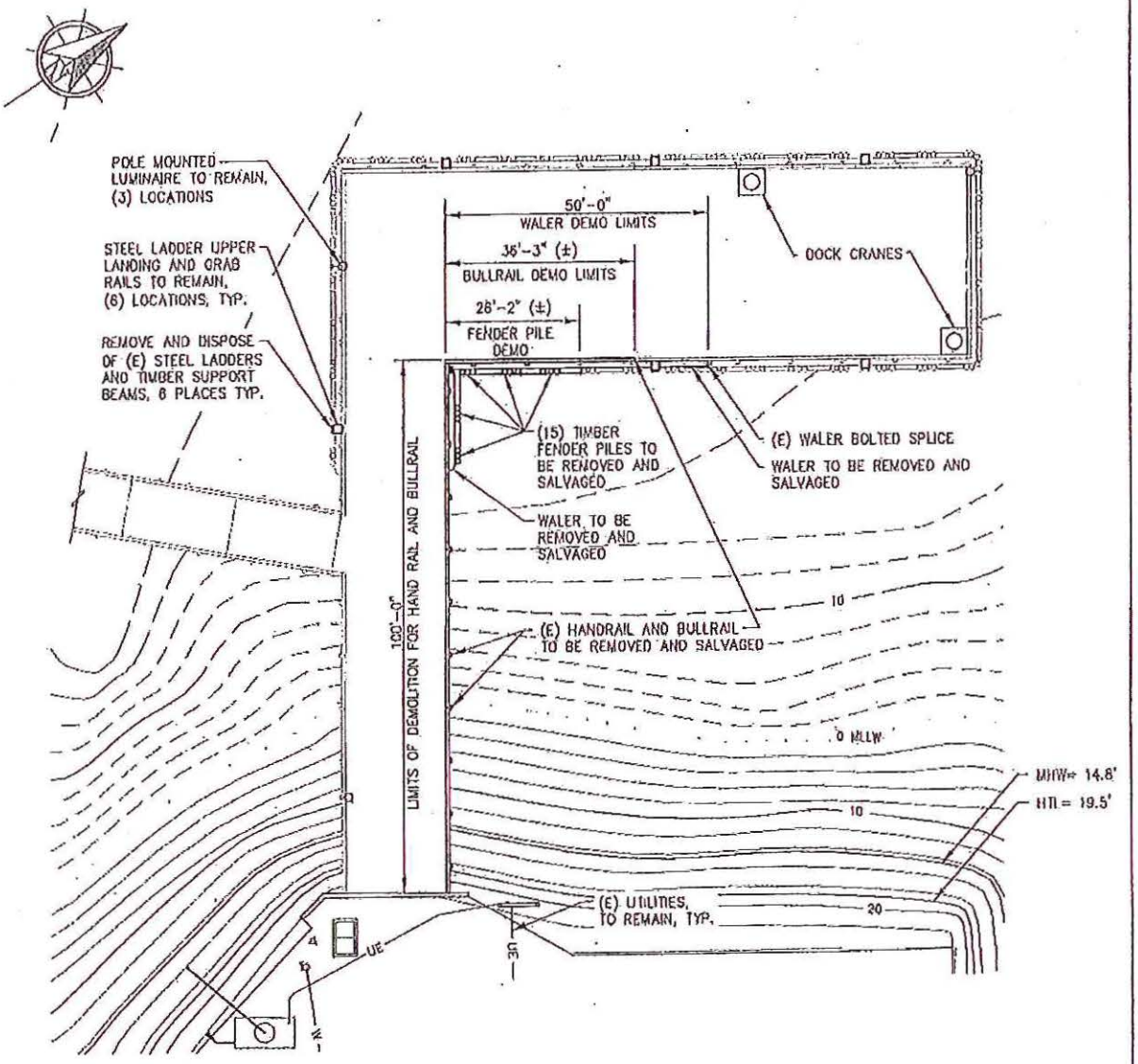


EXISTING CONDITIONS - SITE PLAN

SCALE IN FEET
0 100 200 FT.

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

APPLICANT: PETERSBURG BOROUGH
FILE NO.: POA-2013-379
WATERWAY: WRANGELL NARROWS
PROPOSED ACTIVITY: DOCK MODIFICATIONS
SEC. 27 T. 58S R. 79E M CRM
LAT.: 56.81057'N LONG.: 132.961733'W
DATE: JUNE 2013



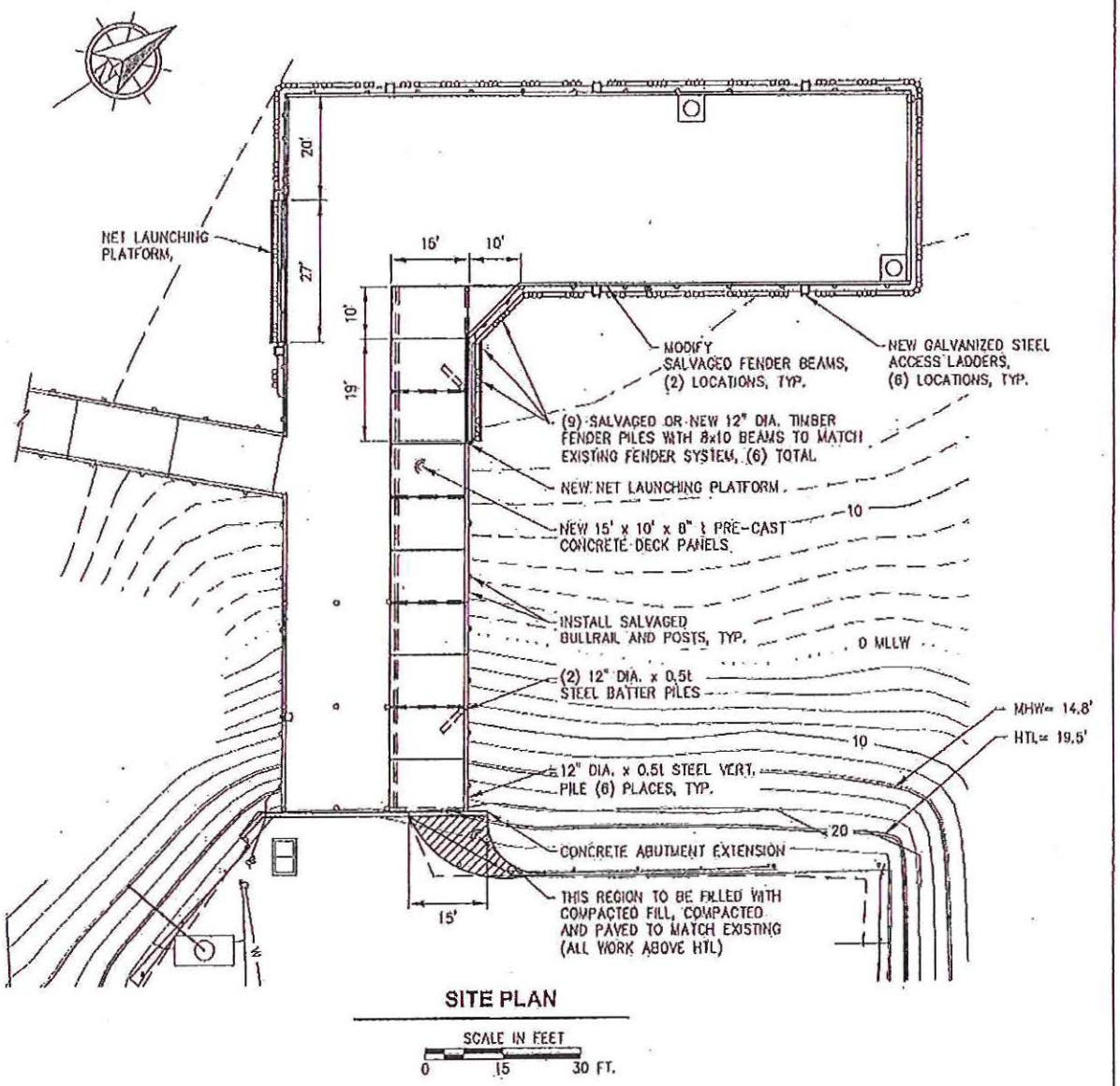
2 CRANE DOCK DEMOLITION AND SALVAGE PLAN

SCALE IN FEET

0 15 30 FT.

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

APPLICANT: PETERSBURG BOROUGH
FILE NO.: POA-2013-379
WATERWAY: WRANGELL NARROWS
PROPOSED ACTIVITY: DOCK MODIFICATIONS
SEC. 27 T. 58S R. 79E M CRM
LAT.: 56.81057'N LONG.: 132.961733'W
DATE: JUNE 2013



SITE PLAN

SCALE IN FEET

0 15 30 FT.

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

APPLICANT: PETERSBURG BOROUGH
FILE NO.: POA-2013-379
WATERWAY: WRANGELL NARROWS
PROPOSED ACTIVITY: DOCK MODIFICATIONS
SEC. 27 T. 58S R. 79E M CRM
LAT.: 56.81057'N LONG.: 132.961733'W
DATE: JUNE 2013

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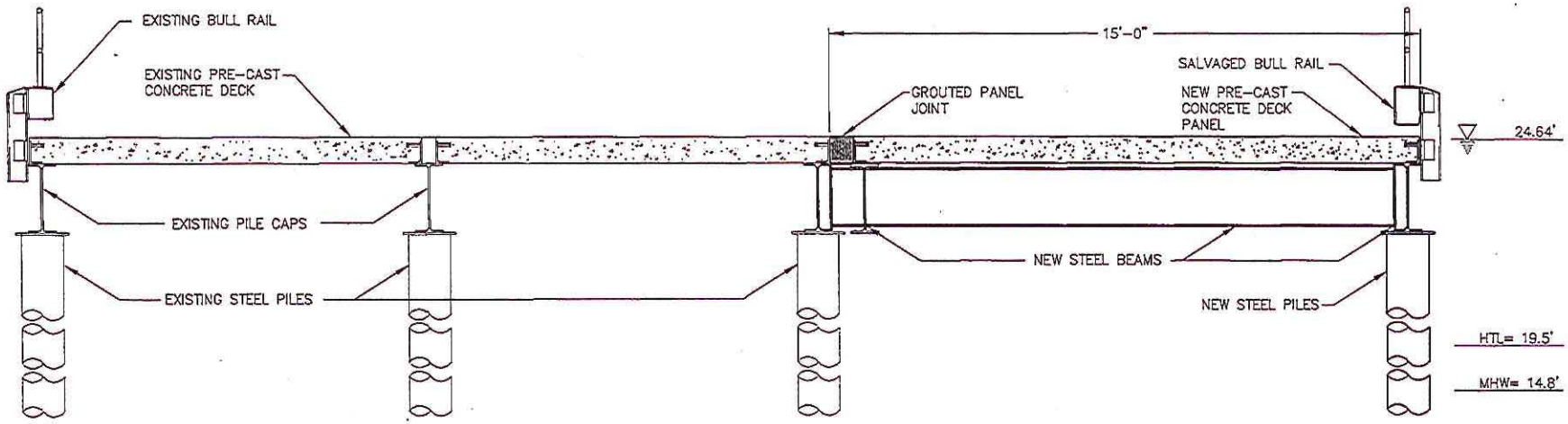

STEEL PILE/ APPROACH DOCK SECTION

SCALE IN FEET

0 2' 4'

TIDAL DATA

HTL= 19.5'
MHW= 14.8'
MLLW= 0.0'

NOTE:
ADDED TO PERMIT DRAWINGS JULY 15, 2013

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

APPLICANT: PETERSBURG BOROUGH
FILE NO.:POA-2013-379
WATERWAY: WRANGELL NARROWS
PROPOSED ACTIVITY: DOCK MODIFICATIONS
SEC. 27 T. 58S R. 79E M CRM
LAT.: 56.81057'N LONG.: 132.961733'W
DATE: JUNE 2013


350 meter observation/shut down zone
POA-2013-379
Image © 2013 DigitalGlobe
©2010 Google

This notice of authorization must be conspicuously displayed at the site of work.

United States Army Corps of Engineers
WRANGELL NARROWS

A permit to: WIDEN THE PETERSBURG CRANE DOCK APPROACH TO 35'. REMOVE 15 FENDER PILES. INSTALL 9 TIMBER PILES . INSTALL 8 NEW 12" DIAMETER GALVANIZED STEEL BATTER VERTICAL PIPE PILES.

at: SEC. 27, T. 58 S., R. 79 E., CRM; USGS QUAD MAP AK -PETERSBURG D-3; LAT. 56.8105., LONG. -132.9617; IN PETERSBURG, AK

has been issued to: THE CITY OF PETERSBURG

on: 24 SEPTEMBER 2013 **and expires on:** 24 SEPTEMBER 2018

Address of Permittee: P.O. BOX 329, PETERSBURG, AK 99833

Permit Number:

POA-2013-379

Roberta K. Budnik

FOR: ***District Commander***
ROBERTA BUDNIK
REGULATORY SPECIALIST
REGULATORY DIVISION

ENG FORM 4336, Jul 81 (33 CFR 320-330) EDITION OF JUL 70 MAY BE USED (Proponent: CECW-O)

PETERSBURG BOROUGH
CRANE DOCK APPROACH WIDENING

XIII DRAWINGS