# CRUISE SHIP TERMINAL
# STAGING AREA IMPROVEMENTS
# PHASE I

## VOLUME I OF II

## Contract No. DH12-002

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**END OF SECTION**

## SECTION 00030 NOTICE INVITING BIDS

**OBTAINING CONTRACT DOCUMENTS.** The Contract Documents are entitled:

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

The Contract Documents may be obtained at the City & Borough of Juneau (CBJ) Engineering Department, 3rd Floor Marine View Center, upon payment of $50 (non-refundable) for each set of Contract Documents (including Technical Specifications and Drawings).

**PRE-BID CONFERENCE.** Prospective Bidders are encouraged to attend a pre-Bid conference to discuss the proposed WORK, which will be conducted by the OWNER, at 10:00 a.m. on June 20, 2012, in CBJ Port/Custom Conference Room, 510 S. Franklin Street. The object of the conference is to acquaint Bidders with the project and bid documents.

**DESCRIPTION OF WORK.** This Project consists of all activities necessary to construct the Cruise Ship Terminal Staging Area Improvements Phase 1 as shown in the contract documents. The work includes demolition, excavation, salvage, shot rock borrow, base course, reinforced concrete deck and slabs, curb and gutter, storm drains, water system, concrete retaining wall, timber dock with steel substructure, steel piles and electrical improvements.

**COMPLETION OF WORK.**

Field work may not start until September 27, 2012. Work shall be completed according to the following schedule:

| Work Description | Completion Date |
|---|---|
| Substantial Completion | May 1, 2013 |
| All WORK under the Contract Documents | May 15, 2013 |

**DEADLINE FOR BIDS:** Sealed bids must be received at the office of the CBJ Docks and Harbors, Port Director's Office, located at 76 Egan Drive, 2nd Floor, Juneau, Alaska 99801 **prior to 2:00 p.m., Alaska Time on July 3, 2012,** or such later time as may be announced by addendum at any time prior to the deadline. Bids will be time and date stamped by the CBJ Docks and Harbors, Port Director's Office, which will establish the official time of receipt of bids. Bids will be opened at 2:15 p.m. in the Assembly Chambers of the Municipal Building, 155 S. Seward Street, unless otherwise specified.

Bid documents delivered in person or by courier service must be delivered to:

**PHYSICAL LOCATION:**
CBJ Docks and Harbors, Port Director's Office
76 Egan Drive, 2nd Floor
Juneau, AK 99801

Bid documents delivered by the U.S. Postal Service must be mailed to:

**MAILING ADDRESS:**
Port Director
City and Borough of Juneau, Docks and Harbors
155 South Seward Street
Juneau, AK 99801

**Please affix the label below to outer envelope in the lower left hand corner.**

IMPORTANT NOTICE TO BIDDER

**To submit your Bid:**

1. Print your company name and address on the upper left corner of your envelope.
2. **Complete this label and place it on the lower left corner of your envelope.**

| | | |
|---|---|---|
| **S** | **BID NUMBER:** | |
| **E** | **DH12-002** | **B** |
| **A** | **SUBJECT:** | **I** |
| **L** | **CRUISE SHIP TERMINAL STAGING AREA** | **D** |
| **E** | **IMPROVEMENTS – PHASE I** | |
| **D** | **DEADLINE DATE:** | |
| | _____ | |
| | **PRIOR TO 2:00PM ALASKA TIME** | |

**Mailing/delivery times to Alaska may take longer than other areas of the U.S.** Late bids will not be accepted and will be returned.

**SITE OF WORK.** The site of the WORK is at the South Ferry Dock in downtown Juneau, Alaska, near the Mt. Roberts Tram Facility.

**BIDDING, CONTRACT, or TECHNICAL QUESTIONS.** All communications relative to this WORK, prior to opening Bids, shall be directed to the following:

Jennifer Mannix, Contract Administrator
CBJ Engineering Department, 3rd Floor, Marine View Center
Email: jennifer_mannix@ci.juneau.ak.us
Telephone: (907) 586-0873
Fax: (907) 586-4530

**BID SECURITY.** Each Bid shall be accompanied by a certified or cashier's check or Bid Bond, in the amount of 5% percent of the Bid, payable to the City and Borough of Juneau, Alaska, as a guarantee that the Bidder, if its Bid is accepted, will promptly execute the Agreement. A Bid shall not be considered unless one of the forms of Bidder's security is enclosed with it.

**CONTRACTOR'S LICENSE.** All contractors are required to have a current Alaska Contractor's License, prior to submitting a Bid, and a current Alaska Business License prior to award.

**BID TO REMAIN OPEN.** The Bidder shall guarantee the Bid for a period of 90 Days from the date of Bid opening. Any component of the Bid may be awarded anytime during the 90 Days.

**OWNER'S RIGHTS RESERVED.** The OWNER 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 interests of the OWNER.

**STANDARD SPECIFICATIONS.** The Standard Specifications for Civil Engineering Projects and Subdivision Improvements, December 2003 with twelve Errata Sheets, as published by the City and Borough of Juneau, is part of these Contract Documents and shall pertain to all phases of the contract. This document is available for a fee from the City and Borough of Juneau Engineering Contracts Office, (907) 586-0490, or you may view it on line at: www.juneau.org/engineering.

**OWNER: City and Borough of Juneau**

By: _____ 6/8/12
Carl J. Uchytil, P.E., Port Director — Date

**END OF SECTION**

## SECTION 00100 - INSTRUCTIONS TO BIDDERS

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

**2.0 INTERPRETATIONS AND ADDENDA.**

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

B. ADDENDA. Addenda may be issued to modify the Contract Documents as deemed advisable by the OWNER. Addenda may be faxed or, if addendum format warrants, addenda may be posted to the CBJ Engineering Department website. In any event, notification of addendum issuance will be faxed to planholders. Hard copies are available upon request. The OWNER will make all reasonable attempts to ensure that all planholders receive notification of Addenda, however, it is strongly recommended by the OWNER that bidders independently confirm the contents, number, and dates of each Addendum prior to submitting a Bid.

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

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

1. financial resources
2. ability to meet delivery standards
3. past performance record
    a. References from others on contractor’s performance
    b. Record of performance on prior OWNER contracts
4. record of integrity
5. obligations to OWNER
    a. Bidders must be registered as required by law and in good standing for all amounts owed to the OWNER within ten Days of OWNER’s Notice of Intent to Award.

b. City and Borough of Juneau (CBJ) Finance Department, Treasury Division administers the registration and assessment of sales, business personal property and business real property taxes.

A. Special standards for responsibility, if applicable, will be specified. These special standards establish minimum standards or experience required for a responsible Bidder on a specific contract.

B. Before a Bid is considered for award, a Bidder may be requested to submit information documenting its ability and competency to perform the WORK, according to general standards of responsibility and any special standards which may apply. It is Bidder's responsibility to submit sufficient, relevant, and adequate information. OWNER will make its determination of responsibility and has no obligation to request clarification or supplementary information.

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

A. If a Bid is received by the CBJ Purchasing Division after the Deadline for Bids.

B. If the Bid is on a form other than that furnished by the OWNER, or legible copies thereof; or if the form is altered or any part thereof is detached; or if the Bid is improperly signed.

C. If there are unauthorized additions, conditional or alternate Bids, or irregularities of any kind which may tend to make the bid incomplete, indefinite, ambiguous as to its meaning, or in conflict with the OWNER's Bid document.

D. If the Bidder adds any unauthorized conditions, limitations, or provisions reserving the right to accept or reject any award, or to enter into a contract pursuant to an award. This does not exclude a Bid limiting the maximum gross amount of awards acceptable to any one Bidder at any one Bid opening, provided that any selection of awards will be made by the OWNER.

E. If the Bid does not contain a Unit Price for each pay item listed, except in the case of authorized alternate pay items.

F. If the Bidder has not acknowledged receipt of each Addendum.

G. If the Bidder fails to furnish an acceptable Bid guaranty with the Bid.

H. If any of the Unit Prices Bid are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the OWNER.

I. If a Bid modification does not conform to Article 15.0 of this Section.

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

A. To examine thoroughly the Contract Documents, and other related data identified in the Bidding documents (including "technical data" referred to below):

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

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

A. Those reports of explorations and tests of subsurface conditions at the site which have been utilized by the Engineer of Record in the preparation of the Contract Documents. The Bidder may rely upon the accuracy of the technical data contained in such reports, however, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with non-technical data, interpretations, and opinions contained therein or the completeness thereof is the responsibility of the Bidder.

B. Those Drawings of physical conditions in or relating to existing surface and subsurface conditions (except underground utilities) which are at or contiguous to the site have been utilized by the Engineer of Record in the preparation of the Contract Documents. The Bidder may rely upon the accuracy of the technical data contained in such Drawings, however, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with nontechnical data, interpretations, and opinions contained in such Drawings or the completeness thereof is the responsibility of the Bidder.

C. Copies of such reports and Drawings will be made available by the OWNER to any Bidder on request if said reports and Drawings are not bound herein. Those reports and Drawings are not part of the Contract Documents, but the technical data contained therein upon which the Bidder is entitled to rely, as provided in Paragraph SGC-4.2 of the Supplementary General Conditions, are incorporated herein by reference.

D. Information and data reflected in the Contract Documents with respect to underground utilities at or contiguous to the site is based upon information and data furnished to the OWNER and the Engineer of Record by the owners of such underground utilities or others, and the OWNER does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary General Conditions, or in Section 01530 - Protection and Restoration of Existing Facilities of the General Requirements.

E. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, underground utilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.2, 4.3, and 4.4 of the General Conditions.

F. Before submitting a Bid, each Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface,

and underground utilities) at or contiguous to the site or otherwise which may affect cost, progress, or performance of the WORK and which the Bidder deems necessary to determine its Bid for performing the WORK in accordance with the time, price, and other terms and conditions of the Contract Documents.

G. On request in advance, the OWNER will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and shall clean up and restore the site to its former condition upon completion of such explorations.

H. The lands upon which the WORK is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the CONTRACTOR in performing the WORK are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the OWNER unless otherwise provided in the Contract Documents.

I. The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of Article 6.0, "Bidder's Examination of Contract Documents and Site" herein, that without exception the Bid is premised upon performing the WORK required by the Contract Documents and such means, methods, techniques, sequences, or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the WORK.

**8.0 BID FORM.**

A. The Bid shall be made on the Bid Schedule(s) bound herein, or on the yellow Bid packet provided, or on legible and complete copies thereof, and shall contain the following: Sections 00300, 00310, the required Bid Security, and any other documents required in Section 00300 – Bid.

B. All blanks on the Bid Form and Bid Schedule must be completed in ink or typed.

C. Bids by corporations must be executed in the corporate name by the president, a vice-president (or other corporate officer). The corporate address and state of incorporation must appear below the signature.

D. Bids by partnerships must be executed in the partnership name and be signed by a managing partner, and the official address of the partnership must appear below the signature.

E. The Bidder’s Bid must be signed. All names must be printed or typed below the signature.

F. The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form. Failure to acknowledge Addenda may render Bid non-responsive and may cause its rejection.

G. The address to which communications regarding the Bid are to be directed must be shown.

**9.0 QUANTITIES OF WORK**. The quantities of WORK, or material, stated in Unit Price items of the Bid are supplied only to give an indication of the general scope of the WORK; the OWNER does not expressly or by implication agree that the actual amount of WORK, or material, will correspond therewith, and reserves the right after award to increase or decrease the amount of any Unit Price item of the WORK by an amount up to and including 25 percent of any Bid item, without a change in the Unit Price, and shall include the right to delete any Bid item in its entirety, or to add additional Bid items up to and including an aggregate total amount not to exceed 25 percent of the Contract Price (see Section 00700 - General Conditions, Article 10 Changes In the WORK).

**10.0 SUBSTITUTE OR "OR-EQUAL" ITEMS**. The procedure for the submittal of substitute or "or-equal" products is specified in Section 01300 - Submittals.

**11.0 SUBMISSION OF BIDS**. The Bid shall be delivered by the time and to the place stipulated in Section 00030 - Notice Inviting Bids. It is the Bidder's sole responsibility to see that its Bid is received in proper time. Oral, telegraphic, emailed, or faxed Bids will not be considered. The envelope enclosing the sealed Bids shall be plainly marked in the upper left-hand corner with the name and address of the Bidder and shall also include the label included in Section 00030 – Notice Inviting Bids. The Bid Security shall be enclosed in the same envelope with the Bid

**12.0 BID SECURITY, BONDS, AND INSURANCE**. Each Bid shall be accompanied by a certified, or cashier's check, or approved Bid Bond in an amount of at least 5 percent of the total Bid price. The “total Bid price” is the amount of the Base Bid, plus the amount of alternate Bids, if any, which total to the maximum amount for which the CONTRACT could be awarded. Said check or Bond shall be made payable to the OWNER and shall be given as a guarantee that the Bidder, if offered the WORK, will enter into an Agreement with the OWNER, and will furnish the necessary insurance certificates, Payment Bond, and Performance Bond; each of said Bonds, if required, and insurance amounts shall be as stated in the Supplementary General Conditions. In case of refusal or failure to enter into said Agreement, the check or Bid Bond, as the case may be, may be forfeited to the OWNER. If the Bidder elects to furnish a Bid Bond as its Bid security, the Bidder shall use the Bid Bond form bound herein, or one conforming substantially to it in form. Bid Bonds must be accompanied by a legible Power of Attorney.

**13.0 RETURN OF BID SECURITY.** The OWNER will return all Bid security checks (certified or cashier’s) accompanying such of the Bids as are not considered in making the award. All other Bid securities will be held until the Agreement has been executed. Following execution of the Agreement, all other Bid security checks will be returned to the respective Bidders whose Bids they accompanied and Bid security bonds will be appropriately discarded.

**14.0 DISCREPANCIES IN BIDS**. In the event there is more than one Pay Item in a Bid Schedule, the Bidder shall furnish a price for all Pay Items in the schedule, and failure to do so may render the Bid non-responsive and cause its rejection. In the event there are Unit Price Pay Items in a Bid Schedule and the “amount” indicated for a Unit Price Bid Item does not equal the product of the Unit Price and quantity, the Unit Price shall govern and the amount will be corrected accordingly,

and the Bidder shall be bound by said correction. In the event there is more than one Pay Item in a Bid Schedule and the total indicated for the schedule does not agree with the sum of the prices Bid on the individual items, the prices Bid on the individual items shall govern and the total for the schedule will be corrected accordingly, and the Bidder shall be bound by said correction.

**15.0 BID MODIFICATIONS AND UNAUTHORIZED ALTERNATIVE BIDS.**

A. Any bidder may deliver a modification to a bid in person, by mail or fax (907-586-4561), provided that such modification is received by the Purchasing Division no later than the deadline for bids. Modifications will be time and date stamped by the Purchasing Division, which will establish the official time of receipt of the modification. The modification must not reveal the bid price but should be in the form of an addition or subtraction or other modification so that the final prices will not be known until the sealed bid is opened.

The Bid modifications shall be provided on the **Bid Modification Form** located at the end of this Section. Submittal of any other form by the vendor may deem the modification unacceptable by the OWNER **A mail or fax modification should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices will not be known by the City and Borough until the sealed Bid is opened.** Submitted Modification forms shall include the modification to the unit price or lump sum amount of each pay item modified.

**FAX DISCLAIMER:** It is the responsibility of the bidder to submit modifications in a timely manner. Bidders' use of a fax machine to modify their bid shall be at bidders' sole risk. The Purchasing Division will attempt to keep the fax machine in good working order but will not be responsible for bid modifications that are late due to mechanical failure, a busy fax machine, or any other cause arising from bidder's use of a fax machine, even if bidder submits a transmission report or provides other confirmation indicating that the bidder transmitted a bid modification prior to the deadline. The City will not be responsible for its failure to receive the modification whether such failure is caused by equipment or human error, or otherwise. Bidders are therefore strongly encouraged to confirm receipt of their bid modification with the Purchasing Division (907-586-5258) prior to deadline.

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

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

**17.0 AWARD OF CONTRACT.**

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

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

B. If the OWNER has elected to advertise this Project with a Base Bid and Alternates, the OWNER may elect to award the contract for the Base Bid, or the Base Bid in combination with one or more Alternates selected by the OWNER. In either case, award shall be made to the responsive, responsible bidder offering the lowest total Bid for the WORK to be awarded.

**18.0 EXECUTION OF AGREEMENT.**

A. All Bids of value greater than $1,000,000 must be approved by the CBJ Assembly. After the CBJ Assembly has approved the award and after the Bid protest period, the OWNER will issue a Notice of Intent to Award to the approved Bidder. The Bidder to whom award is made shall execute a written Agreement with the OWNER on the Agreement form, Section 00500, collect insurance, and shall furnish all certificates and Bonds required by the Contract Documents within 10 Days (calendar) from the date of the Notice of Intent to Award letter.

B. Failure or refusal to enter into the Agreement as herein provided or to conform to any of the stipulated requirements in connection therewith shall be just cause for annulment of the award and forfeiture of the Bid security. If the lowest responsive, responsible Bidder refuses or fails to execute the Agreement, the OWNER may award the contract to the second lowest responsive, responsible Bidder. If the second lowest responsive, responsible Bidder refuses or fails to execute the Agreement, the OWNER may award the contract to the third lowest responsive, responsible Bidder. On the failure or refusal of such second or third lowest Bidder to execute the Agreement, each such Bidder's Bid securities shall be likewise forfeited to the OWNER.

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

**20.0 FILING A PROTEST.**

A. A Bidder may protest the proposed award of a competitive sealed Bid by the City and Borough of Juneau. The protest shall be executed in accordance with CBJ Ordinance 53.50.062 PROTESTS and CBJ Ordinance 53.50.080 ADMINISTRATION OF PROTEST. The entire text of the CBJ Purchasing Ordinance can be accessed at the CBJ website, *http://www.juneau.org/law/code/code.php*, or call the CBJ Purchasing Division at (907) 586-5258 for a copy of the ordinance.

B. Late protests shall not be considered by the CBJ Purchasing Officer.

**21.0 <u>CONTRACTOR'S GOOD STANDING WITH CITY FINANCE DEPARTMENT</u>:** <u>CONTRACTORs and Subcontractors must be in good standing with the City prior to award, and prior to any contract renewals,</u> and in any event no later than ***<u>ten business days</u>*** following notification by the City of intent to award. **Good standing** means: all amounts owed to the City are paid in full or a Confession of Judgment has been executed and the Contractor or Subcontractor is in compliance with the terms of any stipulation associated with the Confession of Judgment, including being current as to any installment payments due. <u>Failure to meet these</u>

requirements may be cause for rejection of your bid. To determine if your business is in good standing, or for further information, contact the City Finance Department's Sales Tax Division at (907) 586-5265 for sales tax issues or Collections Division at (907) 586-5268 for all other accounts.

**22.0 PERMITS AND LICENSES**. The CONTRACTOR is responsible for all WORK associated with meeting any local, state, and/or federal permit and licensing requirements.

CITY AND BOROUGH OF JUNEAU
PURCHASING DIVISION
FAX NO. 907-586-4561

# BID MODIFICATION FORM

Modification Number: _____

Note: All modifications shall be made to the original bid amount(s). If more than one Modification form is submitted by any one bidder, changes from all Modification forms submitted will be combined and applied to the original bid. Changes to the modified Bid amounts will be calculated by the OWNER.

| PAY ITEM NO. | PAY ITEM DESCRIPTION | UNIT PRICE CHANGE – Leave Blank For Lump Sum Pay Items (*indicate* +/-) | TOTAL INCREASE OR DECREASE (*indicate* +/-) |
|---|---|---|---|
| | | | |
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| | | | |
| | | **Total Increase or Decrease** | $ |

**Name of Bidding Firm**

**Responsible Party Signature**

**Printed Name (must be an authorized signatory for Bidding Firm)**

**END OF SECTION**

## SECTION 00300 - BID

**BID TO: THE CITY AND BOROUGH OF JUNEAU**

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

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH 12-002**

2. Bidder accepts all of the terms and conditions of the Contract Documents, including without limitation those in the "Notice Inviting Bids" and "Instructions to Bidders," dealing with the disposition of the Bid Security.

3. This Bid will remain open for the period stated in the "Notice Inviting Bids" unless otherwise required by law. Bidder will enter into an Agreement within the time and in the manner required in the "Notice Inviting Bids" and the "Instructions to Bidders," and will furnish insurance certificates, Payment Bond, Performance Bond, and any other documents as may be required by the Contract Documents.

4. Bidder has familiarized itself with the nature and extent of the Contract Documents, WORK, site, locality where the WORK is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the WORK and has made such independent investigations as Bidder deems necessary.

5. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

6. To all the foregoing, and including all Bid Schedule and information required of Bidder contained in this Bid Form, said Bidder further agrees to complete the WORK required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment therefore the Contract Price based on the total bid price(s) named in the aforementioned Bid Schedule.

7. Bidder has examined copies of all the Contract Documents including the following Addenda (receipt of all of which is hereby acknowledged by the Undersigned):

| Addenda No. | Date Issued | Addenda No. | Date Issued |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

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

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

| | |
|---|---|
| Dated: _____ | Bidder: _____ (Company Name) |
| Alaska CONTRACTOR's Business License No: _____ | By: _____ (Signature) |
| Alaska CONTRACTOR's License No: _____ | Printed Name: _____ |
| Telephone No: _____ | Title: _____ |
| Fax No: _____ | Address: _____ (Street or P.O. Box) |
| E-mail: _____ | _____ (City, State, Zip) |

the space provided below.

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

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

10. The apparent low Bidder is required to complete and submit the following documents by 4:30 p.m. on the ***fifth business day*** following the date of the Posting Notice.

- Subcontractor Report, Section 00360

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

11. The successful Bidder will be required to submit, ***within ten Days (calendar)*** after the date of the "Notice of Intent to Award" letter, the following executed documents:

- Agreement Forms, Section 00500
- Performance Bond, Section 00610
- Payment Bond, Section 00620
- Certificates of Insurance, (CONTRACTOR) Section 00700 and Section 00800

**END OF SECTION**

## SECTION 00310 – BID SCHEDULE

**BASE BID**

| Pay Item No. | Pay Item Description | Pay Unit | Approximate 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 | $ | |
| 2201.1 | Clearing and Grubbing | LS | All Reqd | Lump | Sum | $ | |
| 2202.1 | Excavation | LS | All Reqd | Lump | Sum | $ | |
| 2202.2 | Class A Shot Rock Borrow | CY | 1,000 | | | $ | |
| 2204.1 | Base Course, Grading D-1 | CY | 200 | | | $ | |
| 2205.1 | Riprap, Class II | CY | 250 | | | $ | |
| 2231.1 | Plant Protection and Salvaging | LS | All Reqd | Lump | Sum | $ | |
| 2501.1 | 8-Inch CPP Storm Sewer Pipe | LF | 110 | | | $ | |
| 2502.1 | In Line Drain | EA | 2 | | | $ | |
| 2601.1 | Water System | LS | All Reqd | Lump | Sum | $ | |
| 2603.1 | Relocate Fire Hydrant | LS | All Reqd | Lump | Sum | $ | |
| 2702.1 | Construction Surveying | LS | All Reqd | Lump | Sum | $ | |
| 2714.1 | Geotextile Reinforcement | SY | 300 | | | $ | |
| 2726.1 | Timber Dock | LS | All Reqd | Lump | Sum | $ | |
| 2801.1 | A.C. Pavement, Type II, Class B, 4" Thick | LS | All Reqd | Lump | Sum | $ | |
| 2896.1 | Furnish Steel Pipe Pile, 16" Dia. X 0.500" Thick | LF | 2,750 | | | $ | |
| 2896.2 | Furnish Steel Pipe Pile, 24" Dia. X 0.500" Thick | LF | 490 | | | $ | |
| 2896.3 | Install 16" Dia. Vertical Pile | EA | 22 | | | $ | |
| 2896.4 | Install 16" Dia. Batter Pile | EA | 12 | | | $ | |
| 2896.5 | Install 24" Dia. Vertical Pile | EA | 9 | | | $ | |
| 2896.6 | Pile Splice | EA | 5 | | | $ | |
| 3301.1 | Concrete Retaining Wall | LS | All Reqd | Lump | Sum | $ | |

**BIDDER:** _____

**BASE BID**

| Pay Item No. | Pay Item Description | Pay Unit | Approximate Quantity | Unit Price | | Amount | |
|---|---|---|---|---|---|---|---|
| | | | | Dollars | Cents | Dollars | Cents |
| 3301.2 | Covered Shelter Concrete Foundations | LS | All Reqd | | | $ | |
| 3301.3 | Concrete Deck and Slab on Grade | SY | 700 | | | $ | |
| 3303.1 | Curb and Gutter, All Types | LF | 200 | | | $ | |
| 5120.1 | Bollards | LS | All Reqd | Lump | Sum | $ | |
| 13130.1 | Tension Membrane Structure | LS | All Reqd | Lump | Sum | $ | |
| 16000.1 | Electrical Power and Lighting | LS | All Reqd | Lump | Sum | $ | |
| 16000.2 | Primary Raceway Ductbanks and Vault | LS | All Reqd | Lump | Sum | $ | |

**TOTAL BASE BID AMOUNT IN FIGURES: $_____**

**TOTAL BASE BID AMOUNT IN WORDS: _____**

**BIDDER:_____**

**END OF SECTION**

## SECTION 00320 - BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that_____

_____ as Principal, and _____

as Surety, are held and firmly bound unto **THE CITY AND BOROUGH OF JUNEAU** hereinafter called "OWNER," in the sum of _____

_____dollars, (not less than five percent of the total amount of the Bid) for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

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

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

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

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

(SEAL)_____ (SEAL)_____
(Principal) (Surety)

By:_____ By:_____
(Signature) (Signature)

**END OF SECTION**

## SECTION 00360 - SUBCONTRACTOR REPORT

**LIST OF SUBCONTRACTORS (AS 36.30.115)**

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

| | SUBCONTRACTOR<br>ADDRESS | [1] AK Contractor License No.<br>[2] AK Business License No. | [1] Contact Name<br>[2] Phone No. | Type of Work | Contract Amount | ✓ if DBE |
|---|---|---|---|---|---|---|
| **1.** | | [1]<br>[2] | | | $ | ☐ |
| **2.** | | [1]<br>[2] | | | $ | ☐ |
| **3.** | | [1]<br>[2] | | | $ | ☐ |
| **4.** | | [1]<br>[2] | | | $ | ☐ |

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

_____
CONTRACTOR, Authorized Signature

_____
CONTRACTOR, Printed Name

_____
COMPANY

## SECTION 00360 - SUBCONTRACTOR REPORT

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

1. fails to comply with AS 08.18;
2. files for bankruptcy or becomes insolvent;
3. fails to execute a contract with the Bidder involving performance of the WORK for which the Subcontractor was listed and the Bidder acted in good faith;
4. fails to obtain bonding;
5. fails to obtain insurance acceptable to the OWNER;
6. fails to perform the contract with the Bidder involving work for which the Subcontractor was listed;
7. must be substituted in order for the CONTRACTOR to satisfy required state and federal affirmative action requirements;
8. refuses to agree or abide with the Bidder's labor agreement; or
9. is determined by the OWNER not to be responsible.

B. If a Bidder fails to list a Subcontractor or lists more than one Subcontractor for the same portion of WORK, the Bidder shall be considered to have agreed to perform that portion of WORK without the use of a Subcontractor and to have represented the Bidder to be qualified to perform that WORK.

C. A Bidder who attempts to circumvent the requirements of this section by listing as a Subcontractor another contractor who, in turn, sublets the majority of the WORK required under the contract violates this section.

D. If a contract is awarded to a Bidder who violates this section, the OWNER may:

1. cancel the contract; or
2. after notice and a hearing, assess a penalty on the Bidder in an amount that does not exceed 10 percent of the value of the subcontract at issue.

E. On the Subcontractor Report, the apparent low Bidder must list any Subcontractors anticipated to perform WORK with a value of greater than one-half of one percent of the intended award amount, or $2,000, whichever is less.

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

**END OF SECTION**

## SECTION 00500 - AGREEMENT

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

**ARTICLE 1. WORK**.

CONTRACTOR shall complete the WORK as specified or as indicated under the Bid Schedule of the OWNER's Bid Documents entitled **Contract No. DH12-002 Cruise Ship Terminal Staging Area Improvements – Phase I.**

The WORK is generally described as follows: This Project consists of all activities necessary to construct the Cruise Ship Terminal Staging Area Improvements Phase 1 as shown in the contract documents. The work includes demolition, excavation, salvage, shot rock borrow, base course, reinforced concrete deck and slabs, curb and gutter, storm drains, water system, concrete retaining wall, timber dock with steel substructure, steel piles and electrical improvements and miscellaneous related WORK.

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

**ARTICLE 2. CONTRACT COMPLETION TIME**.

Field work may not start until September 27, 2012. Work shall be completed according to the following schedule:

| Work Description | Completion Date |
|---|---|
| Substantial Completion | May 1, 2013 |
| All WORK under the Contract Documents | May 15, 2013 |

**ARTICLE 3. DATE OF AGREEMENT**

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

**ARTICLE 4. LIQUIDATED DAMAGES**.

OWNER and the CONTRACTOR recognize that time is of the essence of this Agreement and that the OWNER will suffer financial loss if the WORK is not completed within the time specified in Article 2 herein, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual damages suffered by the OWNER if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the OWNER and the CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay the OWNER **$1,000** for each Day that expires after the completion time specified in Article 2 herein. The amount of liquidated damages specified above is agreed to be a reasonable estimate based on all facts known as of the date of this Agreement.

**ARTICLE 5. CONTRACT PRICE.**

OWNER shall pay CONTRACTOR for completion of the WORK in accordance with the Contract Documents in the amount set forth in the Bid Schedule. The CONTRACTOR agrees to accept as full and complete payment for all WORK to be done in this contract for: **Contract No. DH12-002 Cruise Ship Terminal Staging Area Improvements – Phase I**, those Unit Price amounts as set forth in the Bid Schedule in the Contract Documents for this Project.

The total amount of this contract shall be _____ ($ _____), except as adjusted in accordance with the provisions of the Bid Documents.

**ARTICLE 6. PAYMENT PROCEDURES.**

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

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

**ARTICLE 7. CONTRACT DOCUMENTS.**

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

- Table of Contents (pages 00005-1 to 00005-4, inclusive)
- Notice Inviting Bids (pages 00030-1 to 00030-3, inclusive).
- Instructions to Bidders (pages 00100-1 to 00100-9, inclusive).
- Bid (pages 00300-1 to 00300-2, inclusive).
- Bid Schedule (pages 00310-1 to 00310-2, inclusive).
- Bid Bond (page 00320-1, inclusive) or Bid Security.
- Subcontractor Report (pages 00360-1 to 00360-2, inclusive).
- Performance Bond (pages 00610-1 to 00610-2, inclusive).
- Payment Bond (pages 00620-1 to 00620-2, inclusive).
- Insurance Certificate(s).
- General Conditions (pages 00700-1 to 00700-48, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-7, inclusive).
- Alaska Labor Standards, Reporting, and Prevailing Wage Determination (page 00830-1).
- Permits, (page 00852-1 to 00852-20).
- Technical Specifications as listed in the Table of Contents.
- Drawings consisting of 38 sheets, as listed in the Table of Contents.
- Addenda numbers _____ to ____, inclusive.
- Change Orders which may be delivered or issued after the Date of the Agreement and which are not attached hereto.

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

**ARTICLE 8. MISCELLANEOUS.**

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

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

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

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

| **OWNER:** | **CONTRACTOR:** |
|---|---|
| City and Borough of Juneau | _____ (Company Name) |
| _____ (Signature) | _____ (Signature) |
| By: Kimberly A. Kiefer, City & Borough Manager | By: |
| _____ (Printed Name) | (Printed Name, Authority or Title) |
| Date: _____ | CONTRACTOR Signature Date: _____ |
| OWNER's address for giving notices: | CONTRACTOR's address for giving notices: |
| 155 South Seward Street | _____ |
| Juneau, Alaska 99801 | _____ |
| 907-586-0873 907-586-4530 (Telephone) (Fax) | _____ (Telephone) (Fax) |
| | _____ (E-mail address) |

Contractor License No. _____

**CERTIFICATE**
**(if Corporation)**

STATE OF )
) SS:
COUNTY OF )

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

_____a corporation existing under the laws of

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

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

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

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the corporation this _____ day of _____, 20____.

_____
Secretary

(SEAL)

## CERTIFICATE
## (if Partnership)

STATE OF )
) SS:
COUNTY OF )

I HEREBY CERTIFY that a meeting of the Partners of the

_____ a partnership existing under the laws of the State

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

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

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

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

_____
Secretary

(SEAL)

**CERTIFICATE**
**(if Joint Venture)**

STATE OF )
) SS:
COUNTY OF )

I HEREBY CERTIFY that a meeting of the Principals of the

_____ a joint venture existing under the laws of the

State of _____, held on _____, 20___, the following resolution was duly passed and adopted:

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

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

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

_____
Secretary

(SEAL)

**END OF SECTION**

**SECTION 00610 - PERFORMANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS: That we _____
(Name of Contractor)
_____ a _____
(Corporation, Partnership, Individual)

hereinafter called "Principal" and _____
(Surety)
of _____, State of _____hereinafter called the "Surety," are held and firmly bound to the CITY AND BOROUGH of JUNEAU, ALASKA hereinafter called "OWNER,"
(Owner) (City and State)
for the penal sum of _____

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the CONTRACTOR has entered into a certain contract with the OWNER, the effective date of which is (CBJ Contracts Office to fill in effective date) _____, a copy of which is hereto attached and made a part hereof for the construction of:

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

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

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

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

**SECTION 00610 - PERFORMANCE BOND**

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

-

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

**CONTRACTOR:**

By:_____
(Signature)

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.0. Box)

_____
(City, State, Zip Code)

**SURETY:**

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

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.0. Box)

_____
(City, State, Zip Code)

**(Affix SURETY'S SEAL)**

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

**END OF SECTION**

## SECTION 00620 - PAYMENT BOND

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

_____ a _____
(Corporation, Partnership, Individual)

hereinafter called "Principal" and _____
(Surety)

of _____, State of _____hereinafter called the "Surety," are held and firmly bound to the CITY AND BOROUGH of JUNEAU, ALASKA hereinafter called "OWNER,"
(Owner) (City and State)

for the penal sum of _____

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the CONTRACTOR has entered into a certain contract with the OWNER, the effective date of which is (CBJ Contracts Office to fill in effective date) _____, a copy of which is hereto attached and made a part hereof for the construction of:

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

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

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

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

**SECTION 00620 - PAYMENT BOND**

**Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

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

**CONTRACTOR:**

By:_____
(Signature)

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.0. Box)

_____
(City, State, Zip Code)

**SURETY:**

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

_____
(Printed Name)

_____
(Company Name)

_____
(Street or P.0. Box)

_____
(City, State, Zip Code)

**(Affix SURETY'S SEAL)**

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

**END OF SECTION**

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**(Revised 03-2003)**

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## ARTICLE 16 MISCELLANEOUS

## ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

CBJ Project Manager - The authorized representative of the City and Borough of Juneau Engineering Department, as OWNER, who is responsible for administration of the contract.

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

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

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

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

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

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

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

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

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

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

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

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

General Requirements - Division 1 of the Technical Specifications.

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

Holidays - The CBJ legal holidays occur on:

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

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

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

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

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

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

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

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

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

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

OWNER - The City and Borough of Juneau (CBJ), acting through its legally designated officials, officers, or employees.

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

PCB's - Polychlorinated biphenyls.

PERMITTEE – See definition for CONTRACTOR.

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

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

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

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

Specifications - Same definition as "Technical Specifications" hereinafter.

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

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

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

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

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

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

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

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

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

## ARTICLE 2 PRELIMINARY MATTERS

2.1 DELIVERY OF BONDS/INSURANCE CERTIFICATES. When the CONTRACTOR delivers the signed Agreements to the OWNER, the CONTRACTOR shall also deliver to the OWNER such Bonds and Insurance Policies and Certificates as the CONTRACTOR may be required to furnish in accordance with the Contract Documents.

2.2 COPIES OF DOCUMENTS. The OWNER shall furnish to the CONTRACTOR the required number of copies of the Contract Documents specified in the Supplementary General Conditions.

2.3 COMMENCEMENT OF CONTRACT TIME; NOTICE TO PROCEED. The Contract Time will start to run on the commencement date stated in the Notice to Proceed.

2.4 STARTING THE WORK

A. The CONTRACTOR shall begin to perform the WORK within 10 days after the commencement date stated in the Notice to Proceed, but no WORK shall be done at the site prior to said commencement date.

B. Before undertaking each part of the WORK, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. The CONTRACTOR shall promptly report in writing to the ENGINEER any conflict, error, or discrepancy which the CONTRACTOR may discover and shall obtain a written interpretation or clarification from the ENGINEER before proceeding with any WORK affected thereby.

C. The CONTRACTOR shall submit to the ENGINEER for review those documents called for under Section 01300 - CONTRACTOR Submittals in the General Requirements.

2.5 PRE-CONSTRUCTION CONFERENCE. The CONTRACTOR is required to attend a Pre-Construction Conference. This conference will be attended by the ENGINEER and others as appropriate in order to discuss the WORK in accordance with the applicable procedures specified in the General Requirements, Section 01010 - Summary of WORK in the General Requirements.

2.6 FINALIZING CONTRACTOR SUBMITTALS. At least 7 days before submittal of the first Application for Payment a conference attended by the CONTRACTOR, the ENGINEER and others as appropriate will be held to finalize the initial CONTRACTOR submittals in accordance with the General Requirements. As a minimum the CONTRACTOR's representatives should include the project manager and schedule expert. The CONTRACTOR should plan on this meeting taking no less than 8 hours. If the submittals are not finalized at the end of the meeting, additional meetings will be held so that the submittals can be finalized prior to the submittal of the first application for payment. No application for payment will be processed until CONTRACTOR submittals are finalized.

## ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 INTENT

A. The Contract Documents comprise the entire Agreement between the OWNER and the CONTRACTOR concerning the WORK. The Contract Documents shall be construed as a whole in accordance with Alaska Law.

B. It is the intent of the Contract Documents to describe the WORK, functionally complete, to be constructed in accordance with the Contract Documents. Any work, materials, or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result shall be supplied whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe work, materials, or equipment such words or phrases shall be interpreted in accordance with that meaning, unless a definition has been provided in Article 1 of the General Conditions. Reference to standard specifications, manuals, or codes of any technical society, organization, or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, or the ENGINEER or any of their consultants, agents, or employees from those set forth in the Contract Documents.

C. If, during the performance of the WORK, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the WORK or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, the CONTRACTOR shall report it to the ENGINEER in writing at once, and the CONTRACTOR shall not proceed with the WORK affected thereby (except in an emergency as authorized by the ENGINEER) until a clarification field order, or Change Order to the Contract Documents has been issued.

3.2 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

A. In resolving conflicts resulting from, errors, or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

1. Permits from other agencies as may be required by law, excepting the definition of “PERMITEE” in these permits.
2. Field Orders
3. Change Orders
4. ENGINEER’s written interpretations and clarifications.
5. Agreement
6. Addenda
7. CONTRACTOR's Bid (Bid Form)
8. Supplementary General Conditions
9. Notice Inviting Bids

10. Instructions to Bidders
11. General Conditions
12. Technical Specifications
13. Drawings

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

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

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

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

**ARTICLE 4 AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS**

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

4.2 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

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

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

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

4.3 DIFFERING SITE CONDITIONS

A. The CONTRACTOR shall promptly upon discovery (but in no event later than 14 days thereafter) and before the following conditions are disturbed, notify the ENGINEER, in writing of any:

1. Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Article 1 of these General Conditions, or asbestos, PCB's, petroleum or any other substance or material posing a threat to human or to the environment.
2. Subsurface or latent physical conditions at the site differing from those indicated.
3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the contract.

B. The OWNER shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the WORK shall issue a Change Order under the procedures described in the contract.

C. In the event that a dispute arises between the OWNER and the CONTRACTOR whether the conditions materially differ, or involved hazardous waste or other materials listed above, or cause a decrease or increase in the CONTRACTOR's cost of, or time required for, performance of any part of the WORK, the CONTRACTOR shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all WORK to be performed under the contract. The CONTRACTOR shall retain any and all rights provided either by contract or by Law which pertain to the resolution of disputes and protests between the contracting parties.

4.4 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

A. Indicated. The information and data indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site are based on information and data furnished to the OWNER or the ENGINEER by the owners of such Underground Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions and/or Section 01530 - Protection and Restoration of Existing Facilities of the General

Requirements, the OWNER and the ENGINEER shall not be responsible for the accuracy or completeness of any such information or data, and the CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Utilities indicated in the Contract Documents, for coordination of the WORK with the owners of such Underground Utilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the WORK, the cost of which will be considered as having been included in the Contract Price.

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

4.5 REFERENCE POINTS

A. The ENGINEER will provide one bench mark, near or on the site of the WORK, and will provide two points near or on the site to establish a base line for use by the CONTRACTOR for alignment control. Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.

B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks, and in case of their removal or destruction by its own employees or by its Subcontractor's employees, the CONTRACTOR shall be responsible for the accurate replacement of such reference points by personnel qualified under the Alaska Statute governing the licensing of Architects, Engineers, and Land Surveyors.

4.6 USE OF THE CBJ/STATE LEMON CREEK GRAVEL PIT

A. On City and Borough of Juneau (CBJ) construction projects, the CBJ may make unclassified material available to CONTRACTORs, from the CBJ/State Lemon Creek gravel pit, at a rate less than charged other customers. CONTRACTORs are not required to use material from the CBJ/State pit and the CBJ makes no guarantee as to the quantity or quality of the available material. For this Project, the price shall be $1.90 per ton.

B. CONTRACTORs proposing to use gravel from the CBJ/State pit are required to be in good standing for all amounts owed to the CBJ, for previous gravel operations, prior to submitting a mining plan for approval. CONTRACTORs using the pit must comply with Allowable Use Permit USE 98-00047. Failure to meet these requirements, if so subject, shall be sufficient reason to deny use of the CBJ/State pit as a gravel source. To determine if your company is subject to these requirements, contact the CBJ Engineering Department, Gravel Pit Management, at (907) 586-0800.

C. CONTRACTORs deciding to use material from the CBJ/State pit shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing

operations within the pit. CONTRACTORs shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ.

D. If CONTRACTOR operations for a project do not exceed 500 tons of material, the CONTRACTOR will not be required to provide an Individual Mining Plan prepared by an engineer. However, the CONTRACTOR must submit an Individual Mining Plan that is in compliance with Allowable Use Permit USE 98-00047 for gravel extraction within the CBJ/State pit. The CONTRACTOR must contact the CBJ Engineering Department for conditions for the extraction.

E. CONTRACTORs using the CBJ material may do primary dry separation (screening) of materials within the pit. Crushing and washing of material will not be allowed. CONTRACTORs shall account for placement of materials removed from the pit. The CBJ may require CONTRACTORs to cross-check weight tickets, submit to an audit, or participate in other measures required by the CBJ to ensure accountability. Unprocessed overburden removed from the pit will not be weighed. All other material mined will be weighed at the CBJ scale. CONTRACTORs will be responsible for loading and/or screening their own material. If asphalt pavement is removed as part of the WORK, CONTRACTORs shall dispose of the material at a to-be-specified location within the pit area, as directed by the CBJ Project Manager.

F. The gravel pit overhead charge shall be paid to the CBJ by the CONTRACTOR within 60 days after removal of all materials from the pit and prior to requesting and/or receiving final payment. Upon completion of each excavation CONTRACTORs shall notify the CBJ, in writing, in sufficient time to perform a field-compliance examination prior to vacating the pit. Any significant deviation from the stipulations of the Individual Mining Plan identified during the field inspection shall be corrected by the CONTRACTOR prior to release of the bond. A signed release from CBJ will be required prior to releasing the CONTRACTOR's bond.

G. If asphalt pavement is removed as part of this WORK, the CONTRACTOR shall dispose of the material at the location designated as the Asphalt Storage Facility, or as directed by the ENGINEER.

H. The CBJ/State pit is a seasonal operation. The hours of operation are from 7:00 a.m. to 6:00 p.m., Monday through Friday, from April 1 through October 15 of the year. CONTRACTORS may obtain gravel on weekends, or during the off-season, by applying for a separate agreement with the City and Borough of Juneau Engineering Department. The CONTRACTOR will be responsible for any additional costs incurred during weekend or off-season operations at the gravel pit.

I. All Contractors/Equipment Operators using the CBJ/State Pit shall be in compliance with Federal Mine Safety and Health Administration regulations for quarry and gravel operations.

## ARTICLE 5 BONDS AND INSURANCE

5.1 PERFORMANCE, PAYMENT, AND OTHER BONDS

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

B. If the surety on any Bond furnished by the CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days thereafter substitute another Bond and Surety, which must be acceptable to the OWNER.

C. All Bonds required by the Contract Documents to be purchased and maintained by CONTRACTOR shall be obtained from surety companies that are duly licensed or authorized in the State of Alaska to issue Bonds for the limits so required. Such surety companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions. The City Engineer may, on behalf of the OWNER, notify the surety of any potential default or liability.

5.2 INSURANCE

A. The CONTRACTOR shall purchase and maintain the insurance required under this paragraph. Such insurance shall include the specific coverages set out herein and be written for not less than the limits of liability and coverages provided in the Supplementary General Conditions, or required by law, whichever are greater. All insurance shall be maintained continuously during the life of the Agreement up to the date of Final Completion and at all times thereafter when the CONTRACTOR may be correcting, removing, or replacing Defective WORK in accordance with Paragraph 13.6, but the CONTRACTOR's liabilities under this Agreement shall not be deemed limited in any way to the insurance coverage required.

B. All insurance required by the Contract Documents to be purchased and maintained by the CONTRACTOR shall be obtained from insurance companies that are duly licensed or authorized in the State of Alaska to issue insurance policies for the limits and coverages so required. Such insurance companies shall have a current Best's Rating of at least an "A" (Excellent) general policy holder's rating and a Class VII financial size category and shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.

C. The CONTRACTOR shall furnish the OWNER with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. All of the policies of insurance so required to be purchased and maintained (or the certificates or other

evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, reduced in coverage, or renewal refused until at least 30 days' prior written notice has been given to the OWNER by certified mail. All such insurance required herein (except for Workers' Compensation and Employer's Liability) shall name the OWNER, its Consultants and subconsultants and their officers, directors, agents, and employees as "additional insureds" under the policies. The CONTRACTOR shall purchase and maintain the following insurance:

1. Workers' Compensation and Employer's Liability. This insurance shall protect the CONTRACTOR against all claims under applicable state workers' compensation laws. The CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a Workers' Compensation law. This policy shall include an "all states" endorsement. The CONTRACTOR shall require each Subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees to be engaged in such WORK unless such employees are covered by the protection afforded by the CONTRACTOR's Workers' Compensation Insurance. In case any class of employees is not protected, under the Workers' Compensation Statute, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of such of its employees as are not otherwise protected.
2. Commercial General Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees or damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees, or Subcontractors. The policy shall contain no exclusions for any operations within the scope of this contract.
3. Comprehensive Automobile Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired. Coverage for hired motor vehicles should include endorsement covering liability assumed under this Agreement.
4. Subcontractor's Commercial General Liability Insurance and Commercial Automobile Liability Insurance. The CONTRACTOR shall either require each of its Subcontractors to procure and to maintain Subcontractor's Commercial General Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Supplementary General Conditions or insure the activities of its Subcontractors in the CONTRACTOR's own policy, in like amount.
5. Builder's Risk. This insurance shall be of the "all risks" type, shall be written in completed value form, and shall protect the CONTRACTOR, the OWNER, and the ENGINEER, against risks of damage to buildings, structures, and materials and equipment. The amount of such insurance shall be not less than the insurable value of the WORK at completion. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR and the OWNER, as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the

coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, and the ENGINEER. The Builder's Risk policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake. Allowable exclusions, if any, shall be as specified in the Supplementary General Conditions.

## ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

### 6.1 SUPERVISION AND SUPERINTENDENCE

A. The CONTRACTOR shall supervise, inspect, and direct the WORK competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the WORK in accordance with the Contract Documents. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incidental thereto. The CONTRACTOR shall be responsible to see that the completed WORK complies accurately with the Contract Documents.

B. The CONTRACTOR shall designate in writing and keep on the WORK site at all times during its progress a technically qualified, English-speaking superintendent, who is an employee of the CONTRACTOR and who shall not be replaced without written notice to the OWNER and the ENGINEER. The superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall issue all its communications to the OWNER through the ENGINEER and the ENGINEER only.

C. The CONTRACTOR's superintendent shall be present at the site of the WORK at all times while WORK is in progress. Failure to observe this requirement shall be considered suspension of the WORK by the CONTRACTOR until such time as such superintendent is again present at the site.

### 6.2 LABOR, MATERIALS, AND EQUIPMENT

A. The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. The CONTRACTOR shall furnish, erect, maintain, and remove the construction plant and any temporary works as may be required. The CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the WORK or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all WORK at the site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without the OWNER's written consent. The CONTRACTOR shall apply for this consent through the ENGINEER.

B. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing.

Additional compensation will be paid the CONTRACTOR for overtime work only in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the CONTRACTOR for overtime work of a similar nature in the same locality.

C. All costs of inspection and testing performed during overtime work by the CONTRACTOR which is allowed solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER shall have the authority to deduct the cost of all such inspection and testing from any partial payments otherwise due to the CONTRACTOR.

D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the WORK.

E. All materials and equipment to be incorporated into the WORK shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of the OWNER. If required by the ENGINEER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provisions of any such instructions will be effective to assign to the ENGINEER, or any of the ENGINEER consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraphs 9.9C and 9.9D.

F. The CONTRACTOR shall at all times employ sufficient labor and equipment for prosecuting the several classes of WORK to full completion in the manner and time set forth in and required by these specifications. All workers shall have sufficient skill and experience to perform property the WORK assigned to them. Workers engaged in special WORK, or skilled WORK, shall have sufficient experience in such WORK and in the operation of the equipment required to perform all WORK, properly and satisfactorily.

G. Any person employed by the CONTRACTOR or by any Subcontractor who, in the opinion of the ENGINEER, does not perform the WORK in a proper and skillful manner, or is intemperate or disorderly shall, at the written request of the ENGINEER, be removed forthwith by the CONTRACTOR or Subcontractor employing such person, and shall not be employed again in any portion of the WORK without the approval of the ENGINEER. Should the CONTRACTOR fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the WORK, the ENGINEER may suspend the WORK by written notice until such orders are complied with.

6.3 ADJUSTING PROGRESS SCHEDULE. The CONTRACTOR shall submit monthly updates of the progress schedule to the ENGINEER for acceptance in accordance with the provisions in Section 01300 - CONTRACTOR Submittals in the General Requirements.

6.4 SUBSTITUTES OR "OR-EQUAL" ITEMS. The CONTRACTOR shall submit proposed substitutes or "or-equal" items in accordance with the provisions in Section 01300 - CONTRACTOR Submittals in the General Requirements.

6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

A. The CONTRACTOR shall be responsible to the OWNER and the ENGINEER for the acts and omissions of its Subcontractors and their employees to the same extent as CONTRACTOR is responsible for the acts and omissions of its own employees. Nothing contained in this Paragraph shall create any contractual relationship between any Subcontractor and the OWNER or the ENGINEER nor relieve the CONTRACTOR of any liability or obligation under the prime contract.

B. The CONTRACTOR shall perform not less than 40% of the WORK with its own forces (i.e., without subcontracting). The 40% requirement shall be understood to mean that the CONTRACTOR shall perform, with its own organization, WORK amounting to at least 40% of the awarded contract amount. The 40% requirement will be calculated based upon the total of the subcontract amounts submitted for contract award, and any other information requested by the OWNER from the apparent low bidder.

6.6 PERMITS

A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including the furnishing of insurance and bonds if required by such agencies. The enforcement of such requirements under this contract shall not be made the basis for claims for additional compensation. The OWNER shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids. The CONTRACTOR shall pay all charges of utility owners for connections to the WORK.

B. These Contract Documents may require that the WORK be performed within the conditions and/or requirements of local, state and/or federal permits. These permits may be bound within the Contract Documents, included within the Contract Documents by reference, or included as part of the WORK, as designated in this Section. The CONTRACTOR is responsible for completing the WORK required for compliance with all permit requirements; this WORK is incidental to other items in the Contract Documents. Any reference to the PERMITTEE in the permits shall mean the CONTRACTOR. If any permits were acquired by the OWNER, this action was done to expedite the start of construction. If the CONTRACTOR does not complete the WORK within the specified permit window, the CONTRACTOR shall be responsible for the permit extension, and for completing any additional requirements placed upon the permit.

C. The OWNER shall apply for, and obtain, the necessary building permit for this Project, however, the CONTRACTOR is responsible for scheduling and coordinating all necessary inspections. The CBJ Inspection number is 586-1703. All other provisions of this Section remain in effect.

6.7 PATENT FEES AND ROYALTIES. The CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the WORK or the incorporation in the WORK of any invention, design, process, product, software or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the WORK and if to the actual knowledge of the OWNER or the ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the OWNER in the Contract Documents. The CONTRACTOR shall indemnify, defend and hold harmless the OWNER and the ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees and court costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the WORK or resulting from the incorporation in the WORK of any invention, design, process, product, or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

6.8 LAWS AND REGULATIONS. The CONTRACTOR shall observe and comply with all federal, state, and local laws, ordinances, codes, orders, and regulations which in any manner affect those engaged or employed on the WORK, the materials used in the WORK, or the conduct of the WORK. If any discrepancy or inconsistency should be discovered in this contract in relation to any such law, ordinance, code, order, or regulation, the CONTRACTOR shall report the same in writing to the ENGINEER. The CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, and their officers, agents, and employees against all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by CONTRACTOR or by its employees, Subcontractors, or third parties. Any particular law or regulation specified or referred to elsewhere in the Contract Documents shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of federal, state, and local laws and regulations.
The OWNER may, per AS 36.30, audit the CONTRACTOR's or Subcontractor(s) records that are related to the cost or pricing data for this contract, all related Change Orders, and/or contract modifications.

6.9 TAXES. The CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by the CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the WORK.

6.10 USE OF PREMISES. The CONTRACTOR shall confine construction equipment, the storage of materials and equipment, and the operations of workers to (1) the Project site, (2) the land and areas identified in and permitted by the Contract Documents, and (3) the other land and areas permitted by Laws and Regulations, rights-of-way, permits, leases and easements. The CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the WORK. Should any claim be made against the OWNER or the ENGINEER by any such owner or occupant because of the performance of the WORK, the CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim through litigation. The CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify, defend, and hold the OWNER and the ENGINEER harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers attorneys, and other professionals and court costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any such owner or occupant against the OWNER, the ENGINEER, their Consultants, Sub-consultants,

and the officers, directors, employees and agents of each and any of them to the extent caused by or based upon the CONTRACTOR's performance of the WORK.

6.11 SAFETY AND PROTECTION

A. The CONTRACTOR shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the WORK. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all employees on the WORK and other persons and organizations who may be affected thereby;
2. all the WORK and materials and equipment to be incorporated therein, whether in storage on or off the site; and
3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

B. The CONTRACTOR shall comply with all applicable Laws and Regulations whether referred to herein or not) of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utilities when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. The CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and program.

D. Materials that contain hazardous substances or mixtures may be required on the WORK. A Material Safety Data Sheet shall be requested by the CONTRACTOR from the manufacturer of any hazardous product used.

E. Material usage shall be accomplished with strict adherence to all safety requirements and all manufacturer's warnings and application instructions listed on the Material Safety Data Sheet and on the product container label.

F. The CONTRACTOR shall be responsible for coordinating communications on any exchange of Material Safety Data Sheets or other hazardous material information that is required to be made available to, or exchanged between, or among, employers at the site in accordance with Laws or Regulations.

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

6.12 SHOP DRAWINGS AND SAMPLES

A. After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the ENGINEER for review, all Shop Drawings in accordance with Section 01300 - CONTRACTOR Submittals in the General Requirements.

B. The CONTRACTOR shall also submit to the ENGINEER for review all samples in accordance with Section 01300 - CONTRACTOR Submittals in the General Requirements.

C. Before submittal of each shop drawing or sample, the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the WORK and the Contract Documents.

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

6.14 INDEMNIFICATION

A. To the fullest extent permitted by Laws and Regulations, the CONTRACTOR shall indemnify, defend, and hold harmless the OWNER, the ENGINEER, their Consultants, Sub-consultants and the officers, directors, employees, and agents of each and any of them, against and from all claims and liability arising under, by reason of or incidentally to the contract or any performance of the WORK, but not from the sole negligence or willful misconduct of the OWNER, and the ENGINEER. Such indemnification by the CONTRACTOR shall include but not be limited to the following:

1. Liability or claims resulting directly or indirectly from the negligence or carelessness of the CONTRACTOR, its employees, or agents in the performance of the WORK, or in guarding or maintaining the same, or from any improper materials, implements, or appliances used in its construction, or by or on account of any act or omission of the CONTRACTOR, its employees, agents, or third parties;
2. Liability or claims arising directly or indirectly from bodily injury, occupational sickness or disease, or death of the CONTRACTOR's or Subcontractor's own employees engaged in the WORK resulting in actions brought by or on behalf of such employees against the OWNER, and the ENGINEER;
3. Liability or claims arising directly or indirectly from or based on the violation of any law, ordinance, regulation, order, or decree, whether by the CONTRACTOR, its employees, or agents;
4. Liability or claims arising directly or indirectly from the use or manufacture by the CONTRACTOR, its employees, or agents in the performance of this contract of any copyrighted or non-copyrighted composition, secret process, patented or non-patented invention, computer software, article, or appliance, unless otherwise specifically stipulated in this contract.

5. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the OWNER or any other parties by the CONTRACTOR, its employees, or agents;
6. Liabilities or claims arising directly or indirectly from the willful or criminal misconduct of the CONTRACTOR, its employees, or agents; and,
7. Liabilities or claims arising directly or indirectly from any breach of the obligations assumed herein by the CONTRACTOR.

B. The CONTRACTOR shall reimburse the ENGINEER and the OWNER for all costs and expenses, (including but not limited to fees and charges of engineers, attorneys, and other professionals and court costs including all costs of appeals) incurred by said OWNER, and the ENGINEER in enforcing the provisions of this Paragraph 6.14.

C. The indemnification obligation under this Paragraph 6.14 shall not be limited in any way by any limitation of the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any such Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.

6.15 CONTRACTOR'S DAILY REPORTS. The CONTRACTOR shall complete a daily report indicating total manpower for each construction trade, major equipment on site, each Subcontractor's manpower, weather conditions, etc., involved in the performance of the WORK. The daily report shall be completed on forms provided by the ENGINEER and shall be submitted to the ENGINEER at the conclusion of each workday. The report should comment on the daily progress and status of the WORK within each major component of the WORK. These components will be decided by the ENGINEER. CONTRACTOR shall record the name, affiliation, time of arrival and departure, and reason for visit for all visitors to the location of the WORK.

6.16 ASSIGNMENT OF CONTRACT. The CONTRACTOR shall not assign, sublet, sell, transfer, or otherwise dispose of the contract or any portion thereof, or its right, title, or interest therein, or obligations thereunder, without the written consent of the OWNER except as imposed by law. If the CONTRACTOR violates this provision, the contract may be terminated at the option of the OWNER. In such event, the OWNER shall be relieved of all liability and obligations to the CONTRACTOR and to its assignee or transferee, growing out of such termination.

6.17 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES. It is understood that any turn-on or turn-off, line locates and any other work or assistance necessary by the CBJ Water Utilities Division, will be at the CONTRACTOR's expense unless otherwise stated in the bid documents. All cost must be agreed to prior to any related actions, and will be considered incidental to the project cost. Billing to the CONTRACTOR will be direct from the CBJ Water Utilities Division.

6.18 OPERATING WATER SYSTEM VALVES

A. The CONTRACTOR shall submit a written request, to the ENGINEER, for approval to operate any valve on any in-service section of the CBJ water system. The request must be submitted at least 24-hours prior to operating any valves. The CBJ Water Utilities Division reserves the right to approve or deny the request. The request shall specifically identify each valve to be operated, the time of operation, and the operation to be performed. The

CONTRACTOR shall obtain the written approval of the ENGINEER for any scheduled operation before operating any valve.

B. The CONTRACTOR shall be responsible for all damages, both direct and consequential, to the City or any other party, caused by unauthorized operation of any valve of the CBJ water system.

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

**ARTICLE 7 OTHER WORK**

7.1 RELATED WORK AT SITE

A. The OWNER may perform other work related to the Project at the site by the OWNER's own forces, have other work performed by utility owners, or let other direct contracts therefor which may contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work.

B. The CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (or the OWNER, if the OWNER is performing the additional work with the OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the WORK with theirs. The CONTRACTOR shall do all cutting, fitting, and patching of the WORK that may be required to make its several parts come together properly and integrate with such other work. The CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of the ENGINEER and the others whose work will be affected.

C. If the proper execution or results of any part of the CONTRACTOR's work depends upon the work of any such other contractor or utility owner (or OWNER), the CONTRACTOR shall inspect and report to the ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to report such delays, defects, or deficiencies will constitute an acceptance of the other work as fit and proper for integration with the CONTRACTOR's work except for latent or nonapparent defects and deficiencies in the other work.

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

responsibility will be itemized and the extent of such authority and responsibilities will be provided in the Supplementary General Conditions.

## ARTICLE 8 OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS

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

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

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

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

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

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

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

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

## ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION

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

9.2 VISITS TO SITE. The ENGINEER will make visits to the site during construction to observe the progress and quality of the WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. Exhaustive or continuous on-site inspections to check the quality or quantity of the WORK will not be required of the ENGINEER. The ENGINEER will not, during such visits, or as a result of such observations of the CONTRACTOR's WORK in progress, supervise, direct, or have control over the CONTRACTOR's WORK.

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

A. Duties, Responsibilities and Limitations of Authority of Inspector

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

Duties and Responsibilities. The Inspector may:

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

including all addenda, Change Orders, field orders, additional Drawings issued subsequent to the execution of the contract, the ENGINEER's clarifications and interpretations of the Contract Documents, progress reports, and other related documents.

13. Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions, list all project visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of performing and observing test procedures. Send copies to the ENGINEER.
14. Record names, addresses, and telephone numbers of the CONTRACTOR, Subcontractors, and major suppliers of materials and equipment.
15. Furnish the ENGINEER with periodic reports as required of progress of the WORK and the CONTRACTOR's compliance with the accepted progress schedule and schedule of CONTRACTOR submittals.
16. Consult with the ENGINEER in advance of scheduled major tests, inspections, or start of important phases of the WORK.
17. Report immediately to the ENGINEER upon the occurrence of any accident.
18. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submittal and forward them with recommendations to the ENGINEER, noting particularly their relation to the schedule of values, WORK completed, and materials and equipment delivered at the site but not incorporated in the WORK.
19. During the course of the WORK, verify that certificates, maintenance and operation manuals, and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed; and deliver this material to the ENGINEER for its review and forwarding to the OWNER prior to final acceptance of the WORK.
20. Before the ENGINEER prepares a Certificate of Substantial Completion/Notice of Completion, as applicable, review the CONTRACTOR's punch list items requiring completion or correction and add any items that CONTRACTOR has omitted.
21. Conduct final inspection in the company of the ENGINEER, the OWNER, and the CONTRACTOR, and prepare a final punch list of items to be completed or corrected.
22. Verify that all items on the punch list have been completed or corrected and make recommendations to the ENGINEER concerning acceptance.

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

1. Shall not authorize any deviation from the Contract Documents or approve any substitute material or equipment.
2. Shall not exceed limitations on the ENGINEER's authority as set forth in the Contract Documents.
3. Shall not undertake any of the responsibilities of the CONTRACTOR, Subcontractors or CONTRACTOR's superintendent, or expedite the WORK.
4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences, or procedures of construction unless such is specifically called for in the Contract Documents.
5. Shall not advise on or issue directions as to safety precautions and programs in connection with the WORK.

9.4 CLARIFICATIONS AND INTERPRETATIONS. The ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the ENGINEER may determine necessary, which shall be consistent with, or reasonably inferred from, the overall intent of the Contract Documents.

9.5 AUTHORIZED VARIATIONS IN WORK. The ENGINEER may authorize variations in the WORK from the requirements of the Contract Documents. These may be accomplished by a Field Order and will require the CONTRACTOR to perform the WORK involved in a manner that minimizes the impact to the WORK and the contract completion date. If the CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time, the CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

9.6 REJECTING DEFECTIVE WORK. The ENGINEER will have authority to reject WORK which the ENGINEER believes to be defective and will also have authority to require special inspection or testing of the WORK as provided in Paragraph 13.3G, whether or not the WORK is fabricated, installed, or completed.

9.7 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS

A. In accordance with the procedures set forth in the General Requirements, the ENGINEER will review all CONTRACTOR submittals, including Shop Drawings, samples, substitutes, or "or equal" items, etc., in order to determine if the items covered by the submittals will, after installation or incorporation in the WORK, conform to the requirements of the Contract Documents and be compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. The ENGINEER's review will not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto.

B. In connection with the ENGINEER's responsibilities as to Change Orders, see Articles 10, 11, and 12.

C. In connection with the ENGINEER's responsibilities in respect of Applications for Payment, see Article 14.

9.8 DECISIONS ON DISPUTES

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

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

9.9 LIMITATION ON ENGINEER'S RESPONSIBILITIES

A. Neither the ENGINEER's authority to act under this Article or other provisions of the Contract Documents nor any decision made by the ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the ENGINEER to the CONTRACTOR, any Subcontractor, any Supplier, any surety for any of them, or any other person or organization performing any of the WORK.

B. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as reviewed," "as approved," or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper," or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the ENGINEER as to the WORK, it is intended that such requirement, direction, review, or judgment will be solely to evaluate the WORK for compliance with the requirements of the Contract Documents, and conformance with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the ENGINEER any duty or authority to supervise or direct the performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.9C or 9.9D.

C. The ENGINEER will not supervise, direct, control, or have authority over or be responsible for the CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of the CONTRACTOR to comply with Laws and Regulations, applicable to the performance of the WORK. The ENGINEER will not be responsible for the CONTRACTOR's failure to perform the WORK in accordance with the Contract Documents.

D. The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR nor of any Subcontractor, supplier, or any other person or organization performing any of the WORK.

## ARTICLE 10 CHANGES IN THE WORK

10.1 GENERAL

A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK; these will be authorized by a written Field Order and/or a Change Order issued by the ENGINEER.

B. If the CONTRACTOR believes that it is entitled to an increase or decrease in the Contract Price, or an extension or shortening in the Contract Time as the result of a Field Order, a claim may be made as provided in Articles 11 and 12.

C. If the OWNER and CONTRACTOR agree on the value of any work, or the amount of Contract Time that should be allowed as a result of a Field Order, upon receiving written notice from the ENGINEER, the CONTRACTOR shall proceed so as to minimize the impact on and delays to the work pending the issuance of a Change Order.

D. If the OWNER and the CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Field Order, the ENGINEER can direct the CONTRACTOR to proceed on the basis of Time and Materials so as to minimize the impact on and delays to WORK, and a claim may be made therefor as provided in Articles 11 and 12.

E. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work as provided in Paragraph 13.3G.

F. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:

1. changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.1A;
2. changes required because of acceptance of Defective WORK under Paragraph 13.7;
3. changes in the Contract Price or Contract Time which are agreed to by the parties; or
4. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by the ENGINEER pursuant to Paragraph 9.8.

G. If notice of any change is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

10.2 ALLOWABLE QUANTITY VARIATIONS

A. In the event of an increase or decrease in Bid item quantity of a unit price contract, the total amount of WORK actually done or materials or equipment furnished shall be paid for according to the unit price established for such WORK under the Contract Documents,

wherever such unit price has been established; provided, that an adjustment in the Contract Price may be made for changes which result in an increase or decrease in excess of 25% of the estimated quantity of any major item of the WORK. Major Item is defined as any bid item amount that is ten percent (10%) or more of the total contract amount.

B. In the event a part of the WORK is to be entirely eliminated and no lump sum or unit price is named in the Contract Documents to cover such eliminated work, the price of the eliminated work shall be agreed upon in writing by the OWNER and the CONTRACTOR. If the OWNER and the CONTRACTOR fail to agree upon the price of the eliminated work, said price shall be determined in accordance with the provisions of Article 11.

**ARTICLE 11 CHANGE OF CONTRACT PRICE**

11.1 GENERAL

A. The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. All duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR to complete the WORK shall be at its expense without change in the Contract Price.

B. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 7 days) after the start of the occurrence or the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within 14 days after such occurrence (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by the ENGINEER in accordance with Paragraph 9.8A if the OWNER and the CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Paragraph 11.1B.

C. The value of any WORK covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

1. Where the WORK involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
2. By mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.4.
3. On the basis of the cost of WORK (determined as provided in Paragraphs 11.3) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.4).

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

a reasonable extension of Contract Time to make proper repairs, renewals, and replacements of the work, materials, or equipment.

11.3 COST OF WORK (BASED ON TIME AND MATERIALS)

A. General. The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of extra work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.5 EXCLUDED COSTS.

B. Labor. The costs of labor will be the actual cost for wages prevailing for each craft or type of workers performing the extra work at the time the extra work is done, plus employer payments of payroll taxes, worker's compensation insurance, liability insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental. The labor costs for forepersons shall be proportioned to all of their assigned work and only that applicable to extra work shall be paid. Non-direct labor costs including superintendence shall be considered part of the mark-up set out in paragraph 11.4.

C. Materials. The cost of materials reported shall be at invoice or lowest current price at which materials are locally available and delivered to the job in the quantities involved, plus the cost of freight, delivery and storage, subject to the following:

1. Trade discounts available to the purchaser shall be credited to the OWNER notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.
2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER. Mark-up except for actual costs incurred in the handling of such materials will not be allowed.
3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on extra work items or the current wholesale price for such materials delivered to the work site, whichever price is lower.
4. If in the opinion of the ENGINEER the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of such material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned delivered to the work site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim shall be allowed by the CONTRACTOR for costs and profit on such materials.

D. Equipment. The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the Supplementary General Conditions. Such rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of

acquisition. The rental rate to be applied for use of each item of equipment shall be the rate resulting in the least total cost to the OWNER for the total period of use. If it is deemed necessary by the CONTRACTOR to use equipment not listed in the publication specified in the Supplementary General Conditions, an equitable rental rate for the equipment will be established by the ENGINEER. The CONTRACTOR may furnish cost data which might assist the ENGINEER in the establishment of the rental rate.

1. All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used.
2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the ENGINEER, in duplicate, a description of the equipment and its identifying number.
3. Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
4. Individual pieces of equipment or tools having a replacement value of $200 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.
5. Rental time will not be allowed while equipment is inoperative due to breakdowns.
6. Equipment Rental Rates. Unless otherwise agreed in writing, the CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication: "Rental Rate Blue Book" as published by Dataquest (a company of the Dunn and Bradstreet Corporation), 1290 Ridder Park Drive, San Jose, CA 95131, telephone number (800) 227-8444.

E. Equipment on the Work Site. The rental time to be paid for equipment on the work site shall be the time the equipment is in productive operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except, that moving time will not be paid if the equipment is used on other than the extra work, even though located at the site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made for loading and transporting costs when the equipment is used at the site of the extra work on other than the extra work. The following shall be used in computing the rental time of equipment on the work site.

1. When hourly rates are listed, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
2. When daily rates are listed, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraphs (3), (4), and (5), following.
3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.3D, herein.

4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the work site, or in the absence of such labor, established by collective bargaining agreements for the type of worker and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.3B, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all other payments made to or on behalf of workers other than actual wages.
5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.4, herein.

F. Specialty Work. Specialty work is defined as that work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. The following shall apply in making estimates for payment for specialty work:

1. Any bid item of WORK to be classified as Specialty Work shall be listed as such in the Supplementary General Conditions. Specialty work shall be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the ENGINEER, invoices for specialty work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs.
2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from the job site, the charges for that portion of the work performed at the off-site facility may, by agreement, be accepted as specialty work and accordingly, the invoices for the work may be accepted without detailed itemization.
3. All invoices for specialty work will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of the allowances for overhead and profit specified in Paragraph 11.4, herein, an allowance of 5 percent will be added to invoices for specialty work.

G. Sureties. All work performed hereunder shall be subject to all of the provisions of the Contract Documents and the CONTRACTOR's sureties shall be bound with reference thereto as under the original Agreement. Copies of all amendments to surety bonds or supplemental surety bonds shall be submitted to the OWNER for review prior to the performance of any work hereunder.

11.4 CONTRACTOR'S FEE

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

Actual Overhead and Profit Allowance

| | |
|---|---|
| Labor | 15 percent |
| Materials | 10 percent |
| Equipment | 10 percent |

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

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

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

A. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, estimators, attorneys' auditors, accountants, purchasing and contracting agents, expenditures, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the work, or not specifically covered by paragraph 11.3, all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

B. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

C. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the WORK and charges against CONTRACTOR for delinquent payments.

D. Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by paragraph 11.4 above).

E. Costs due to the negligence of CONTRACTOR , any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective WORK, disposal of materials or equipment wrongly supplied and making good any damage to property.

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

## ARTICLE 12 CHANGE OF CONTRACT TIME

12.1 GENERAL

A. The Contract Time may only be changed by a Change Order. Any claim for an extension of the Contract Time (or Milestones) shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within 60 days after such occurrence (unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the CONTRACTOR's written statement that the adjustment claimed is the entire adjustment to which the CONTRACTOR has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by the ENGINEER in accordance with Paragraph 9.8 if the OWNER and the CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this Paragraph 12.1A. An increase in Contract Time does not mean that the Contractor is due an increase in Contract Price. Only compensable time extensions will result in an increase in Contract Price.

B. All time limits stated in the Contract Documents are of the essence of the Agreement.

C. Where CONTRACTOR is prevented from completing any part of the WORK within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost on the critical path of the project due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, unprecedented weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

D. Where CONTRACTOR is prevented from completing any part of the WORK within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost on the critical path of the project due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall the OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

12.2 EXTENSIONS OF TIME FOR DELAY DUE TO WEATHER. Contract Time may be extended by the ENGINEER because of delays in completion of the WORK due to unusually severe weather, provided that the CONTRACTOR shall, within 10 days of the beginning of any such delay, notify the ENGINEER in writing of the cause of delay and request an extension of Contract Time. The

ENGINEER will ascertain the facts and the extent of the delay and extend the time for completing the work when, in the ENGINEER's judgment, the findings of fact justify such an extension. Unprecedented, abnormal, or unusually severe weather will be defined as an event, or events, with a greater than 50-year recurrence interval, as determined by the National Weather Service, or equivalent State or Federal agency

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

13.1 WARRANTY AND GUARANTEE. The CONTRACTOR warrants and guarantees to the OWNER and the ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of defects known to the OWNER or ENGINEER shall be given to the CONTRACTOR. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in this Article 13.

13.2 ACCESS TO WORK. OWNER, ENGINEER, their Consultants, sub-consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the WORK at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

13.3 TESTS AND INSPECTIONS

A. The CONTRACTOR shall give the ENGINEER timely notice of readiness of the WORK for all required inspections, tests, or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. If Laws or Regulations of any public body having jurisdiction other than the OWNER require any WORK to specifically be inspected, tested, or approved, the CONTRACTOR shall pay all costs in connection therewith. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the OWNER's or the ENGINEER's acceptance of a Supplier of materials or equipment proposed as a substitution or (or-equal) to be incorporated in the WORK, or of materials or equipment submitted for review prior to the CONTRACTOR's purchase thereof for incorporation in the WORK. The cost of all inspections, tests, and approvals in addition to the above which are required by the Contract Documents shall be paid by the OWNER (unless otherwise specified).

C. The ENGINEER will make, or have made, such inspections and tests as the ENGINEER deems necessary to see that the WORK is being accomplished in accordance with the requirements of the Contract Documents. Unless otherwise specified in the Supplementary General Conditions, the cost of such inspection and testing will be borne by the OWNER. In the event such inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the ENGINEER, as well as the cost of subsequent reinspection and retesting. Neither observations by the ENGINEER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

D. All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to the ENGINEER and the CONTRACTOR.

E. If any WORK (including the work of others) that is to be inspected, tested, or approved is covered without written concurrence of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the ENGINEER timely notice of the CONTRACTOR's intention to perform such test or to cover the same and the ENGINEER has not acted with reasonable promptness in response to such notice.

F. If any WORK is covered contrary to the written request of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER's observation and recovered at the CONTRACTOR's expense.

G. If the ENGINEER considers it necessary or advisable that covered WORK be observed by the ENGINEER or inspected or tested by others, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, material, and equipment. If it is found that such WORK is defective, the CONTRACTOR shall bear all direct, indirect, and consequential costs and damages of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, including but not limited to fees and charges of engineers, attorneys, and other professionals. However, if such WORK is not found to be defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, the CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

13.4 OWNER MAY STOP THE WORK. If the WORK is defective, or the CONTRACTOR fails to perform work in such a way that the completed WORK will conform to the Contract Documents, the OWNER may order the CONTRACTOR to stop the WORK, or any portion thereof, until the cause for such order has been eliminated; however, this right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.

13.5 CORRECTION OR REMOVAL OF DEFECTIVE WORK. If required by the ENGINEER, the CONTRACTOR shall promptly, either correct all defective work, whether or not fabricated, installed, or completed, or, if the WORK has been rejected by the ENGINEER, remove it from the site and replace it with non-defective work. The CONTRACTOR shall bear all direct, indirect and consequential costs and damages of such correction or removal, including but not limited to fees and charges of engineers, attorneys, and other professionals made necessary thereby.

13.6 ONE YEAR CORRECTION PERIOD

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

B. Where Defective WORK (and damage to other WORK resulting therefrom) has been corrected, removed or replaced under this paragraph 13.6, the correction period hereunder with respect to such WORK will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

**ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION**

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

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

14.3 APPLICATION FOR PROGRESS PAYMENT

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

B. The Application for Payment shall identify, as a sub-total, the amount of the CONTRACTOR'S Total Earnings to Date, plus the Value of Materials Stored at the Site which have not yet been incorporated in the WORK, and less a deductive adjustment for

materials installed which were not previously incorporated in the WORK, but for which payment was allowed under the provisions for payment for Materials Stored at the Site, but not yet incorporated in the WORK.

C. The Net Payment Due the CONTRACTOR shall be the above-mentioned subtotal from which shall be deducted the total amount of all previous payments made to the CONTRACTOR. Progress payments will be paid in full in accordance with Article 14 of the General Conditions until 90% of the Contract Price has been paid. The remaining 10% of the Contract Price amount may be withheld until:

1. final inspection has been made;
2. completion of the Project; and
3. acceptance of the Project by the OWNER.

D. The Value of Materials Stored at the Site shall be an amount equal to the specified percent of the value of such materials as set forth in the Supplementary General Conditions. Said amount shall be based upon the value of all acceptable materials and equipment not incorporated in the WORK but delivered and suitably stored at the site or at another location agreed to in writing; provided, each such individual item has a value of more than $5,000.00 and will become a permanent part of the WORK. The Application for Payment shall also be accompanied by an invoice (including shipping), a certification that the materials meet the applicable contract specifications, and any evidence required by the OWNER that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the OWNER's interest therein, all of which will be satisfactory to the OWNER. Payment for materials will not constitute final acceptance. It shall be the CONTRACTOR’s responsibility to protect the material from damage, theft, loss, or peril while in storage. Unless otherwise prescribed by law, the Value of Materials Stored at the Site shall be paid at the invoice amount up to a maximum of 85% of the Contract Price for those items.

14.4 CONTRACTOR'S WARRANTY OF TITLE. The CONTRACTOR warrants and guarantees that title to all work, materials, and equipment covered by an Application for Payment, whether incorporated in the WORK or not, will pass to the OWNER no later than the time of payment free and clear of all liens.

14.5 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

A. The ENGINEER will, within 7 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the OWNER, or return the Application to the CONTRACTOR indicating in writing the ENGINEER's reasons for refusing to recommend payment. In the later case, the CONTRACTOR may make the necessary corrections and resubmit the Application. If the ENGINEER still disagrees with a portion of the Application, it will submit the Application recommending the undisputed portion of the Application to the OWNER for payment and provide reasons for recommending non-payment of the disputed amount. Thirty days after presentation of the Application for Payment with the ENGINEER's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.5B) become due and when due will be paid by the OWNER to the CONTRACTOR.

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

14.6 PARTIAL UTILIZATION

A. The OWNER shall have the right to utilize or place into service any item of equipment or other usable portion of the WORK prior to completion of the WORK. Whenever the OWNER plans to exercise said right, the CONTRACTOR will be notified in writing by the OWNER, identifying the specific portion or portions of the WORK to be so utilized or otherwise placed into service.

B. It shall be understood by the CONTRACTOR that until such written notification is issued, all responsibility for care and maintenance of all of the WORK shall be borne by the CONTRACTOR. Upon issuance of said written notice of partial utilization, the OWNER will accept responsibility for the protection and maintenance of all such items or portions of the WORK described in the written notice.

C. The CONTRACTOR shall retain full responsibility for satisfactory completion of the WORK, regardless of whether a portion thereof has been partially utilized by the OWNER and the CONTRACTOR's one year correction period shall commence only after the date of Substantial Completion for the WORK.

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

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

14.9 FINAL PAYMENT AND ACCEPTANCE

A. If, on the basis of the ENGINEER's observation of the WORK during construction and final inspection, and the ENGINEER's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, the ENGINEER is satisfied that the WORK has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the ENGINEER will, within 14 days after receipt of the final Application for Payment, indicate in writing the ENGINEER's recommendation of payment and present the Application to the OWNER for payment.

B. After acceptance of the WORK by the OWNER's governing body, the OWNER will make final payment to the CONTRACTOR of the amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract Documents, including the following items:

1. Liquidated damages, as applicable.
2. Two times the value of outstanding items of correction work or punch list items yet uncompleted or uncorrected, as applicable. All such work shall be completed or corrected to the satisfaction of the OWNER within the time stated on the Notice of Completion, otherwise the CONTRACTOR does hereby waive any and all claims to all monies withheld by the OWNER to cover the value of all such uncompleted or uncorrected items.

14.10 RELEASE OF RETAINAGE AND OTHER DEDUCTIONS

A. After executing the necessary documents to initiate the lien period, and not more than 45 days thereafter (based on a 30-day lien filing period and 15-day processing time), the OWNER will release to the CONTRACTOR the retainage funds withheld pursuant to the Agreement, less any deductions to cover pending claims against the OWNER pursuant to Paragraph 14.5B.

B. After filing of the necessary documents to initiate the lien period, the CONTRACTOR shall have 30 days to complete any outstanding items of correction work remaining to be completed or corrected as listed on a final punch list made a part of the Notice of Completion. Upon expiration of the 45 days, referred to in Paragraph 14.10A, the amounts withheld pursuant to the provisions of Paragraph 14.9B herein, for all remaining work items will be returned to the CONTRACTOR; provided, that said work has been completed or corrected to the satisfaction of the OWNER within said 30 days. Otherwise, the CONTRACTOR does hereby waive any and all claims for all monies withheld by the OWNER under the Contract to cover 2 times the value of such remaining uncompleted or uncorrected items.

14.11 CONTRACTOR'S CONTINUING OBLIGATION. The CONTRACTOR's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the ENGINEER, nor the issuance of a Notice of Completion, nor any payment by the OWNER to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the WORK or any part thereof by the OWNER, nor any act of acceptance by the OWNER nor any failure to do so, nor any review of a Shop Drawing or sample submittal, will constitute an acceptance of work not in accordance with the Contract Documents or a

release of the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.

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

**ARTICLE 15 SUSPENSION OF WORK AND TERMINATION**

15.1 SUSPENSION OF WORK BY OWNER. The OWNER, acting through the ENGINEER, may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than 90 days by notice in writing to the CONTRACTOR. The CONTRACTOR shall resume the WORK on receipt from the ENGINEER of a notice of resumption of work. The CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

15.2 TERMINATION OF AGREEMENT BY OWNER (CONTRACTOR DEFAULT)

A. In the event of default by the CONTRACTOR, the OWNER may give 10 days written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement and provide the CONTRACTOR an opportunity to remedy the conditions constituting the default. It shall be considered a default by the CONTRACTOR whenever CONTRACTOR shall: (1) declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors; (2) fail to provide materials or quality of work meeting the requirements of the Contract Documents; (3) disregard or violate provisions of the Contract Documents or ENGINEER's instructions; (4) fail to prosecute the WORK according to the approved progress schedule; or, (5) fail to provide a qualified superintendent, competent workers, or materials or equipment meeting the requirements of the Contract Documents. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue the Notice of Termination.

B. In the event the Agreement is terminated in accordance with Paragraph 15.2A, herein, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK shall be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the balance which would have been due, the CONTRACTOR shall not have claim to the difference.

15.3 TERMINATION OF AGREEMENT BY OWNER (FOR CONVENIENCE). The OWNER may terminate the Agreement at any time if it is found that reasons beyond the control of either the OWNER or CONTRACTOR make it impossible or against the OWNER's interests to complete the WORK. In such a case, the CONTRACTOR shall have no claims against the OWNER except: (1) for the value of work performed up to the date the Agreement is terminated; and, (2) for the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Agreement is terminated which would be needed in the WORK and which meet the requirements of the Contract Documents. The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined by the ENGINEER in accordance with the procedure prescribed for the making of the final application for payment and payment under Paragraphs 14.8 and 14.9.

15.4 TERMINATION OF AGREEMENT BY CONTRACTOR. The CONTRACTOR may terminate the Agreement upon 10 days written notice to the OWNER, whenever: 1) the WORK has been suspended under the provisions of Paragraph 15.1, herein, for more than 90 consecutive days through no fault or negligence of the CONTRACTOR, and notice to resume work or to terminate the Agreement has not been received from the OWNER within this time period; or, 2) the OWNER should fail to pay the CONTRACTOR any monies due him in accordance with the terms of the Contract Documents and within 60 days after presentation to the OWNER by the CONTRACTOR of a request therefor, unless within said 10-day period the OWNER shall have remedied the condition upon which the payment delay was based. In the event of such termination, the CONTRACTOR shall have no claims against the OWNER except for those claims specifically enumerated in Paragraph 15.3, herein, and as determined in accordance with the requirements of said paragraph.

**ARTICLE 16 MISCELLANEOUS**

16.1 GIVING NOTICE. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

16.2 RIGHTS IN AND USE OF MATERIALS FOUND ON THE WORK

A. The CONTRACTOR may use on the Project, with ENGINEER's approval, such stone, gravel, sand, or other material determined suitable by the ENGINEER, as may be found in the excavation. The CONTRACTOR will be paid for the excavation of such material at the corresponding contract unit price. No additional payment will be made for utilizing the material from excavation as borrow, or select borrow.

B. The CONTRACTOR shall replace, at its own expense, with other acceptable material, all of that portion of the excavated material so removed and used which was needed for use on the project. No charge for the materials so used will be made against the CONTRACTOR except that the CONTRACTOR shall be responsible for payment of any royalties required.

C. The CONTRACTOR shall not excavate or remove any material from within the Project location which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from the ENGINEER.

D. In the event the CONTRACTOR has processed materials from OWNER-furnished sources in excess of the quantities required for performance of this contract, including any waste material produced as a by-product, the CBJ may retain possession of such materials without obligation to reimburse the CONTRACTOR for the cost of their production. When such materials are in a stockpile, the ENGINEER may require: That it remain in stockpile; the CONTRACTOR level such stockpile(s); or that the CONTRACTOR remove such materials and restore the premises to a satisfactory condition at the CONTRACTOR's expense. This provision shall not preclude the CBJ from arranging with the CONTRACTOR to produce material over and above the contract needs, payment for which shall be by written agreement between the CBJ and the CONTRACTOR.

E. Unless otherwise provided, the material from any existing old structure may be used temporarily by the CONTRACTOR in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the ENGINEER.

16.3 RIGHT TO AUDIT. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon Subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.

16.4 ARCHEOLOGICAL OR HISTORICAL DISCOVERIES. When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, such as shell heaps, land or sea mammal bones or tusks, or other items of historical significance, the CONTRACTOR shall cease operations immediately and notify the ENGINEER. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the ENGINEER order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra work, such order(s) shall be covered by an appropriate contract change document.

16.5 CONSTRUCTION OVER OR ADJACENT TO NAVIGABLE WATERS. All work over, on, or adjacent to navigable waters shall be so conducted that free navigation of the waterways will not be interfered with and the existing navigable depths will not be impaired, except as allowed by permit issued the U.S. Coast Guard and/or the U.S. Army Corps of Engineers, as applicable.

16.6 GRATUITY AND CONFLICT OF INTEREST. The CONTRACTOR agrees to not extend any loan, gratuity or gift of money of any form whatsoever to any employee or elected official of the OWNER, nor will the CONTRACTOR rent or purchase any equipment or materials from any employee or

elected official of the OWNER, or to the best of the CONTRACTOR's knowledge, from any agent of any employee or elected official of the OWNER. Before final payment, the CONTRACTOR shall execute and furnish the OWNER an affidavit certifying that the CONTRACTOR has complied with the above provisions of the contract.

16.7 SUITS OF LAW CONCERNING THE WORK

A. Should a suit of law be entered into, either by the CONTRACTOR (or the CONTRACTOR's surety) against the OWNER, or by the OWNER against the CONTRACTOR (or the CONTRACTOR's surety), the suit of law shall be tried in the First Judicial District of Alaska.

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

16.8 CERTIFIED PAYROLLS

A. All CONTRACTORs or Subcontractor who perform work on a public construction contract for the OWNER shall file a certified payroll with the Alaska Department of Labor before Friday of each week that covers the preceding week (Section 14-2-4 ACLA 1949; am Section 4 ch 142 SLA 1972).

B. In lieu of submitting the State payroll form, the CONTRACTOR's standard payroll form may be submitted, provided it contains the information required by AS 36.05.040 and a statement that the CONTRACTOR is complying with AS 36.10.010.

C. A contractor or subcontractor, who performs work on public construction in the State, as defined by AS 36.95.010(3), shall pay not less than the current prevailing rate of wages as issued by the Alaska Department of Labor before the end of the pay period. (AS 36.05.010).

16.9 PREVAILING WAGE RATES

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

B. Failure to Pay Agreed Wages, AS 36.05.080. If it is found that a laborer, mechanic, or field surveyor employed by the CONTRACTOR or Subcontractor has been, or is being, paid a rate or wages less than the established rate, the OWNER may, by written notice, terminate the CONTRACTOR or Subcontractors right to proceed with the work. The OWNER may prosecute the work to completion by contract or otherwise, and the CONTRACTOR and

sureties will be held liable to the OWNER for excess costs for completing the WORK. (Section 2 ch 52 SLA 1959).

C. Listing Contractor's Who Violate Contracts, AS 36.05.090. In addition, a list giving the names of persons who have disregarded the rights of their employees shall be distributed to all departments of State government and all political subdivisions. No person appearing on this list, and no firm, corporation, partnership or association in which the person has an interest, may work as a CONTRACTOR or Subcontractor on a public construction contract for the State, or a political subdivision of the state, until three years after the date of publication of the list. (Section 3 ch 52 SLA 1959; am Section 9 ch 142 SLA).

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

16.11 COST REDUCTION INCENTIVE

A. At any time within 45 days after the date of the Notice of Award, the CONTRACTOR may submit to the ENGINEER in writing, proposals for modifying the plans, specifications, or other requirements of this contract for the sole purpose of reducing the total cost of construction. The cost reduction proposal shall not impair in any manner the essential functions or characteristics of the project, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance or design and safety standards.

B. The cost reduction proposal shall contain the following information:

1. Description of both the existing contract requirements for performing the WORK and the proposed changes.
2. An itemization of the contract requirements that must be changed if the proposal is adopted.
3. A detailed estimate of the time required and the cost of performing the WORK under both the existing contract and the proposed change.
4. A statement of the date by which the CONTRACTOR must receive the decision from the OWNER on the cost reduction proposal.
5. The contract items of WORK effected by the proposed changes including any quantity variations.
6. A description and estimate of costs the OWNER may incur in implementing the proposed changes, such as test and evaluation and operating and support costs.
7. A prediction of any effects the proposed change would have on future operations and maintenance costs to the OWNER.

C. The provisions of this section shall not be construed to require the OWNER to consider any cost reduction proposal which may be submitted; nor will the OWNER be liable to the CONTRACTOR for failure to accept or act upon any cost reduction proposal submitted, or for delays to the work attributable to the consideration or implementation of any such proposal.

D. If a cost reduction proposal is similar to a change in the plans or specifications for the project under consideration by the OWNER at the time the proposal is submitted, the OWNER will not accept such proposal and reserves the right to make such changes without compensation to the CONTRACTOR under the provisions of this section.

E. The CONTRACTOR shall continue to perform the work in accordance with the requirements of the contract until an executed Change Order incorporating the cost reduction proposal has been issued. If any executed Change Order has not been issued by the date upon which the CONTRACTOR's cost reduction proposal specifies that a decision should be made by the OWNER, in writing, the cost reduction proposal shall be considered rejected.

F. The OWNER, shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings in Contract Time and construction costs resulting from the adoption of all or any part of such proposal. Should the CONTRACTOR disagree with OWNER's decision on the cost reduction proposal, there is no further consideration. The OWNER reserves the right to make final determination.

G. If the CONTRACTOR's cost reduction proposal is accepted in whole or in part, such acceptance will be made by a contract Change Order, which specifically states that the change is executed pursuant to this cost reduction proposal section. Such Change Order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted to be put into effect and shall include any conditions upon which the OWNER's approval is based, if such approval is conditional. The Change Order shall also describe the estimated net savings in the cost of performing the work attributable to the cost reduction proposal, and shall further provide that the contract cost be adjusted by crediting the OWNER with the estimated net savings amount.

H. Acceptance of the cost reduction proposal and performance of the work does not extend the time of completion of the contract, unless specifically provided in the Change Order authorizing the use of the submitted proposal. Should the adoption of the cost reduction proposal result in a Contract Time savings, the total Contract Time shall be reduced by an amount equal to the time savings realized.

I. The amount specified to the CONTRACTOR in the Change Order accepted in the cost reduction proposal shall constitute full compensation for the performance of WORK. No claims for additional costs as a result of the changes specified in the cost reduction proposal shall be allowed.

J. The OWNER reserves the right to adopt and utilize any approved cost reduction proposal for general use on any contract administered when it is determined suitable for such application. Cost reduction proposals identical, similar, or previously submitted will not be accepted for consideration if acceptance and compensation has previously been approved. The OWNER reserves the right to use all or part of any cost reduction proposal without obligation or compensation of any kind to the CONTRACTOR.

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

**END OF SECTION**

## SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

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

**SGC 1 DEFINITIONS.** ***Remove*** the definition for Contract Documents and ***replace*** with the following:

Contract Documents – The Table of Contents, Notice Inviting Bids, Instructions to Bidders, Bid Forms (including the Bid, Bid Schedule(s), Subcontractor Report, Bid Bond, and all required certificates and affidavits), Agreement, Performance Bond, Payment Bond, General Conditions, Supplementary General Conditions, Alaska Labor Standards, Reporting, and Prevailing Wage Rate Determination, Special Provisions, Standard Specifications, Technical Specifications, Drawings, Permits, and all Addenda, and Change Orders executed pursuant to the provisions of the Contract Documents.

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

The OWNER shall furnish to the CONTRACTOR up to ten (10) copies of the Contract Documents which will include bound reduced Drawings. The CBJ Contracts Office shall contact the CONTRACTOR after issuance of Notice of Intent to Award to determine how many copies are needed. Additional quantities of the Contract Documents will be furnished at reproduction cost.

**SGC 3.2 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS.** ***Remove*** No. 12. Technical Specifications and No. 13. Drawings, and ***add*** the following:

12. Special Provisions Section
13. Standard Specifications for Civil Engineering Projects and Subdivision Improvements December 2003 Edition with current Errata Sheets.
14. Drawings.

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

C. In the preparation of the Contract Documents, the Engineer of Record has relied upon the following:

1. The following reports of exploration and tests of subsurface conditions at the site of the WORK:

    a. Geotechnical Findings for Juneau Cruise Ship Dock Transfer Bridge Restoration, PN&D 96233.02, dated January 27, 1997

    b. This report is available online on the CBJ Engineering Department home page at http://www.juneau.org/engineering_ftp/contracts/Contracts.php. As provide in Paragraph 4.2 of the General Conditions and as identified and established above, the CONTRACTOR may rely upon the accuracy of the technical data contained in this report, which are incorporated into the Contract Documents by reference. However, the interpretation of such technical data, including any interpolation or extrapolation thereof, together with non-technical data, interpretations and opinions contained in such reports or drawings, which are not a part of Contract Documents, or the completeness thereof, is the responsibility of the CONTRACTOR.

2. Field measurements and visual inspection of the existing structures and surface conditions.

***Add*** the following SGC 4.6**:**

**SGC - 4.6 USE OF THE CBJ/STATE LEMON CREEK GRAVEL PIT.** ***Add*** the following.

The CBJ/State Lemon Creek Gravel Pit is available for this Project.

**SGC - 4.6 USE OF THE CBJ/STATE LEMON CREEK GRAVEL PIT.** ***Delete*** paragraph C., and ***replace*** with the following paragraph C.

Wherever the land use permits are referenced, ***delete*** and ***replace with*** the permit number USE2008-00061.

C. CONTRACTORs deciding to use material from the CBJ/State pit shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing operations within the pit. CONTRACTORs shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ. A $10,000 cash processing restoration bond is required prior to screening or primary crushing operations.

***Add*** the following paragraph:

J. CONTRACTORs choosing to mine material from CBJ material sources are also subject to the conditions contained in each site's Multi Sector General Permit for Stormwater Discharges associated with industrial activities (MSGP) and the Storm Water Pollution Prevention Plan (SWPPP).

***Add*** the following SGC 4.7**:**

**SGC 4.7 USE OF CITY/STATE STABLER'S POINT ROCK QUARRY.** ***Add*** the following:

The CBJ/State Stabler's Point Rock Quarry is available for this Project**.**

***Add*** the following SGC 4.7**:**

**SGC 4.7 USE OF CITY/STATE STABLER'S POINT ROCK QUARRY.**

A. On City and Borough of Juneau construction projects, the CBJ may make unclassified material available to the CONTRACTOR, from the City/State Stabler's Point rock quarry, at a rate less than charged other customers. The CONTRACTOR is not required to use material from the CBJ/State quarry and the CBJ makes no guarantee as to the quantity or quality of material. For this Project, the price for 2012 shall be $1.67 per ton; price for 2013 to be adjusted per Anchorage CPI.

B. The CONTRACTOR proposing to use material from the City/State quarry is required to be in good standing for all amounts owed to the CBJ, for previous gravel operations, prior to submitting a mining plan for approval. The CONTRACTOR using the quarry must comply with Conditional Use Permit USE2011-00017. Failure to meet these requirements, if so subject, shall be sufficient reason to deny use of the City/State Stabler's Point rock quarry as a rock source. To determine if your

company is subject to these requirements, contact the CBJ Engineering Department, Rock Quarry Management, at 907-586-0481.

C. The CONTRACTOR deciding to use material from the CBJ/State Stabler's Point rock quarry shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing operations with the pit. The CONTRACTOR shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ. A $10,000.00 cash processing restoration bond is required prior to screening or primary crushing operations.

D. The CONTRACTOR must submit an Individual Mining Plan that is in compliance with Conditional Use Permit No. USE 2011-00017 for rock extraction with the City/State Stabler's Point rock quarry. The CONTRACTOR must contact the CBJ Engineering Department for conditions for the extraction.

E. The CONTRACTOR shall account for placement of materials removed from the quarry. The CBJ may require the CONTRACTOR to cross-check weight tickets, submit to an audit, or participate in other measures required by the CBJ to ensure accountability. Unprocessed overburden removed from the quarry will not be weighed. All other material mined will be measured by truck load or survey. The CONTRACTOR will be responsible for loading, screening and sorting their own material. Primary screening may be allowed in the quarry. Primary crushing may be allowed according to the conditions of the Conditional Use Permit No USE2011-00017.

F. The rock quarry overhead charge shall be paid to the CBJ within 60 days after removing material from the quarry and prior to requesting and/or receiving final payment. Upon completion of the excavation the CONTRACTOR shall notify the CBJ, in writing, in sufficient time to perform a field-compliance examination prior to vacating the quarry. Any significant deviation from the stipulations of the Individual Mining Plan identified during the field inspection shall be corrected by the CONTRACTOR prior to release of the bond. A signed release from CBJ will be required prior to releasing the CONTRACTOR's bond.

G. The City/State Stabler's Point rock quarry is a by-project operation. The hours of operation are stipulated in Conditional Use Permit No. USE2011-00017.

H. All Contractors/Equipment Operators using the CBJ/State Stabler's Point rock quarry shall be in compliance with Federal Mine Safety and Health Administration regulations for quarry and gravel operations.

I. Contractors choosing to mine material from CBJ material sources are also subject to the conditions contained in each site's Multi Sector General Permit for Stormwater Discharges associated with industrial activities (MSGP) and the Storm Water Pollution Prevention Plan (SWPPP).

**SGC 5.1 PERFORMANCE, PAYMENT, AND OTHER BONDS**. The Contractor shall furnish Performance and Payment Bonds in the amount of 100% of the Bid.

**SGC 5.2 INSURANCE AMOUNTS.** The limits of liability for the insurance required by Paragraph 5.2 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations**.** All certificates of insurance supplied to the OWNER shall state that the OWNER is named as **"Additional Insured for any and all work performed for the City & Borough of Juneau."** The Additional Insured requirement does not apply to Workers Compensation insurance. NOTE:

This requirement has changed. The OWNER no longer requires certificates of insurance referencing project names and contract numbers.

A. Workers' Compensation: (under Paragraph 5.2C.1 of the General Conditions) as in accordance with AS 23.30.045: (Additional Insured requirements not necessary for Workers' Compensation coverage.)

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

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

3. Employers Liability

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

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

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

| | | | |
|---|---|---|---|
| 1. | General Policy | $1,000,000.00 | Each Occurrence |
| | | $2,000,000.00 | Annual Aggregate |
| 2. | Products/Completed Operations | $1,000,000.00 | Each Occurrence |
| | | $2,000,000.00 | Annual Aggregate |
| 3. | Personal Injury | $1,000,000.00 | Each Occurrence |

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

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

The CONTRACTOR shall require each Subcontractor similarly to provide Commercial Automobile Liability Insurance for all of the latter's employees to be engaged in such WORK unless such employees are covered by the protection afforded by the CONTRACTOR's Commercial Automobile Liability Insurance.

D. Builder's Risk: (under Paragraph 5.2C.5 of the General Conditions) in an amount equal to the completed value of the BID.

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

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

G. Should any of the policies described above be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

**SGC 6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS.** ***Add*** the following:

The CONTRACTOR shall perform not less than 40% of the WORK with its own forces (i.e., without subcontracting). The 40% requirement shall be understood to mean that the CONTRACTOR shall perform, with its own organization, WORK amounting to at least 40% of the original contract amount. The 40% requirement will be calculated based upon the total of the subcontract amounts submitted for Contract Award, and any other information requested by the OWNER from the apparent low Bidder.

**SGC 6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS,** ***Add*** the following paragraph:

C. CONTRACTOR must pay Subcontractors and/or Suppliers within 30 days of receiving payment from the OWNER, if that payment was made for Work performed by the Subcontractor and/or materials received. Failure to pay Subcontractors within 30 days of receiving payment from which Subcontractor and/or Supplier is to be paid may result in the OWNER initiating debarment proceedings as prescribed in the City and Borough of Juneau Purchasing Code.

**SGC 6.6 PERMITS** ***Add*** the following paragraph:

D. A Right-of-Way Permit shall be obtained by the CONTRACTOR from the City and Borough of Juneau, Engineering Department prior to WORK within the Right-of-Way. The CONTRACTOR is responsible for coordinating all necessary inspections. All other provisions of this section remain in effect.

E. Contractor is responsible for obtaining a Hot Works permit from the CBJ Permit Center, if performing work which requires such a permit. Work requiring a Hot Works Permit includes but is not limited to the following: cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar activity.

**SGC 14.3 APPLICATION FOR PROGRESS PAYMENT.** Paragraph D.

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

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

C. Prior to the final payment the CONTRACTOR shall contact the Alaska Department of Labor and Workforce Development (ADOL) and provide the OWNER with clearance from the ADOL for the CONTRACTOR and all Subcontractors that have worked on the Project. This clearance shall indicate that all Employment Security Taxes have been paid. A sample form for this purpose is at the end of this section. The CONTRACTOR shall also submit a "NOTICE OF COMPLETION OF PUBLIC WORKS" signed by ADOL.

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

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

***Add*** the following SGC 17**:**

**SGC 17 GENERAL INFORMATION.** This Project is currently funded by the City and Borough of Juneau, Alaska Port Development and Marine Passenger fees and CBJ Sales Tax.

## Employment Security Tax Clearance

Date: _____

To: Alaska Department of Labor
Juneau Field Tax Office
PH 907-465-2787
FAX 907-465-2374

From: _____

**Subject: Cruise Ship Terminal Staging Area Improvements – Phase I**
**Contract No. DH12-002**

Timeframe of Contract _____

Please advise whether or not clearance is granted for the following CONTRACTOR or Subcontractor:
*(List only one CONTRACTOR or Subcontractor per page.)*

_____ _____
Name Address

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

Gary Gillette
CBJ Docks and Harbors
155 S. Seward Street
Juneau, Alaska 99801
FAX 907-586-0295

( ) Tax Clearance is granted.
( ) Tax Clearance is NOT granted.

Remarks: _____

_____ _____
Signature Date

_____
Title

**END OF SECTION**

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

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

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

Correspondence regarding Title 36 requirements may be submitted electronically or paper copies can be submitted by mail. To submit Title 36 documents electronically, go to https://myalaska.state.ak.us/home/app. If filing electronically, submit certified payrolls to ADOL at the website above and email a copy of all certified payrolls to Jennifer Mannix at the email address below or another CBJ representative, as directed. If Contractor elects to submit paper copies, they should be submitted to the physical addresses below.

**Within 10 Days of "Notice of Award/Notice to Proceed"** make a list of **all** Subcontractors. Include their name, address, phone, estimated subcontract amount, and estimated start and finish dates. Send this list to the Wage and Hour Section (contact information below).

**Certified Payrolls must be submitted every two weeks. Before the second Friday,** each CONTRACTOR and Subcontractor must file Certified Payrolls with Statements of Compliance for the previous two weeks. Indicate ***"Start"*** on your first payroll, and ***"Final"*** on your last payroll for this Project.

As part of the **final payment request package,** CONTRACTOR must submit a "NOTICE OF COMPLETION OF PUBLIC WORKS" form signed by ADOL personnel.

**Contact Information:**

***Wage and Hour Section***
State of Alaska
Department of Labor and Workforce Development
Labor Standards and Safety Division
Wage and Hour Administration
P.O. Box 11149
Juneau, AK 99811-1149
907-465-4842
http://labor.state.ak.us/lss/home.htm

and

***Jennifer Mannix, Contract Administrator***
City and Borough of Juneau
155 S. Seward Street
Juneau, AK 99801
(907) 586-0873
jennifer_mannix@ci.juneau.ak.us

**END OF SECTION**

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

REPLY TO
ATTENTION OF:

MAR 3 0 2012

Regulatory Division
POA-2011-924

Carl Uchytil
Port Director
City and Borough of Juneau
155 South Seward Street
Juneau, Alaska 99801

Dear Mr. Uchytil:

Enclosed is the signed Department of the Army permit, file number POA-2011-924, Gastineau Channel, which authorizes the installation of structures and discharge of fill material into waters and navigable waters of the United States associated with the expansion of the Smokeries dock and improvements to Juneau's Downtown Cruise Ship Docks. The project site is located within Section 23, T. 41 S., R. 67 E., Copper Meridian; USGS Quad Map Juneau B-2; Latitude 58.296° N., Longitude 134.402° W.; Alaska Tidelands Survey 3; at the Smokeries dock, the Alaska Steamship Wharf, and the Cruise Ship Terminal, in Juneau, 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.

Please contact me via email at Randal.P.Vigil@usace.army.mil, by mail at the address above, or by phone at (907) 790-4491, if you have questions.

Sincerely,

Randal P. Vigil
Project Manager

Enclosure

# DEPARTMENT OF THE ARMY PERMIT

**Permittee: City and Borough of Juneau**

**Permit No.: POA-2011-924 (Gastineau Channel)**

**Issuing Office: U.S. Army Engineer District, Alaska**

**NOTE**: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

**Project Description**:

1. Discharge 270 cubic yards of fill material into 0.049 acres below the high tide line (approximate elevation +20.8 feet above the 0.0 foot contour) (HTL) to construct a retaining wall. 2. Construct below the Mean High Water mark (approximate elevation +15.4 feet above the 0.0 foot contour) two offshore cruise ship berths, including the removal of the existing South Ferry Dock, transfer bridge, and associated dolphins and catwalks.

All work will be performed in accordance with the attached plan, sheets 1-14, dated August 2011.

**Project Location**: Section 23, T. 41 S., R. 67 E., Copper Meridian; USGS Quad Map Juneau B-2; Latitude 58.296° N., Longitude 134.402° W.; Alaska Tidelands Survey 3; at the Smokeries dock, the Alaska Steamship Wharf and the Cruise Ship Terminal, in Juneau, Alaska.

**Permit Conditions**:

**General Conditions**:

1. The time limit for completing the work authorized ends on **March 31, 2017**.

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 conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. 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 obtain the signature of the new owner in the space provided and forward a copy of the permit to this office 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. For your convenience, a copy of the certification is attached if it contains such conditions.

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.

**Special Conditions**:

1. All piles shall be driven using a vibratory hammer. If conditions require the use of an impact hammer, the piles shall be driven as deep as possible with a vibratory hammer prior to the use of the impact hammer to verify pile load capacity. A pile cushion shall be used between the impact hammer and the piling to attenuate sound.

2. Prior to beginning and during pile driving activities, an on-site representative of the applicant shall scan the project area for the presence of marine mammals. No pile driving shall occur if marine mammals are observed within 200 meters of the sound source, and pile driving shall cease until the marine mammals leave the area.

3. Creosote-treated wood pilings and deck comprising the existing dock shall not be reused in fresh waters. The reuse of previously creosote-treated wood products in marine waters shall be consistent with its original use and shall not be treated with any additional wood preservative.

4. A petroleum spill response kit shall be available on-site during and after the authorized work has ended, and shall be used to contain and clean up any petroleum products spilled as a result of construction, maintenance, and operation of the authorized structure.

5. All fill material for the authorized work shall be clean, free from toxic pollutants in toxic amounts. Material used for construction or discharge shall not consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.).

6. All fill material for the authorized work below the HTL in Gastineau Channel shall be discharged at low tidal stages to reduce turbidity. Low tidal stages are defined as the six hour period beginning three hours before low tide and ending three hours past low tide.

7. All concrete structures shall be pre-cast, or if poured into forms, shall be completed during low tidal stages while the site is de-watered in order that no liquid concrete can or will come in contact with the waters of the United States until the concrete is set.

8. Excess fill material shall not be disposed within wetlands or other waters of the United States.

9. Effective erosion control measures shall be installed and maintained before, during, and after construction to prevent erosion and the introduction of sediments and/or contaminants into adjacent waters of the United States, including wetlands. These structures shall remain in place until all fills (including side slopes) or other disturbed areas subject to potential erosion have been permanently stabilized.

10. The permittee shall ensure that all synthetic erosion control features (e.g., silt fencing, netting, mats), which are intended for temporary use during construction, are completely removed and properly disposed of after their initial purpose has been served. Only natural fiber materials, which will degrade after time, may be used as permanent measures, or if used temporarily, may be abandoned in place.

11. Project boundaries shall be clearly identified in the field (e.g., staking, flagging, silt fencing, etc.) prior to site clearing and construction to ensure avoidance of impacts to waters of the United States, including wetlands, beyond the authorized project footprint.

12. This permit does not authorize any impacts to waters of the United States, temporary or otherwise, other than that described in the work description and on the attached drawings. If it is determined necessary by the permittee or any contractor that additional impacts to waters may be necessary to accomplish the activity, either within the project site, or for any activities related to the construction of the

residential complex, then the permittee shall apply to the Corps of Engineers for any necessary authorization.

13. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the United States.

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

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

**Further Information**:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization 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.

3. 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.

4. 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.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a revaluation 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 4 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 33 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.

6. 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.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Carl Uchytil
Port Director
City and Borough of Juneau

3/30/12
DATE

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

FOR
Colonel Reinhard W. Koenig
Randal P. Vigil
South Branch, Regulatory Division

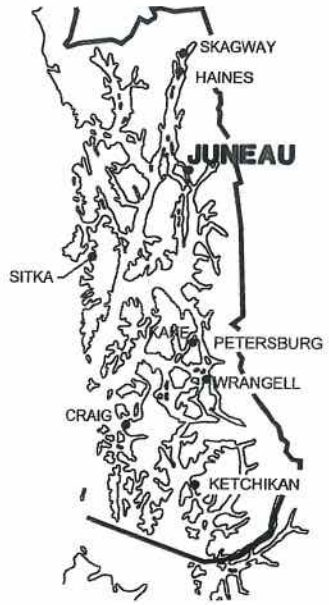
March 30, 2012
DATE

When the structures or work authorized by this permit are still in existence at the time the property is transferred the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions have the transferee sign and date below.

(TRANSFEREE)

(DATE)


**LOCATION MAP**




**SOUTHEAST ALASKA**


**VICINITY MAP**

SCALE IN MILES

0 ½ 1

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**VICINITY MAP**
**LOCATION MAP**

APPLICANT ADDRESS:
CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

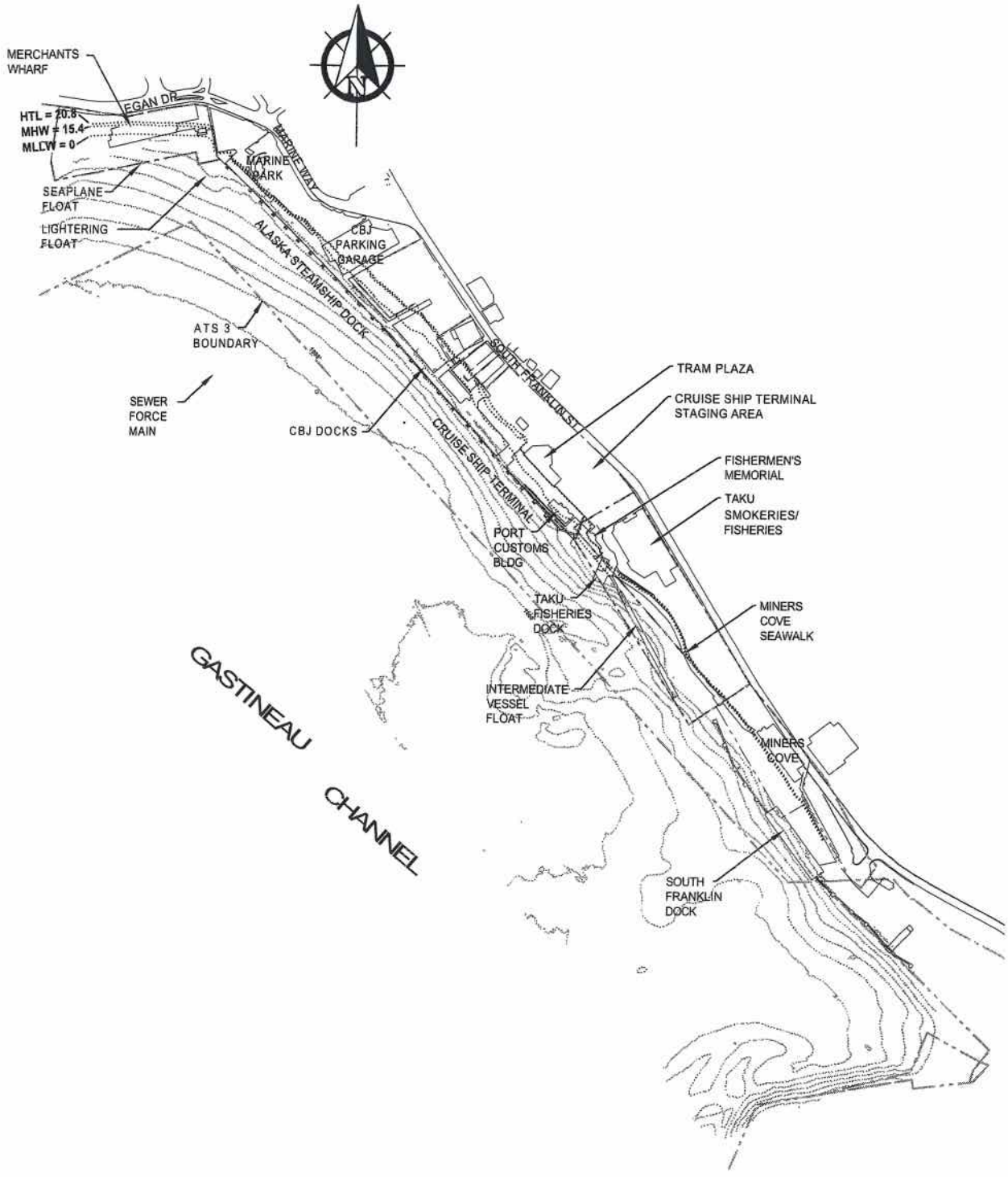
PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**EXISTING CONDITIONS**
**SITE PLAN**

SCALE IN FEET

0 500 1000

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

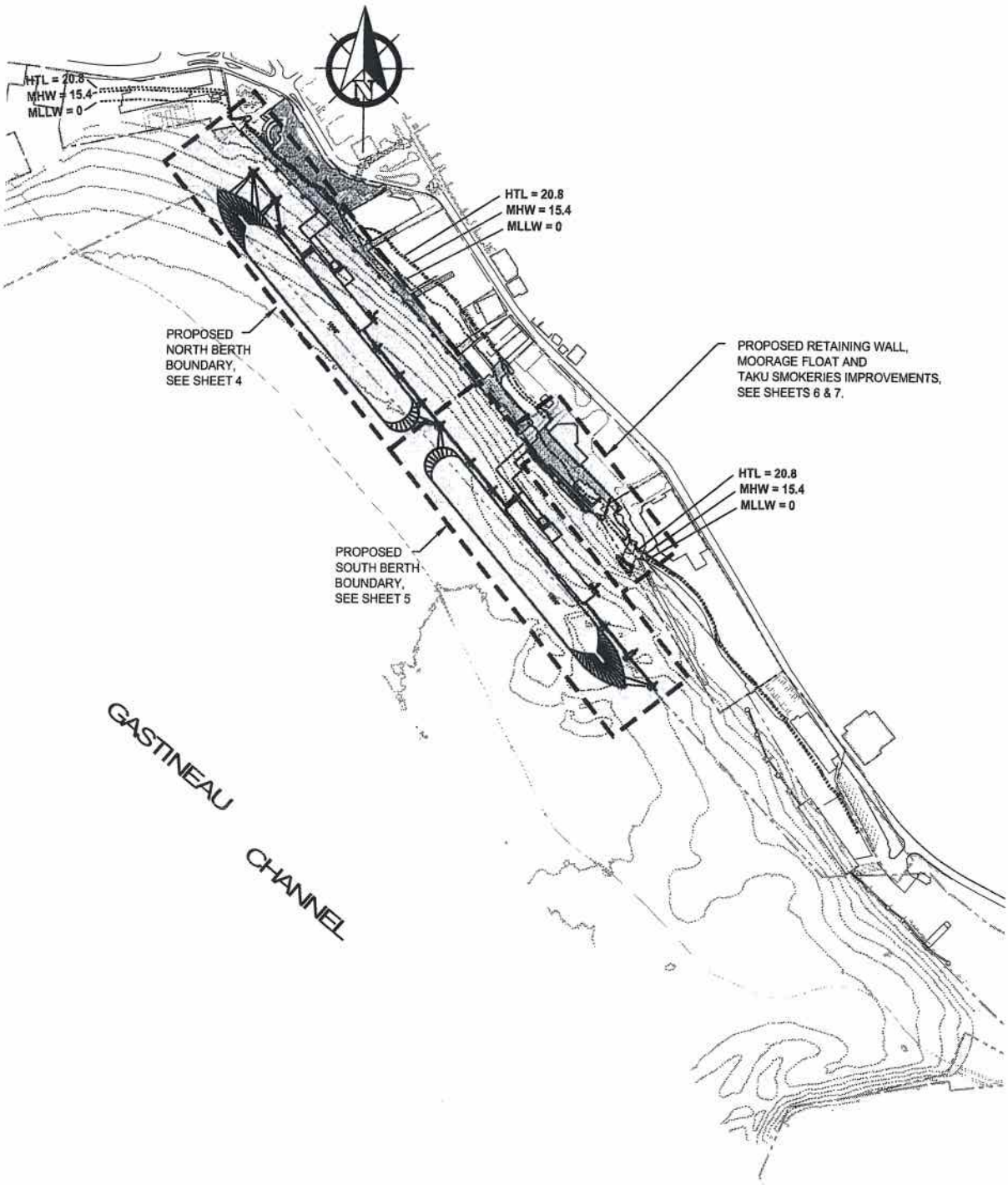
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**PROPOSED**
**SITE PLAN**

SCALE IN FEET

0 500 1000

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

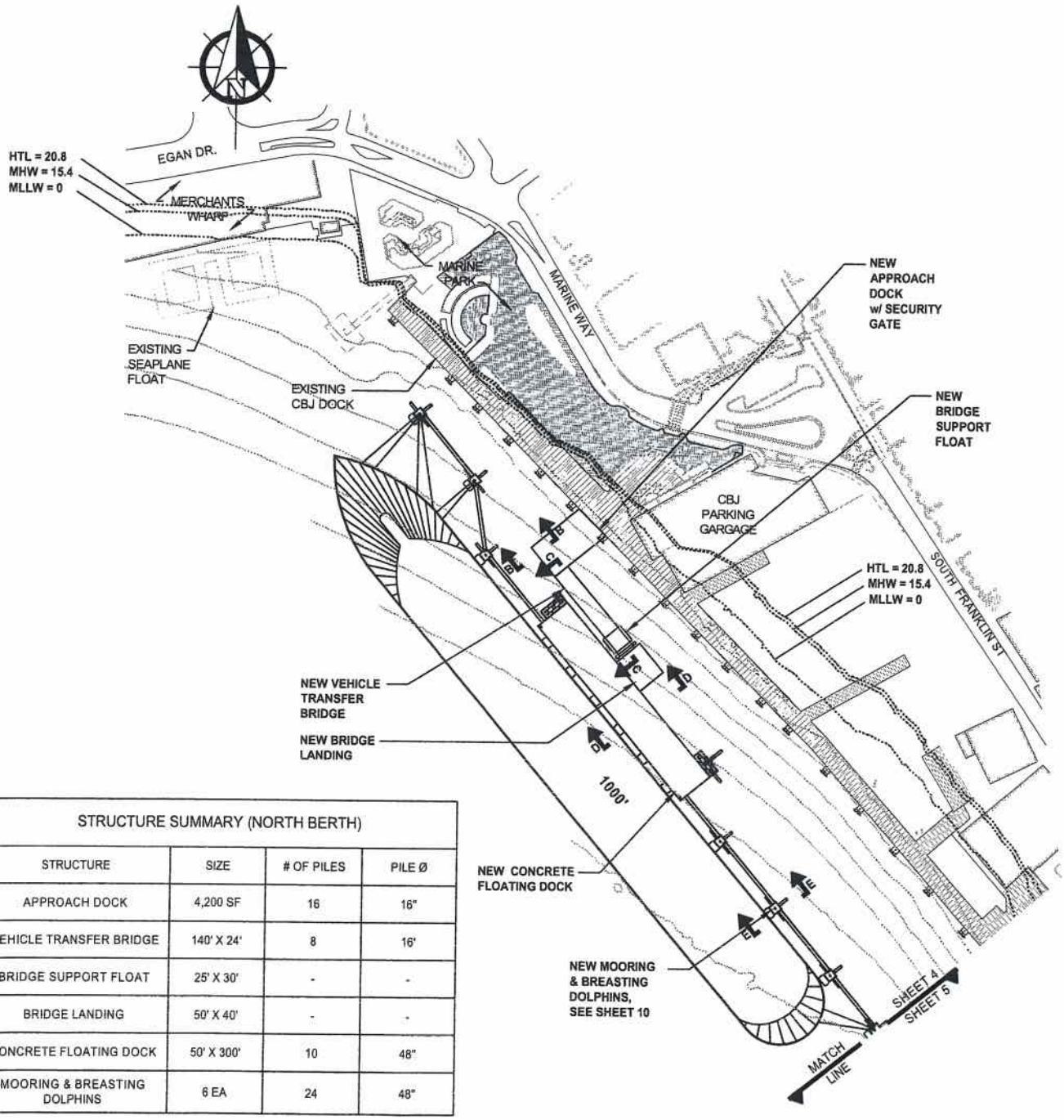
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




| STRUCTURE SUMMARY (NORTH BERTH) | | | |
|---|---|---|---|
| STRUCTURE | SIZE | # OF PILES | PILE Ø |
| APPROACH DOCK | 4,200 SF | 16 | 16" |
| VEHICLE TRANSFER BRIDGE | 140' X 24' | 8 | 16' |
| BRIDGE SUPPORT FLOAT | 25' X 30' | - | - |
| BRIDGE LANDING | 50' X 40' | - | - |
| CONCRETE FLOATING DOCK | 50' X 300' | 10 | 48" |
| MOORING & BREASTING DOLPHINS | 6 EA | 24 | 48" |

## PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## NORTH BERTH
## PROPOSED SITE PLAN

SCALE IN FEET

0 200 400

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

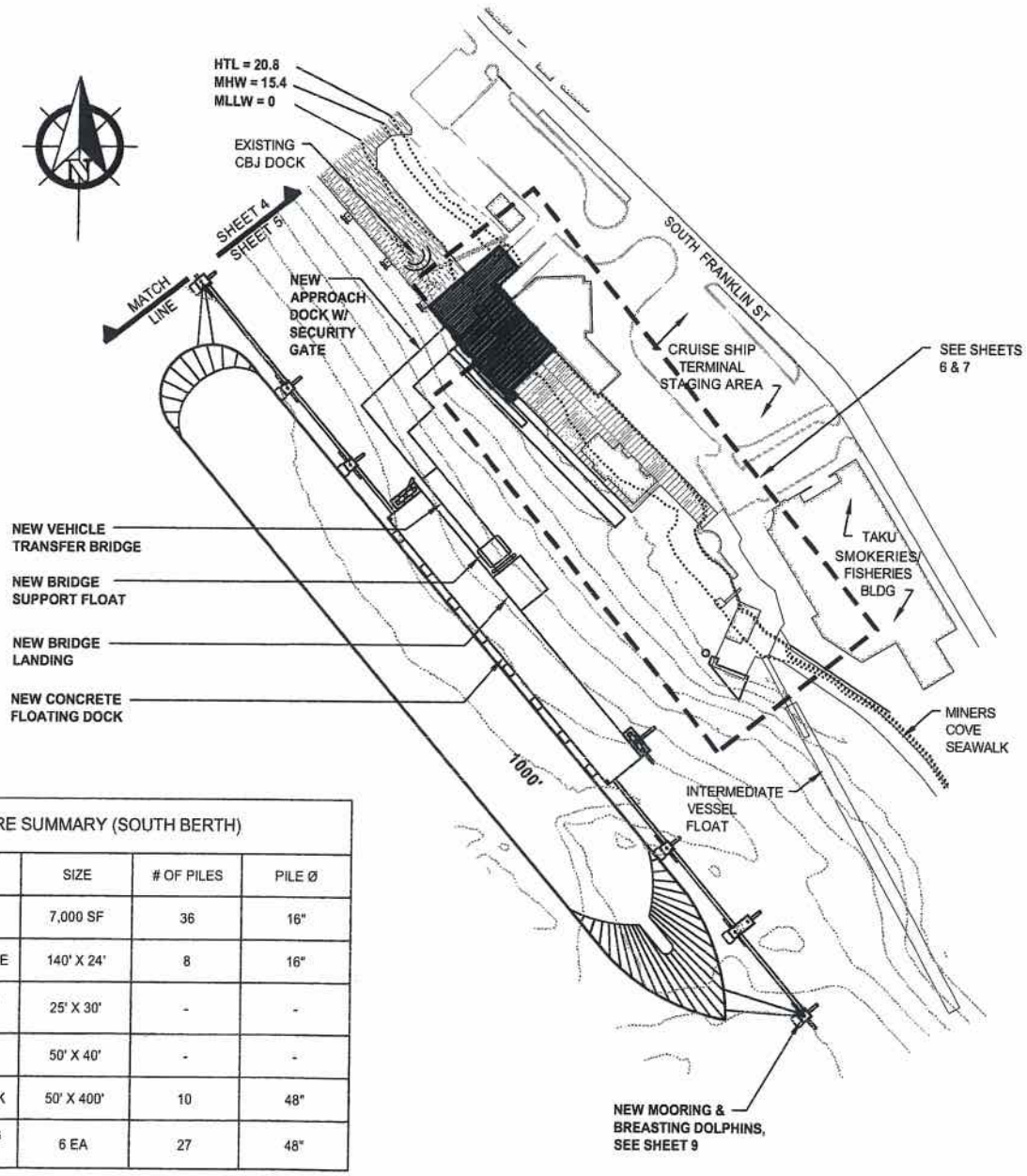
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




| STRUCTURE SUMMARY (SOUTH BERTH) | | | |
|---|---|---|---|
| STRUCTURE | SIZE | # OF PILES | PILE Ø |
| APPROACH DOCK | 7,000 SF | 36 | 16" |
| VEHICLE TRANSFER BRIDGE | 140' X 24' | 8 | 16" |
| BRIDGE SUPPORT FLOAT | 25' X 30' | - | - |
| BRIDGE LANDING | 50' X 40' | - | - |
| CONCRETE FLOATING DOCK | 50' X 400' | 10 | 48" |
| MOORING AND BREASTING DOLPHINS | 6 EA | 27 | 48" |

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## SOUTH BERTH
## PROPOSED SITE PLAN

SCALE IN FEET

0 200 400

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

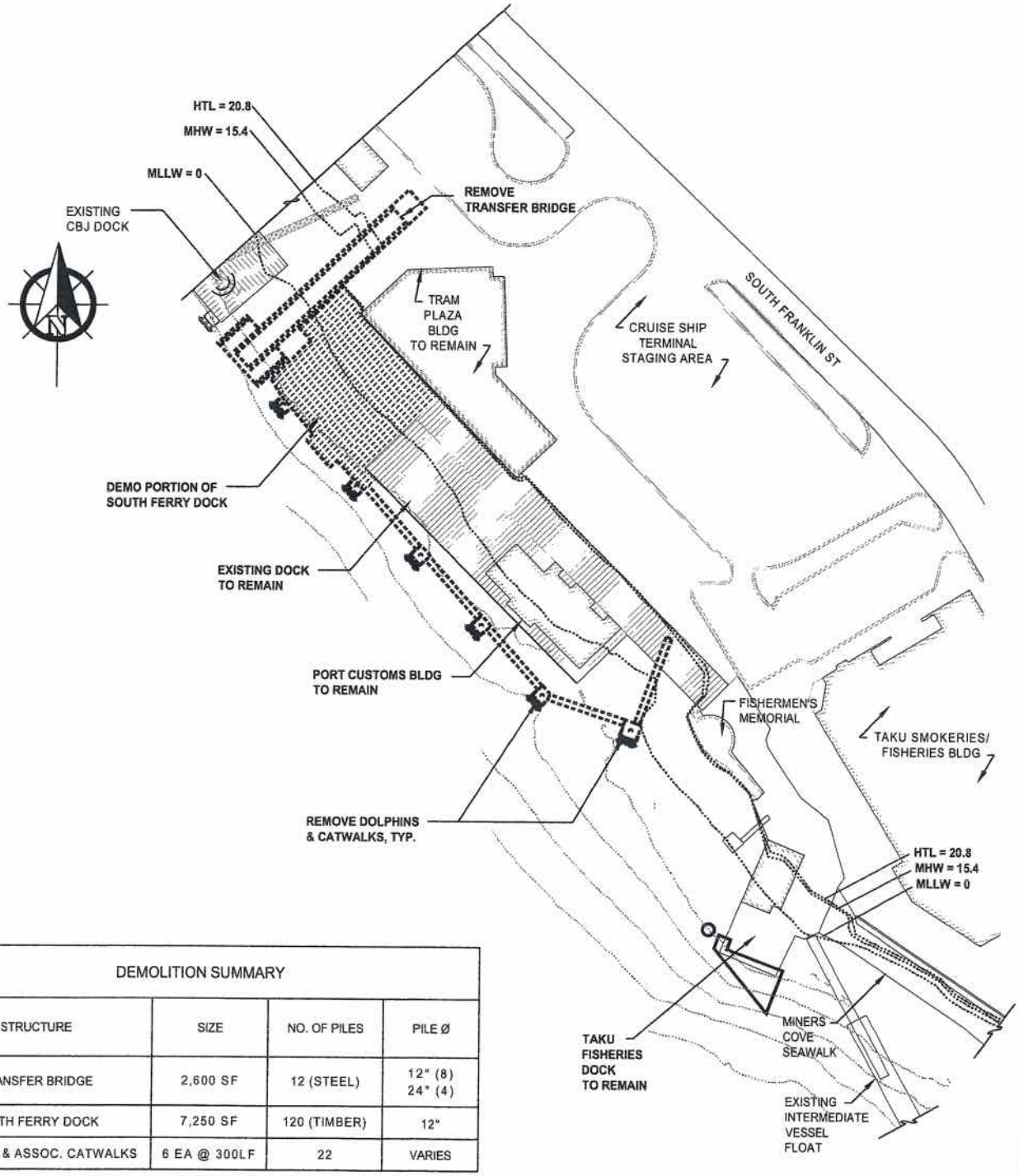
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




| DEMOLITION SUMMARY | | | |
|---|---|---|---|
| STRUCTURE | SIZE | NO. OF PILES | PILE Ø |
| TRANSFER BRIDGE | 2,600 SF | 12 (STEEL) | 12" (8)<br>24" (4) |
| SOUTH FERRY DOCK | 7,250 SF | 120 (TIMBER) | 12" |
| DOLPHINS & ASSOC. CATWALKS | 6 EA @ 300LF | 22 | VARIES |

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## TRANSFER BRIDGE
## PROPOSED DEMOLITION PLAN

SCALE IN FEET

0 100 200

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

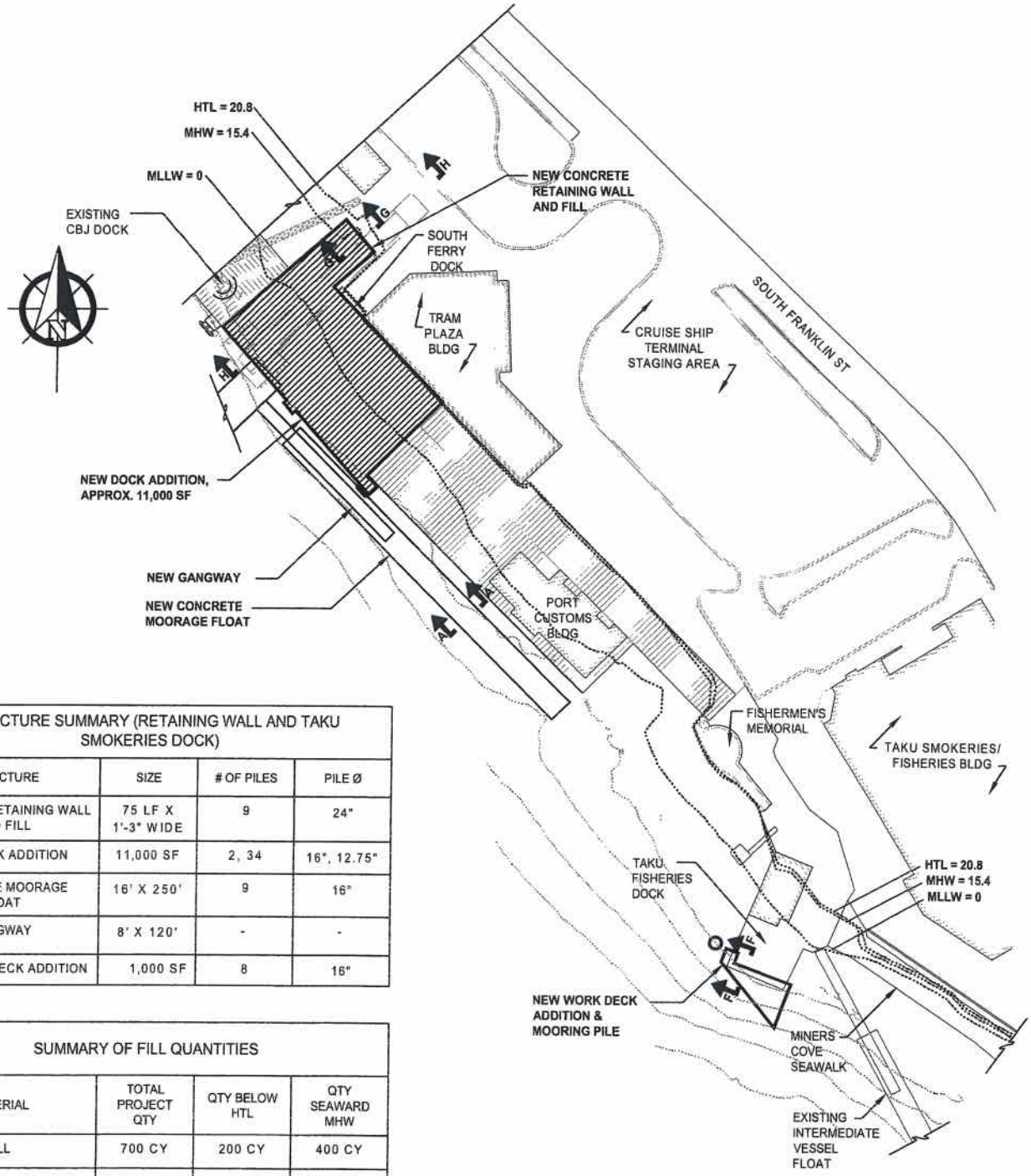
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




| STRUCTURE SUMMARY (RETAINING WALL AND TAKU SMOKERIES DOCK) | | | |
|---|---|---|---|
| STRUCTURE | SIZE | # OF PILES | PILE Ø |
| CONCRETE RETAINING WALL AND FILL | 75 LF X 1'-3" WIDE | 9 | 24" |
| NEW DOCK ADDITION | 11,000 SF | 2, 34 | 16", 12.75" |
| CONCRETE MOORAGE FLOAT | 16' X 250' | 9 | 16" |
| GANGWAY | 8' X 120' | - | - |
| NEW WORK DECK ADDITION | 1,000 SF | 8 | 16" |

| SUMMARY OF FILL QUANTITIES | | | |
|---|---|---|---|
| MATERIAL | TOTAL PROJECT QTY | QTY BELOW HTL | QTY SEAWARD MHW |
| FILL | 700 CY | 200 CY | 400 CY |
| BASE COURSE | 20 CY | 20 CY | 20 CY |
| RIP RAP | 50 CY | 50 CY | 50 CY |
| EXCAVATION | 100 CY | 0 CY | 0 CY |

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## TRANSFER BRIDGE
## PROPOSED SITE PLAN

SCALE IN FEET

0 100 200

APPLICANT ADDRESS:
CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

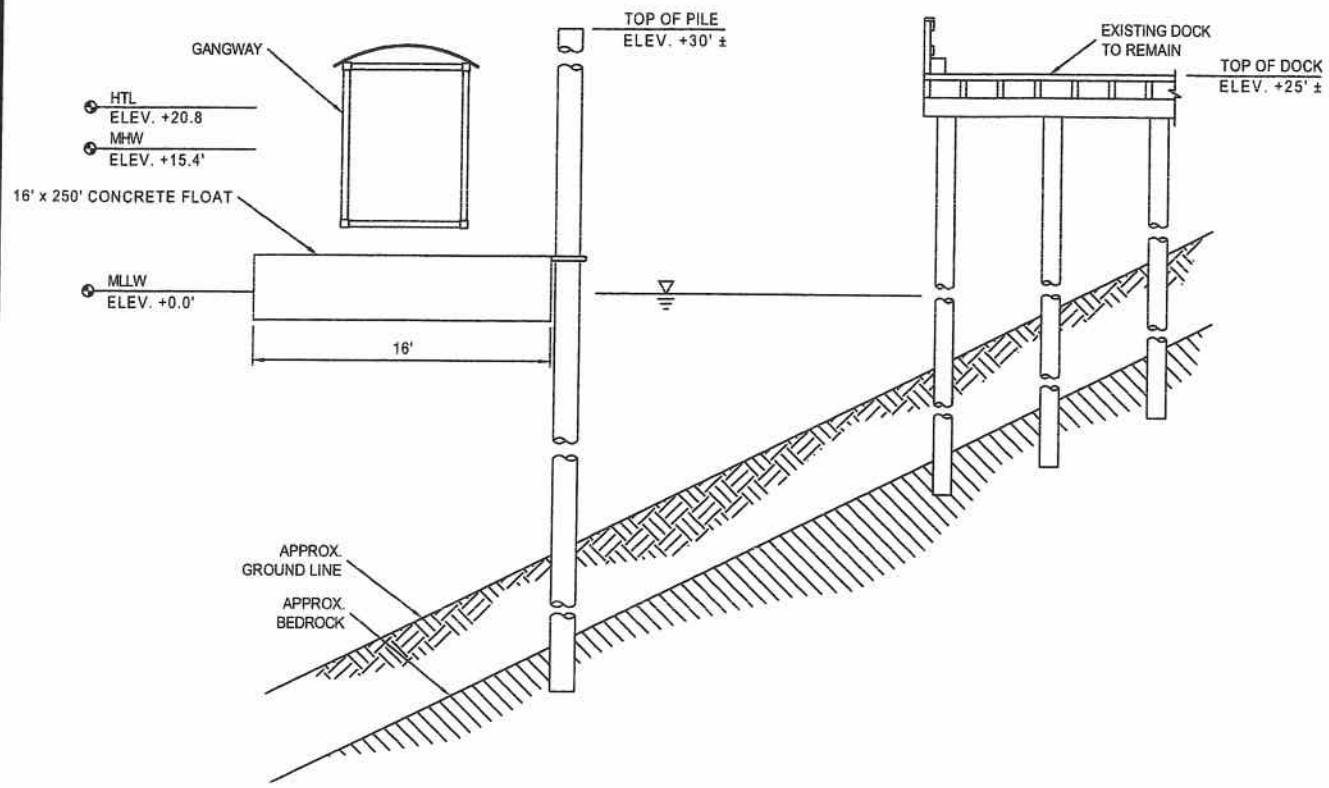
PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




**SECTION A-A**

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**SECTIONS**

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

**CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION**

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
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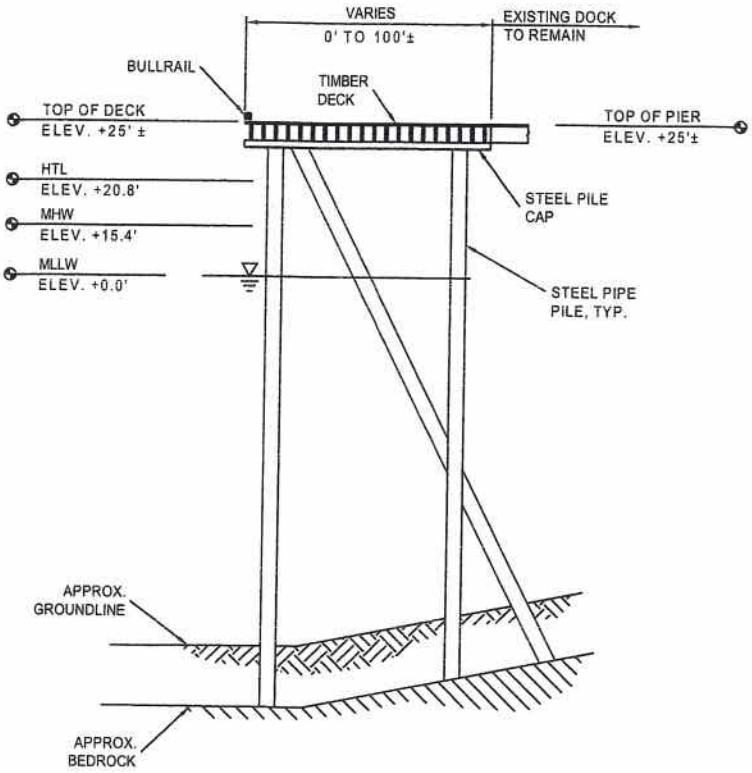
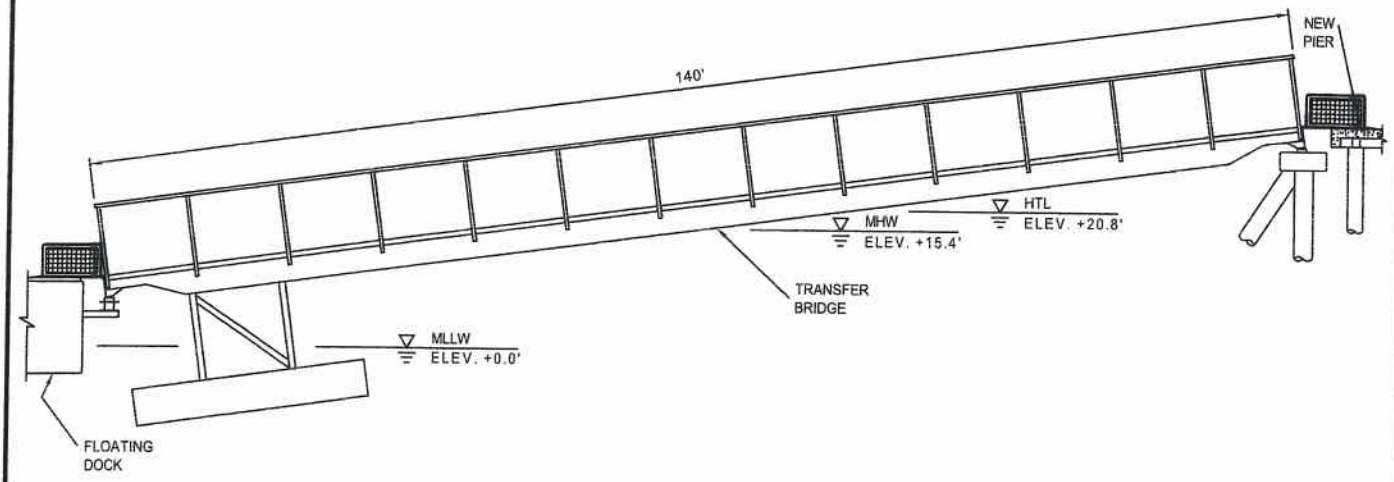
APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




**SECTION B-B**




**SECTION C-C**

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## SECTIONS

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

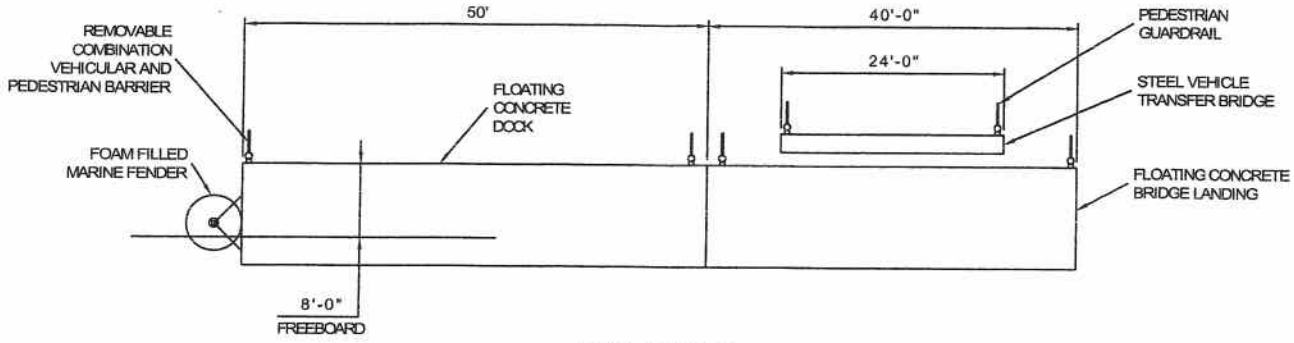
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

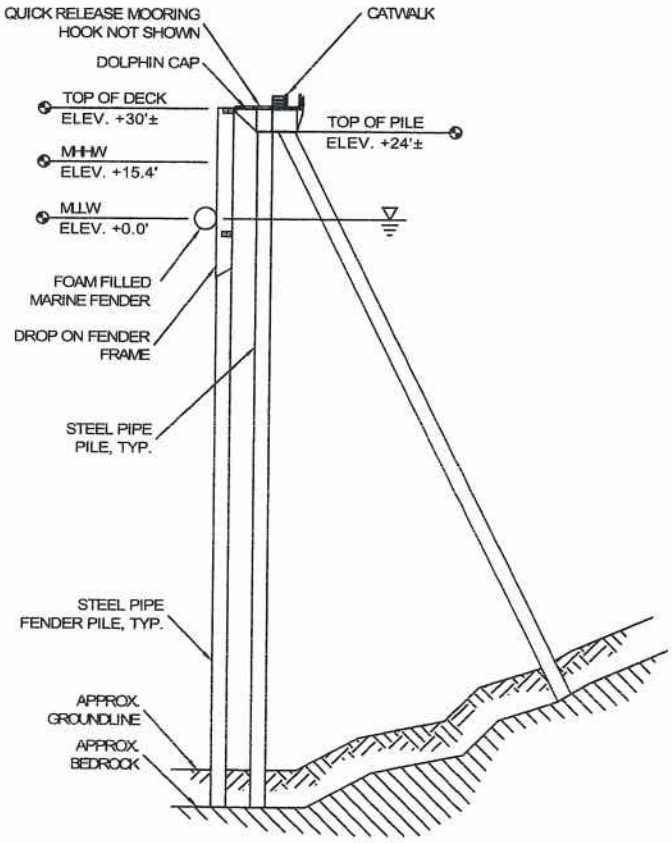
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




## SECTION D-D




## SECTION E-E

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**SECTIONS**

APPLICANT ADDRESS:
CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

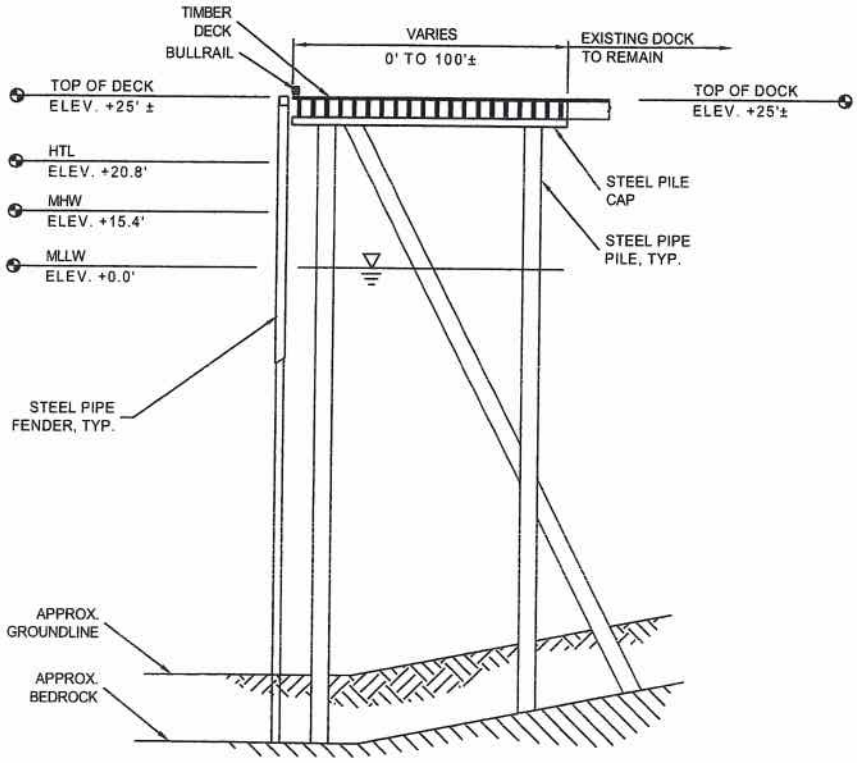
PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




## SECTION F-F

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## SECTIONS

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

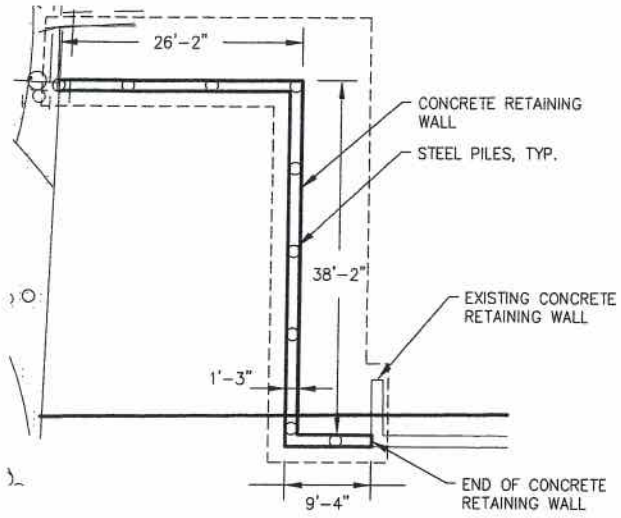
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

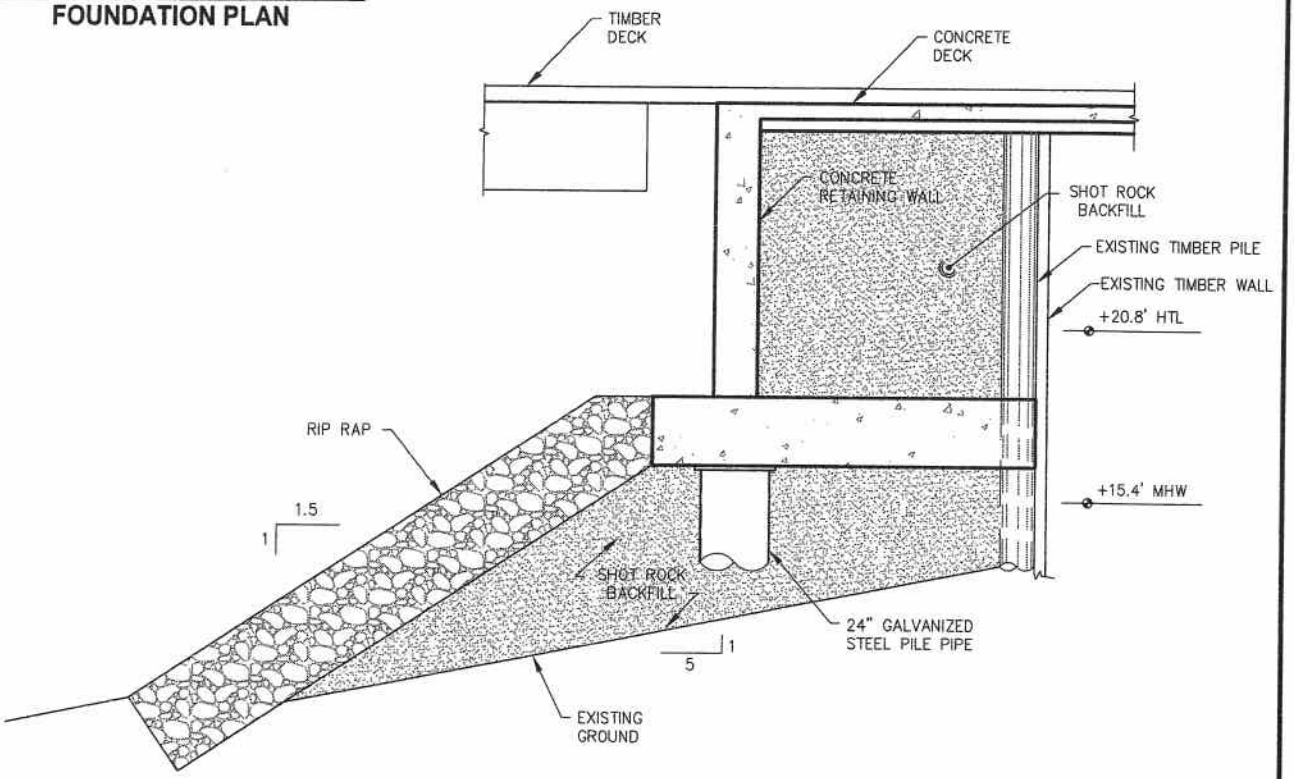
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




**RETAINING WALL FOUNDATION PLAN**




**SECTION G-G**

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**SECTION AT TIMBER WALL**

**NTS**

**APPLICANT ADDRESS:**

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

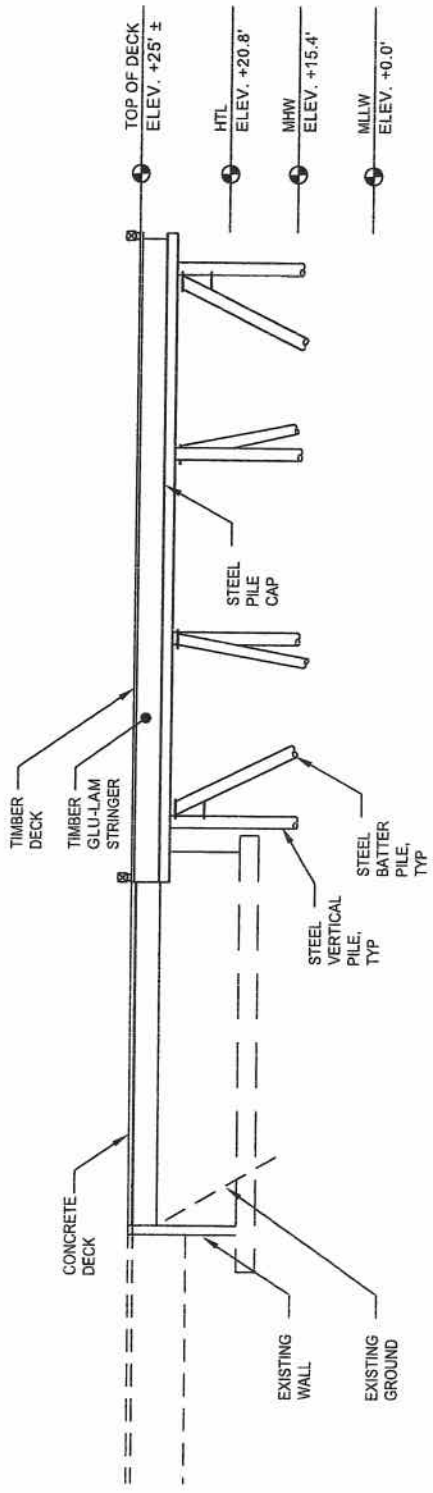
PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




SECTION H-H

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

**PORT CUSTOMS**
**DOCK SECTION**

APPLICANT ADDRESS:

CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

# CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

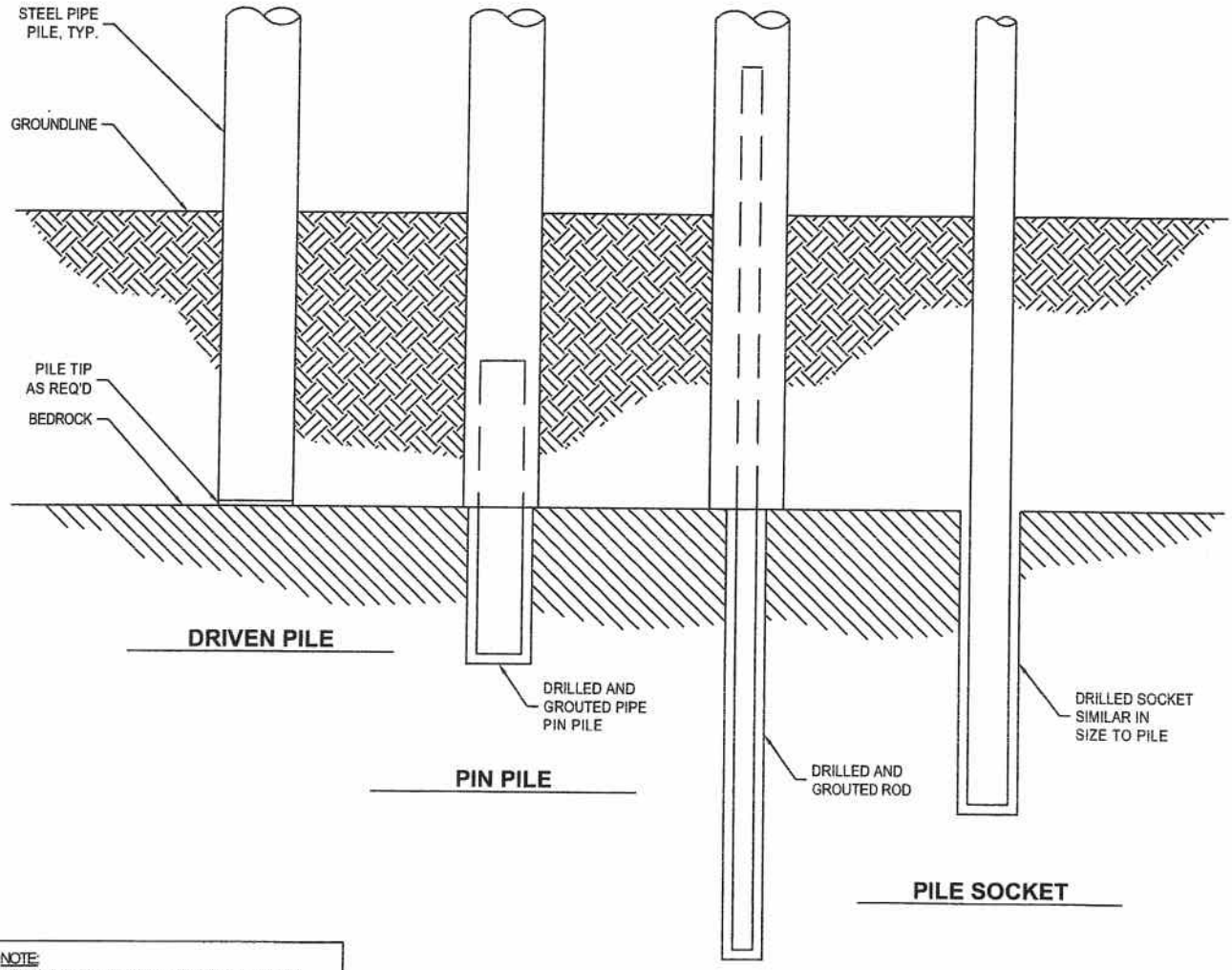
IN: GASTINEAU CHANNEL

NEAR: JUNEAU

AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011




NOTE:
STEEL PIPE PILE TIPS FOR THIS PROJECT WILL BE INSTALLED PER ONE OF THE METHODS DEPICTED ON THIS SHEET. ACTUAL METHOD TO BE DETERMINED AS SUBSURFACE CONDITIONS BECOME KNOWN. ALL PILES DRIVEN TO IMPACT HAMMER REFUSAL

PURPOSE:

TO IMPROVE ACCESS, SECURITY, BERTHING CAPACITY AND SAFETY AT THE CBJ DOWNTOWN CRUISE SHIP DOCKS.

DATUM:
MLLW = 0.0 FT

HTL = 20.8'
MHW = 15.4'
MLLW = 0.0'

## PILE DETAILS

APPLICANT ADDRESS:
CITY AND BOROUGH OF JUNEAU
DOCKS & HARBOR DEPT.
155 S. SEWARD STREET
JUNEAU, AK 99801

PND#: 102050.01

## CBJ DOWNTOWN CRUISE SHIP DOCKS RECONFIGURATION

IN: GASTINEAU CHANNEL
NEAR: JUNEAU
AT: DOWNTOWN CRUISE SHIP DOCKS

APPLICATION BY: CITY AND BOROUGH OF JUNEAU

DATE: AUGUST 2011

## SECTION 00852 – PERMITS

### PART 1 – GENERAL

INDEX OF PERMITS

1. U.S. Army Corps of Engineers, Department of the Army Permit: POA-2011-924 (Gastineau Channel)

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION (Not Used)

**END OF SECTION**

## SECTION 01010 - SUMMARY OF WORK

### PART 1 – GENERAL

1.1 GENERAL

A. 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. WORK consists of all activities necessary to construct the Cruise Ship Terminal Staging Area Improvements Phase 1 as shown in the contract documents. The work includes demolition, excavation, salvage, shot rock borrow, base course, reinforced concrete deck and slabs, curb and gutter, storm drains, water system, concrete retaining wall, timber dock with steel substructure, steel piles and electrical improvements.

1.3 SITE OF THE WORK

A. The site of the WORK is at the South Ferry Dock in downtown Juneau, Alaska, near the Mt. Roberts Tram Facility.

1.4 BEGINNING AND COMPLETION OF THE WORK

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

Field work may not start until September 27, 2012. Work shall be completed according to the following schedule:

| **Work Description** | **Completion Date** |
|---|---|
| Substantial Completion | May 1, 2013 |
| All WORK under the Contract Documents | May 15, 2013 |

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. On site staging areas shall be limited to one parking lot immediately shoreward of the Visitor Center and covered canopy as shown on the Plans.

1.8 OWNER USE OF THE PROJECT SITE

A. The OWNER may utilize all or part of the existing site during the entire period of construction for the conduct of the OWNER's normal operations. The CONTRACTOR shall cooperate and coordinate with the ENGINEER to facilitate the OWNER's operations and to minimize interference with the CONTRACTOR's operations at the same time. In any event, the OWNER shall be allowed access to the Project site during the period of construction.

1.9 PROJECT MEETINGS

A. Pre-Construction Conference

1. Prior to the commencement of WORK at the site, a Pre-Construction Conference will be held at a mutually agreed time and place which shall be attended by the CONTRACTOR's Project manager, its superintendent, and its Subcontractors as the CONTRACTOR deems appropriate. Other attendants will be:

   a. ENGINEER and the Inspector.
   b. Representatives of OWNER.
   c. Governmental representatives as appropriate.
   d. Others as requested by CONTRACTOR, OWNER, or ENGINEER.

2. Unless previously submitted to the ENGINEER, the CONTRACTOR shall bring one copy each of the following:

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

3. The purpose of the Pre-Construction Conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the CONTRACTOR prior to the meeting date.

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

   a. Status of CONTRACTOR's insurance and bonds.
   b. CONTRACTOR's tentative schedules.
   c. Transmittal, review, and distribution of CONTRACTOR's Submittals.
   d. Processing applications for payment.

e. Maintaining record documents.
f. Critical Work sequencing.
g. Field decisions and Change Orders.

h. Use of Project site, office and storage areas, security, housekeeping, and OWNER's needs.
i. Major equipment deliveries and priorities.
j. CONTRACTOR's assignments for safety and first aid.

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

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

B. Progress Meetings

1 The CONTRACTOR shall schedule and hold regular on-site progress meetings at least weekly and at other times as requested by the ENGINEER, or as required by progress of the WORK. The CONTRACTOR, ENGINEER, and all Subcontractors active on the site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its Suppliers, Manufacturers, and other Subcontractors.

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

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

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

**Indicated** - is a word used to direct the CONTRACTOR to information contained on the drawings or in the Specifications. Terms such as "shown," "noted," "scheduled," and "specified" also may be used to assist in locating information but no limitation of location is implied or intended.

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

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

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

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01045 - CUTTING AND PATCHING

### PART 1 - GENERAL

1.1 DEFINITION

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

1.2 REQUIREMENTS OF STRUCTURAL WORK

A. Structural WORK shall not be cut and patched in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

B. Prior to cutting and patching the following categories of WORK, the CONTRACTOR shall obtain the ENGINEER's approval to proceed with:

1. Structural steel
2. Miscellaneous structural metals, including equipment supports, stair systems and similar categories of work
3. Structural concrete
4. Foundation construction including piles
5. Timber and primary wood framing and bullrails
6. Bearing and retaining walls
7. Structural decking
8. Pressurized piping, vessels and equipment
9. Asphalt pavement, concrete or asphalt curb/gutter, and concrete sidewalk
10. Concrete or timber floats

1.3 OPERATIONAL AND SAFETY LIMITATIONS

A. The CONTRACTOR shall not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.

B. Prior to cutting and patching the following categories of WORK, the CONTRACTOR shall obtain the ENGINEER's approval to proceed with:

1. Sheeting, shoring and cross bracing
2. Operating systems and equipment
3. Water, moisture, vapor, air, smoke barriers, membranes and flashing
4. Noise and vibration control elements and systems
5. Control, communication, conveying and electrical wiring systems

1.4 VISUAL REQUIREMENTS

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

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

1.5 APPROVALS

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

**PART 2 - PRODUCTS**

2.1 MATERIALS USED IN CUTTING AND PATCHING

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

B. Materials shall comply with the requirements of the Technical Specifications wherever applicable.

**PART 3 - EXECUTION**

3.1 PREPARATION

A The CONTRACTOR shall provide adequate temporary support for WORK to be cut to prevent failure.

B. The CONTRACTOR shall provide adequate protection of other WORK during cutting and patching.

3.2 INSTALLATION

A. The CONTRACTOR shall employ skilled tradespeople to perform cutting and patching. Except as otherwise indicated, the CONTRACTOR shall proceed with cutting and patching at the earliest feasible time and perform the WORK promptly.

B. The CONTRACTOR shall use methods least likely to damage WORK to be retained and WORK adjoining.

1. In general, where physical cutting action is required, the CONTRACTOR shall cut WORK with sawing and grinding tools, not with hammering and chopping tools. Openings through concrete work shall be core-drilled and all final edges shall be ground smooth to prevent wear.

2. Comply with the requirements of Technical Specifications wherever applicable.
3. Comply with the requirements of applicable sections of Division 2 where cutting and patching requires excavation and backfill.

C. The CONTRACTOR shall patch with seams which are as invisible as possible and comply with specified tolerances for the WORK.

D. The CONTRACTOR shall restore exposed seams of patched area; and, where necessary, extend finish restoration onto retained WORK adjoining, in a manner which will eliminate evidence of patching.

**END OF SECTION**

## SECTION 01070 - ACRONYMS OF INSTITUTIONS

### PART 1 - GENERAL

1.1 GENERAL

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

1.2 ACRONYMS

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

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

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

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01090 - REFERENCE STANDARDS

## PART 1 - GENERAL

1.1 GENERAL

A. Titles of Sections and Paragraphs: Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.

B. Applicable Publications: Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for Bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable Laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.

C. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of the Specifications, all WORK specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents.

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

C. Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for Bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.

D. In case of conflict between codes, reference standards, Drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought

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

E. The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.

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

G. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

H. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01300 – CONTRACTOR SUBMITTALS

### PART 1 - GENERAL

1.1 GENERAL

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

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

1. A preliminary schedule of Shop Drawing, Sample and proposed Substitutes or "Or-Equal" Submittals.
2. A list of all PERMITS and licenses the CONTRACTOR shall obtain indicating the agency required to grant the permit and the expected date of submittal for the permit and the required date for receipt of the permit.
3. A complete progress schedule for all phases of the project.
4. All required Material Safety Data Sheets.
5. A staging and traffic maintenance plan, as required.
6. A plan for temporary erosion control and pollution control, as required.
7. A letter designating the CONTRACTOR's Superintendent, defining that person's responsibility and authority, and providing a specimen of his signature.
8. A letter designating the CONTRACTOR's safety representative and the EEO Officer and the person's responsibility and authority.

1.2 SHOP DRAWING SUBMITTAL

A. Wherever called for in the Contract Documents, or where required by the ENGINEER, the CONTRACTOR shall furnish to the ENGINEER, for review, 8 copies of each Shop Drawing Submittal. The term " Shop Drawings" as used herein shall be understood to include detail design calculations, Shop Drawings, fabrication and installation Drawings, erection Drawings, lists, graphs, operating instructions, catalog sheets, data sheets, and similar items.

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

C. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the ENGINEER.

D. Except as otherwise provided herein, the ENGINEER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within 30 calendar days

following their receipt by the ENGINEER. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the ENGINEER by the second submission of a submittal item. The OWNER reserves the right to withhold monies due to the CONTRACTOR to cover additional costs of the ENGINEER review beyond the second submittal. The ENGINEER's maximum review period for each submittal including all re-submittals will be 30 days per submission. In other words, for a submittal that requires two re-submittals before it is complete, the maximum review period for that submittal could be 90 days.

E. If 3 copies of a submittal are returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision and resubmission of said submittal will not be required.

F. If 3 copies of a submittal are returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal revision and resubmission of said submittal is not required.

G. If one copy of the submittal is returned to the CONTRACTOR marked "AMEND-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.

H. If one copy of the submittal is returned to the CONTRACTOR marked "REJECTED-RESUBMIT," the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the ENGINEER.

I. Fabrication of an item may be commenced only after the ENGINEER has reviewed the pertinent submittal and returned copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on submittal shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for changes to the Contract requirements. Only a Change Order can alter the contract price, time, or requirements.

J. All CONTRACTOR shop drawing Submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR, prior to submission to the ENGINEER. Each submittal shall be dated, signed, and certified by the CONTRACTOR, as being correct and in strict conformance with the Contract Documents. In the case of Shop Drawings, each sheet shall be so dated, signed, and certified. No consideration for review by the ENGINEER of any CONTRACTOR submittal will be made for any items which have not been so certified by the CONTRACTOR. All non-certified Submittals will be returned to the CONTRACTOR without action taken by the ENGINEER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

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

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

1.3 SAMPLES SUBMITTAL

A. Whenever in the Specifications samples are required, the CONTRACTOR shall submit not less than 3 samples of each item or material to the ENGINEER for acceptance at no additional cost to the OWNER.

B. Samples, as required herein, shall be submitted for acceptance a minimum of 21 days prior to ordering such material for delivery to the job site, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the WORK.

C. All samples shall be individually and indelibly labeled or tagged, indicating thereon all specified physical characteristics and Supplier's names for identification and submitted to the ENGINEER for acceptance. Upon receiving acceptance of the ENGINEER, one set of the samples will be stamped and dated by the ENGINEER and returned to the CONTRACTOR, and one set of samples will be retained by the ENGINEER, and one set of samples shall remain at the job site until completion of the WORK.

D. Unless clearly stated otherwise, it is assumed that all colors and textures of specified items presented in sample submittal are from the manufacturer's standard colors and standard materials, products, or equipment lines. If the samples represent non-standard colors, materials, products or equipment lines, and their selection will require an increase in contract time or price, the CONTRACTOR will clearly indicate this on the transmittal page of the submittal.

1.4 TECHNICAL MANUAL SUBMITTAL

A. Using the outline provided in the Equipment Maintenance Summary Sheet (copy of which may be obtained from the ENGINEER), the CONTRACTOR shall include in the technical manuals for each item of mechanical, electrical, and instrumentation equipment, the following:

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

9. Tabulation of proper settings for all pressure relief valves, (low/high) pressure switches and other related equipment protection devices.
10. Detailed test procedures to determine performance efficiency of equipment.
11. List of all electrical relay settings including alarm and contact settings.

B. The CONTRACTOR shall furnish to the ENGINEER 5 identical sets of technical manuals. Each set shall consist of one or more volumes, each of which shall be bound in a standard size, 3-ring, loose-leaf vinyl plastic hard cover binder suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches. A table of contents shall be provided which indicates all equipment in the technical manuals.

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

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

1.5 SPARE PARTS LIST SUBMITTAL

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

1.6 RECORD DRAWINGS SUBMITTALS

A. The CONTRACTOR shall keep and maintain, at the job site, one record set of Drawings. On these, it shall mark all Project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the contract Drawings. Said record Drawings shall be supplemented by any detailed sketches as necessary or directed to indicate, fully, the WORK as actually constructed. These master record Drawings, of the CONTRACTOR’s representation of as-built conditions, including all revisions made necessary by addenda, Change Orders, and the like shall be maintained up-to-date during the progress of the WORK.

B. In the case of those Drawings which depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record Drawings shall be updated by indicating those portions which are superseded by Change Order Drawings or final Shop Drawings, and by including appropriate reference information describing the Change Orders by number and the Shop Drawings by manufacturer, drawing, and revision numbers.

C. Record Drawings shall be accessible to the ENGINEER at all times during the construction period and shall be delivered to the ENGINEER on the 20th working day of every third month after the month in which the Notice to Proceed is given as well as upon completion of the WORK.

D. Final payment will not be acted upon until the CONTRACTOR-prepared record Drawings have been delivered to the ENGINEER.

1.7 PROGRESS SCHEDULES

A. The progress schedule shall be in Bar Chart or Critical Path Method (CPM) form, as required by the ENGINEER.

B. The progress schedule shall show the order in which the CONTRACTOR proposes to carry out the WORK and the contemplated date on which the CONTRACTOR and their Subcontractors will start and finish each of the salient features of the work, including any scheduled periods of shutdown. The schedule shall also indicate any anticipated periods of multiple-shift work.

C. Upon substantial changes to the CONTRACTOR's progress schedule of WORK or upon request of the ENGINEER, the CONTRACTOR shall submit a revised progress schedule(s) in the form required. Such revised schedule(s) shall conform with the Contract Time and take into account delays which may have been encountered in the performance of the WORK. In submitting a revised schedule, the CONTRACTOR shall state specifically the reason for the revision and the adjustments made in his schedule or methods of operation to ensure the completion of all the WORK within the Contract Time.

1.8 PROPOSED SUBSTITUTES OR "OR-EQUAL" ITEM SUBMITTAL

A. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function, and quality required. If the name is followed by the words "or-equal" indicating that a substitution is permitted, materials or equipment of other Suppliers may be accepted by the ENGINEER if sufficient information is submitted by the CONTRACTOR to allow the ENGINEER to determine that the material or equipment proposed is equivalent or equal to that named, subject to the following requirements:

1. The burden of proof as to the type, function, and quality of any such substitute material or equipment shall be upon the CONTRACTOR.

2. The ENGINEER will be the sole judge as to the type, function, and quality of any such substitute material or equipment and the ENGINEER's decision shall be final.
3. The ENGINEER may require the CONTRACTOR, to furnish at the CONTRACTOR's expense, additional data about the proposed substitute.
4. The OWNER may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.
5. Acceptance by the ENGINEER of a substitute item proposed by the CONTRACTOR shall not relieve the CONTRACTOR of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item.
6. The CONTRACTOR shall be responsible for resultant changes and all additional costs which the accepted substitution requires in the CONTRACTOR's WORK, the WORK of its Subcontractors and of other contractors, and shall effect such changes without cost to the OWNER. This shall include the cost for redesign and claims of other contractors affected by the resulting change.

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

1. If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the ENGINEER on the "Substitution Request Form" for acceptance thereof.
2. Unless otherwise provided by law or authorized in writing by the ENGINEER, the "Substitution Request Form(s)" shall be submitted within the 21-day period after Notice of Award.
3. Wherever a proposed substitute material or equipment has not been submitted within said 21-day period, or wherever the submission of a proposed substitute material or equipment has been judged to be unacceptable by the ENGINEER, the CONTRACTOR shall provide material or equipment named in the Contract Documents.
4. The CONTRACTOR shall certify that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified, and be suited to the same use as that specified.
5. The ENGINEER will be allowed a reasonable time within which to evaluate each proposed substitute. In no case will this reasonable time period be less than 30 days.
6. As applicable, no shop drawing Submittals will be made for a substitute item nor will any substitute item be ordered, installed, or utilized without the ENGINEER's prior written acceptance of the CONTRACTOR's "Substitution Request Form" which will be evidenced by a Change Order.
7. The ENGINEER will record the time required by the ENGINEER in evaluating substitutions proposed by the CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute, the CONTRACTOR shall reimburse the OWNER for the charges of the ENGINEER for evaluating each proposed substitute.

C. The CONTRACTOR's application using the "Substitution Request Forms" shall contain the following statements and/or information which shall be considered by the ENGINEER in evaluating the proposed substitution:

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

1.9 MATERIAL CERTIFICATON SUBMITTAL

A. The ENGINEER may permit the use, prior to sampling, inspection and testing, of certain materials or assemblies when accompanied by manufacturer's material certifications stating that such materials or assemblies fully comply with the requirements of the Contract. The certification shall be signed by the manufacturer, and will specifically reference the material's compliance with the AASHTO, ASTM and/or CBJ Standards specified in the applicable Contract Documents.

B. Material Certifications shall be submitted to the ENGINEER prior to incorporating the item into the WORK.

C. Materials or assemblies used on the basis of material certifications may be sampled, inspected and/or tested at any time, and if found not in conformity with these Specifications, will be subject to rejection whether in place or not.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**(SUBSTITUTION REQUEST FORM – next page)**

**CBJ Engineering Department**
**SUBSTITUTION REQUEST FORM**

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

SPECIFIED ITEM:

| _____ | _____ | _____ | _____ |
|---|---|---|---|
| Section | Page | Paragraph | Description |

The undersigned requests consideration of the following:

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

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

1. The proposed substitution does not affect dimensions shown on Drawings and will not require a change in any of the Contract Documents.

2. The undersigned will pay for changes to the design, including engineering design, detailing, and construction costs caused by the requested substitution which is estimated to be $_____.

3. The proposed substitution will have no adverse affect on other contractors, the construction schedule (specifically the date of substantial completion), or specified warranty requirements.

4. Maintenance and service parts will be locally available for the proposed substitution.

5. The incorporation or use of the substitute in connection with the WORK is not subject to payment of any license fee or royalty.

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

Submitted by CONTRACTOR: _____
Signature _____
Firm: _____
By: _____
Title: _____
Date: _____
Attachments: _____

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

**END OF SECTION**

# SECTION 01400 - QUALITY CONTROL

## PART 1 - GENERAL

### 1.1 DEFINITION

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

### 1.2 INSPECTION AT PLACE OF MANUFACTURE

A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the ENGINEER at the place of manufacture.

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

### 1.3 SAMPLING AND TESTING

A. Unless otherwise indicated, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, ATM, and AASHTO as applicable to the class and nature of the article or materials considered; however, the OWNER reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the ENGINEER will insure the OWNER that the quality of the workmanship is in full accord with the Contract Documents.

B. Any waiver by the OWNER of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, shall not be construed as a waiver of any requirements of the Contract Documents.

C. Notwithstanding the existence of such waiver, the ENGINEER reserves the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, shall be reasonable cause for the ENGINEER to require the removal or correction and reconstruction of any such work in accordance with the General Conditions.

### 1.4 INSPECTION AND TESTING LABORATORY SERVICE

A. Inspection and testing laboratory service shall comply with the following:

1. OWNER will appoint, employ, and pay for services of an independent firm to perform inspection and testing or will perform inspection and testing itself unless specific quality control testing is required by the CONTRACTOR under these specifications.

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

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

3.1 INSTALLATION

A. Inspection: The CONTRACTOR shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation, and reject damaged and defective items.

B. Measurements: The CONTRACTOR shall verify measurements and dimensions of the WORK, as an integral step of starting each installation.

C. Manufacturer's Instructions: Where installations include manufactured products, the CONTRACTOR shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

**END OF SECTION**

# SECTION 01505 - MOBILIZATION

## PART 1 - GENERAL

1.1 GENERAL

A. Mobilization shall include the obtaining of all PERMITS; moving onto the site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the WORK. Mobilization shall include the following principal items:

1. Moving on to the site of all CONTRACTOR's plant and equipment required for operations.
2. Providing all on-site communication facilities, including radios and cellular phones.
3. Obtaining all required PERMITS.
4. Having all OSHA required notices and establishment of safety programs.
5. Having the CONTRACTOR's superintendent at the job site full time.
6. Submitting initial submittals.
7. Installation of CBJ Project sign in accordance with CBJ Standard Detail 127A. Sign graphics will be provided by the OWNER. All other materials and installation shall be provided by the CONTRACTOR.

1.2 PAYMENT FOR MOBILIZATION

A. The CONTRACTOR's attention is directed to the condition that no payment for Mobilization, or any part thereof will be approved for payment under the contract until all Mobilization items listed above have been completed as specified.

B. As soon as practicable after receipt of the Notice to Proceed, the CONTRACTOR shall submit a breakdown to the ENGINEER for approval, which shall show the estimated value of each major component of Mobilization. When approved by the ENGINEER, the breakdown will be the basis for initial progress payments in which Mobilization is included.

## PART 2 – PRODUCTS (Not Used)

## PART 3 – EXECUTION (Not Used)

**END OF SECTION**

# SECTION 01520 - SECURITY

## PART 1 - GENERAL

1.1 SECURITY PROGRAM

A. The CONTRACTOR shall:

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

1.2 ENTRY CONTROL

A. The CONTRACTOR shall:

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

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

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION (Not Used)

**END OF SECTION**

## SECTION 01530 - PROTECTION AND RESTORATION OF EXISTING FACILITIES

## PART 1 - GENERAL

1.1 GENERAL

A. The CONTRACTOR shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.

B. All utility locates shall be the responsibility of the CONTRACTOR. CALL DIAL BEFORE YOU DIG AT 586-1333 for locates of all underground utilities within the WORK limits prior to any WORK.

C. The CONTRACTOR shall verify the exact locations and depths of all utilities and the CONTRACTOR shall make exploratory excavations of all utilities that may interfere with the WORK. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR's WORK. Any utility or service in conflict with the WORK will be reburied by the CONTRACTOR prior beginning the WORK to avoid damage.

D. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility.

1.2 RIGHTS-OF-WAY

A. The CONTRACTOR shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, cable television, telegraph, or electric transmission line; any fence; or any other structure, nor shall the CONTRACTOR enter upon the rights-of-way involved until notified by the ENGINEER that the OWNER has secured authority therefore from the proper party. After authority has been obtained, the CONTRACTOR shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support or otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the OWNER shall determine the sequence and order of the WORK. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the OWNER to the CONTRACTOR so desiring, to the extent, amount, in the manner, and at the times permitted.

B. No such decision as to the method or time of conducting the WORK or the use of territory shall be made the basis of any claim for delay or damage, except as provided for temporary suspension of the WORK in Article 15 of the General Conditions of the contract.

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

A. The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. All survey monuments, markers or points disturbed by the CONTRACTOR shall be accurately re-established, at the CONTRACTOR's expense unless provided for

elsewhere in the contract, after all street or roadway resurfacing has been completed. Re-establishment of all survey monuments shall be by a Registered Alaskan Land Surveyor.

1.4 RESTORATION OF PAVEMENT

A. General: All paved areas, including asphalt concrete berms, cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement OWNER. All pavements which are subject to partial removal shall be neatly saw cut in straight lines.

B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

D. Restoration of Sidewalks or Private Driveways: Wherever sidewalks or private roads have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions before proceeding with the final restoration or, if no such period of times is so fixed, the CONTRACTOR shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.5 EXISTING UTILITIES AND IMPROVEMENTS

A. General: The CONTRACTOR shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the CONTRACTOR's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The CONTRACTOR shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

B. Utilities to be Moved: In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the CONTRACTOR, be notified by the OWNER to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the ENGINEER a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

C. Where the proper completion of the WORK requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the CONTRACTOR shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the ENGINEER and the OWNER of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

D. OWNER's Right of Access: The right is reserved to the OWNER and to the OWNERS of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the WORK of this contract.

E. Underground Utilities Indicated: Existing utility lines that are indicated or the locations of which are made known to the CONTRACTOR prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the CONTRACTOR.

F. Underground Utilities Not Indicated: In the event that the CONTRACTOR damages any existing utility lines that are not indicated or the locations of which are not made known to the CONTRACTOR prior to excavation, a written report thereof shall be made immediately to the ENGINEER. If directed by the ENGINEER, repairs shall be made by the CONTRACTOR under the provisions for changes and extra WORK contained in Articles 10, 11, and 12 of the General Conditions.

G. All costs of locating, repairing damage not due to failure of the CONTRACTOR to exercise reasonable care, and removing or relocating such utility facilities not shown in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the WORK which was interrupted or idled by removal or relocation of such utility facilities, and which was necessarily idled during such WORK will be paid for as extra WORK in accordance with the provisions of Articles 10, 11, and 12 of the General Conditions.

H. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement OWNER before being concealed by backfill or other WORK.

I. Maintaining in Service: All oil and gasoline pipelines, power, and telephone, cable television or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the WORK shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the ENGINEER are made with the OWNER of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The CONTRACTOR shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

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

A. General: The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way

and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or OWNER. All existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the CONTRACTOR or a certified tree company under permit from the jurisdictional agency and/or the OWNER. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

B. Trimming: Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over 1-1/2 inches in diameter shall be coated with an asphaltic emulsion material.

C. Replacement: The CONTRACTOR shall immediately notify the jurisdictional agency and/or the OWNER if any tree is damaged by the CONTRACTOR's operations. If, in the opinion of said agency or the OWNER, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, the CONTRACTOR shall pay to the OWNER of said tree a compensatory payment acceptable to the tree OWNER, subject to the approval of the jurisdictional agency or OWNER.

1.7 PROTECTION OF EXISTING STRUCTURES

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

B. The CONTRACTOR shall notify all affected businesses and other residents in advance of any operations that will cause vibrations that may damage belongings within the buildings. All property damage caused by the CONTRACTOR’s operations shall be repaired or replaced at CONTRACTOR’s expense.

**PART 2 PRODUCTS – (Not Used)**

**PART 3 EXECUTION - (Not Used)**

**END OF SECTION**

## SECTION 01550 - SITE ACCESS AND STORAGE

### PART 1 - GENERAL

1.1 HIGHWAY LIMITATIONS. The CONTRACTOR shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the WORK. It shall be the CONTRACTOR's responsibility to construct and maintain any haul roads required for its construction operations.

1.2 TEMPORARY CROSSINGS

A. General: Continuous, unobstructed, safe, and adequate pedestrian and vehicular access shall be provided to fire hydrants, commercial and industrial establishments, private residences, churches, schools, parking lots, service stations, motels, fire and police stations, and hospitals. Safe and adequate public transportation stops and pedestrian crossings at intervals not exceeding 200 feet shall be provided. The CONTRACTOR shall cooperate with parties involved in the delivery of mail and removal of trash and garbage so as to maintain existing schedules for such services. Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time, as approved by the ENGINEER.

B. Temporary Bridges: Wherever necessary, the CONTRACTOR shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the CONTRACTOR shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the ENGINEER prior to excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation. Temporary bridges or steel plates for street and highway crossing shall conform to the requirements of the authority having jurisdiction in each case, and the CONTRACTOR shall adopt designs furnished by said authority for such bridges or steel plates, or shall submit designs to said authority for approval, as may be required.

1.3 MAINTENANCE OF TRAFFIC

A. General: Unless otherwise provided, the roadway undergoing improvements shall be kept open to all traffic by the CONTRACTOR. Nothing herein shall be construed to entitle the CONTRACTOR to the exclusive use of any public street, alleyway, or parking area during the performance of the WORK hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the authorized work of utility companies or other agencies in such streets, alleyways, or parking areas. The CONTRACTOR shall provide unimpeded access through the Project limits for emergency vehicles and make every effort to provide minimum delay to United States Postal Service vehicles and garbage collection vehicles.

B. South Franklin Street is used by the public. Traffic control devices, warning signs and public notification are required to avoid all risks to the public that uses the roadway. Provide the ENGINEER with CONTRACTOR’s traffic control plan meeting DOT&PF approval. The CONTRACTOR shall not impede the Mount Roberts Tram Facility Staff access to their facilities at any time.

C. The CONTRACTOR shall submit three (3) copies of a traffic control plan to the ENGINEER for approval a minimum of two (2) weeks prior to construction. The ENGINEER reserves the right to observe these traffic control Plans in use and to make any changes as field conditions warrant. Any changes shall supersede these Plans and be done solely at the CONTRACTOR's expense.

D. No street shall be closed to the public without first obtaining permission of the ENGINEER and proper governmental authority. Where so provided on the Plans or otherwise approved by the ENGINEER, the CONTRACTOR may by-pass traffic over a detour route. When no longer required, the detour shall be removed and the approached obliterated.

E. Where excavation is being performed in primary streets or highways, one lane in each direction shall be kept open to traffic at all times unless otherwise indicated. Toe boards shall be provided to retain excavated material if required by the ENGINEER or the agency having jurisdiction over the street or highway. Fire hydrants on or adjacent to the WORK shall be kept accessible to fire-fighting equipment at all times. Temporary provisions shall be made by the CONTRACTOR to assure the use of sidewalks and the proper functioning of all gutters, storm drain inlets, and other drainage facilities.

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

G. When the CONTRACTOR is required to maintain traffic through grading, roadway excavation and embankment areas, the construction shall be conducted in such a manner as to provide a reasonably smooth and even surface satisfactory for use by public traffic at all times. The surface of the roadbed shall be properly crowned for drainage. In advance of other grading operations, sufficient fill shall be placed at culverts and bridges to permit traffic to cross unimpeded. Part width construction techniques shall be employed when the traffic is routed through roadway cuts or over embankments under construction. The material shall be excavated or placed in layers and the construction activities shall be alternated from one side to the other, with traffic routed over the side opposite the one under construction.

H. During the removal and laying of culvert pipe, a maximum time of one hour of road closure may be permitted, providing the removal and laying of the culvert pipe cannot be completed for one-half width of the roadway and provided that a detour cannot be constructed around the culvert being laid. Closure shall be scheduled so as not to delay buses and peak hour traffic. The CONTRACTOR shall post, at the site of the closure within view of the waiting public traffic, the time the closure started and the time the road will again be open to traffic. The CONTRACTOR shall notify the Fire and Police Departments of such closures prior to commencement of WORK.

I. At intervals of 48 hours and 24 hours prior to start up of construction operations, and at weekly intervals during the construction period, the CONTRACTOR shall advertise in the JUNEAU EMPIRE and have broadcast on all local radio stations the precise location, time of commencement, and proposed completion date of the WORK scheduled for the following week which will require detouring or otherwise effect public traffic. Detours shall be described in sufficient detail to efficiently inform the traveling public of the modified traffic pattern. The cost of these advertisements shall be considered incidental to other contract Bid items. The CONTRACTOR will notify the property owners 24 hours prior to commencement of WORK.

J. When, in the opinion of the ENGINEER, conditions are such that the safety and/or convenience of the traveling public is adversely affected, the CONTRACTOR will be immediately notified in writing. The notice will state the defect(s) and the corrective action(s) required. In the event that the CONTRACTOR neglects to take immediate corrective action, the ENGINEER may suspend all WORK on the project until satisfactory corrective action is performed. In the event the CONTRACTOR does not

take corrective action within 24 hours, the ENGINEER may order such WORK as deemed necessary for public convince and safety accomplished by outside forces. The cost of this WORK shall be deducted from any monies due or that may become due under the terms or the Contract.

K. The CONTRACTOR shall bear all expense of maintaining the traffic over the section of road undergoing improvement, including dust control and snow plowing, and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary, without direct compensation, except as provided below:

1. Special Detours. When the proposal contains a Bid item for detours, the payment for such item shall cover all cost of constructing and maintaining such detour or detours, including the construction of any and all temporary bridges and accessory features and the removal of the same, and obliteration of the detour road. Right-of-way for temporary highways or bridges will be furnished by the OWNER.
2. Maintenance of Traffic during Suspension of WORK. The CONTRACTOR shall make passable and shall open to traffic such portions of the Project and temporary roadways as may be agreed upon between the CONTRACTOR and the ENGINEER for the temporary accommodation of necessary traffic during the anticipated period of suspension. If the suspension is seasonal (winter shutdown), thereafter, and until an issuance of an order for the resumption of construction operations, the maintenance of the temporary route of line of travel agreed upon will be the responsibility of the OWNER. Prior to the OWNER accepting the Project for winter shutdown, the CONTRACTOR shall do all WORK necessary to provide a roadway surface and subgrade that will not require the OWNER to perform additional maintenance WORK during the shutdown period, except for purpose of snow removal. If the WORK is suspended due to unfavorable weather, failure of the CONTRACTOR to correct conditions unsafe for the workers or the general public, failure to carry out provisions of the contract, or for failure to carry out orders of the ENGINEER, all costs for maintenance of traffic during the suspended period shall be borne by the CONTRACTOR. When WORK is resumed, the CONTRACTOR shall replace or renew any WORK or materials lost or damaged because of temporary use of the project; shall remove, to the extent directed by the ENGINEER, any WORK or materials used in the temporary maintenance; and shall complete the Project as though its prosecution had been continuous and without interference.

L. Traffic Control: All locations requiring redirection or stopping of the traveling public shall be properly signed and/or flagged by the CONTRACTOR. For the protection of traffic in public or private streets and ways, the CONTRACTOR shall provide, flaggers and provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations," (MUTCD) published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1) with the current State of Alaska supplements.

M. The CONTRACTOR shall take all necessary precautions for the protection of the WORK and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The CONTRACTOR shall station such guards or flaggers and shall conform to such special safety Regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the

requirements of Subpart G, Part 1926, of the OSHA Safety and Health Standards for Construction.

N. Special pedestrian detours are often necessary in areas adjacent to new construction or demolition of existing structures. The ENGINEER shall determine when walkways are required. Plans for walkways must be approved by the ENGINEER.

O. The CONTRACTOR shall remove traffic control devices when no longer needed, repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.

P. Temporary Street Closure: If closure of any street is required during construction, the CONTRACTOR shall apply in writing to the City ENGINEER and any other jurisdictional agency at least 30 days in advance of the required closure and again at 48 hours. A Detour and Traffic Control Plan shall accompany the application.

Q. The CONTRACTOR shall notify the Police and Fire Departments and any other affected agency of all planned street closures. Notification shall consist of giving the time of commencement and proposed date of completion of WORK and names of street, schedule of operations, and routes of detours. Such notification shall be given at least 48 hours before such closure is to take effect.

R. Temporary Driveway Closure: The CONTRACTOR shall maintain access to all residential, commercial and street approaches. Any temporary closures shall require prior approval by the ENGINEER. The CONTRACTOR shall notify the OWNER or occupant (if not owner-occupied) of the closure of the driveways to be closed more than one (1) eight-hour work day at least three (3) working days prior to the closure. The CONTRACTOR shall minimize the inconvenience and minimize the time period that the driveways will be closed. The CONTRACTOR shall fully explain to the owner/occupant how long the WORK will take and when closure is to start.

S. On-Site Cellular Phones: The CONTRACTOR shall maintain one active cellular phone at the project site at all times with the phone number provided to the CBJ Fire, Police and Engineering Departments. The cellular phone shall be carried by the person in charge of the field operations. The CONTRACTOR shall provide and allow the use of the CONTRACTOR's radio frequency to facilitate communication between the CONTRACTOR and the ENGINEER.

1.4 CONTRACTOR'S WORK AND STORAGE AREA

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

B. Should the CONTRACTOR find it necessary to use any additional land for its camp or for other purposes during the construction of the WORK, it shall provide for the use of such lands at its own expense.

C. The CONTRACTOR shall construct and use a separate storage area for hazardous materials used in constructing the WORK.

1. For the purpose of this paragraph, hazardous materials to be stored in the separate area are all products labeled with any of the following terms: **Warning, Caution, Poisonous, Toxic, Flammable, Corrosive, Reactive, or Explosive**. In addition, whether or not so labeled, the following materials shall be stored in the separate area: diesel fuel, gasoline, new and used motor oil, hydraulic fluid,

cement, paints and paint thinners, two-part epoxy coatings, sealants, asphaltic products, glues, solvents, wood preservatives, sand blast materials, and spill absorbent.

2. The CONTRACTOR shall develop and submit to the ENGINEER a plan for storing and disposing of the materials above.
3. The CONTRACTOR shall obtain and submit to the ENGINEER a single EPA number for wastes generated at the site.
4. The separate storage area shall meet all the requirements of all authorities having jurisdiction over the storage of hazardous materials.
5. The separate storage area shall be inspected by the ENGINEER prior to construction of the area, upon completion of construction of the area, and upon cleanup and removal of the area.
6. All hazardous materials which are delivered in containers shall be stored in the original containers until use. Hazardous materials which are delivered in bulk shall be stored in containers which meet the requirements of authorities having jurisdiction.

1.5 PARKING

A. The CONTRACTOR shall direct its employees to park in areas as directed by the ENGINEER and or OWNER.

B. Traffic and parking areas shall be maintained in a sound condition, free of excavated material, construction equipment, mud, and construction materials. The CONTRACTOR shall repair breaks, potholes, low areas which collect standing water, and other deficiencies.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01560 - TEMPORARY ENVIRONMENTAL CONTROLS

### PART 1 - GENERAL

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

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

1.3 SANITATION

A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.

B. Sanitary and Other Organic Wastes: The CONTRACTOR shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the CONTRACTOR or organic material wastes from any other source related to the CONTRACTOR's operations shall be disposed of away from the site in a manner satisfactory to the ENGINEER and in accordance with all laws and regulations pertaining thereto.

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

1.5 CULTURAL RESOURCES

A. The CONTRACTOR's attention is directed to the National Historic Preservation Act of 1966 (16 U.S.C. 470) and 36 CFR 800 which provides for the preservation of potential historical architectural, archaeological, or cultural resources (hereinafter called "cultural resources").

B. The CONTRACTOR shall conform to the applicable requirements of the National Historic Preservation Act of 1966 as it relates to the preservation of cultural resources.

C. In the event potential cultural resources are discovered during subsurface excavations at the site of construction, stop work immediately and notify the ENGINEER.

1.6 EAGLE NESTING TREES

A. Eagle nesting trees are known to exist in the Juneau area. Those known to exist are shown on the Plans. The CONTRACTOR has the responsibility for adherence to the Bald Eagle Protection Act (16 U.S.C. 668-668d) which prohibits molesting or disturbing bald eagles, their nests, eggs, or young.

B. Guidelines for compliance to the Bald Eagle Protection Act are supervised by the U.S. Department of the Interior, Fish and Wildlife Service, Raptor Management Studies, P.O. Box 021287, Juneau, Alaska 99802-1287, phone (907) 586-7243. The contact person is Mike Jacobson, Eagle Management Specialist.

1.7 NOISE ORDINANCE

A. The CONTRACTOR shall comply with the CBJ, Section 42.20.095, Noise Ordinance, paragraph (b) Construction of buildings and projects. This ordinance states that it is unlawful to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or similar heavy construction equipment, before 7:00 a.m. or after 10:00 p.m., Monday through Friday, or before 9:00 a.m. or after 10:00 p.m., Saturday and Sunday, unless a permit shall first be obtained from the City and Borough building official. Such permit shall be issued by the building official only upon a determination that such operation during hours not otherwise permitted under this section is necessary and will not result in unreasonable disturbance to surrounding residents. The CONTRACTOR may obtain the current CBJ Noise Ordinance by calling City Hall at 907 586 0270.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01570 - EROSION CONTROL

### PART 1 - GENERAL

1.1 THE REQUIREMENT

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

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

### PART 2 - PRODUCTS

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

### PART 3 - EXECUTION

3.1 GENERAL

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

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

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

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

**END OF SECTION**

## SECTION 01600 - MATERIALS AND EQUIPMENT

## PART 1 - GENERAL

1.1 GENERAL

A. The word "Products," as used herein, is defined to include purchased items for incorporation into the WORK, regardless of whether specifically purchased for project or taken from CONTRACTOR's stock of previously purchased products. The word "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialties," "systems," "structure," "finishes," "accessories," "furnishings," special construction," and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

B. Neither "Products" nor "Materials" nor "Equipment" includes machinery and equipment used for preparation, fabrication, conveying and erection of the WORK.

1.2 QUALITY ASSURANCE

A. Source Limitations: To the greatest extent possible for each unit of WORK, the CONTRACTOR shall provide products, materials, or equipment of a singular generic kind from a single source.

B. Compatibility of Options: Where more than one choice is available as options for CONTRACTOR's selection of a product, material, or equipment, the CONTRACTOR shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

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

1.4 TRANSPORTATION AND HANDLING

A. Products shall be transported by methods to avoid product damage and shall be delivered in undamaged condition in manufacturer's unopened containers or packaging.

B. The CONTRACTOR shall provide equipment and personnel to handle products, materials, and equipment by methods to prevent soiling and damage.

C. The CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

1.5 STORAGE AND PROTECTION

A. Products shall be stored in accordance with manufacturer's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight climate controlled enclosures and temperature and humidity ranges shall be maintained within tolerances required by manufacturer's written instructions.

B. For exterior storage of fabricated products, they shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering; ventilation shall be provided to avoid condensation.

C. Loose granular materials shall be stored on solid surfaces in a well-drained area and shall be prevented from mixing with foreign matter.

D. Storage shall be arranged in a manner to provide access for maintenance and inspection. The CONTRACTOR shall periodically inspect to assure products are undamaged and are maintained under required conditions.

1.6 MAINTENANCE OF STORAGE

A. Stored products shall be periodically inspected on a scheduled basis. The CONTRACTOR shall maintain a log of inspections and shall make said log available to the ENGINEER on request.

B. The CONTRACTOR shall verify that storage facilities comply with manufacturer's product storage requirements.

C. The CONTRACTOR shall verify that manufacturer-required environmental conditions are maintained continually.

D. The CONTRACTOR shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes does not occur.

E. For mechanical and electrical equipment, the CONTRACTOR shall provide a copy of the manufacturer's service instructions with each item and the exterior of the package shall contain notice that instructions are included.

F. Products shall be serviced on a regularly scheduled basis, and a log of services shall be maintained and submitted as a record document prior to acceptance by the OWNER in accordance with the Contract Documents.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01700 - PROJECT CLOSE-OUT

### PART 1 – GENERAL

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

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

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

1. Written guarantees, where required.
2. Maintenance stock items; spare parts, special tools, where required.
3. Completed record drawings.
4. Certificates of inspection and acceptance by governing agencies having jurisdiction.
5. Releases from all parties who are entitled to claims against the subject Project, property, or improvement pursuant to the provisions of law.
6. Completed Certificate of Compliance and Release for all contractors involved in the WORK. Forms are available from the OWNER. Submit the original signed documents to Carl Uchytil, Port Director.

1.4 MAINTENANCE AND GUARANTEE

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

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

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

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

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## SECTION 01704 - FINAL CLEAN-UP AND SITE RESTORATION

### PART 1 - GENERAL

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

### PART 2 - PRODUCTS

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

### PART 3 - EXECUTION

3.1 CONSTRUCTION

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

B. If the CONTRACTOR has obtained material from the Stabler Point Rock Quarry, the excavated area shall be cleaned up and any stipulations required by the Individual Mining Plan shall be completed. The management fees for materials shall be paid to CBJ prior to the CONTRACTOR requesting and/or receiving Final Payment.

**END OF SECTION**

## SECTION 02060 – DEMOLITION, SALVAGE AND DISPOSAL

### PART 1 - GENERAL

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

1.2 SUBMITTALS.

A. Provide public notification in local newspaper and on local radio to notify public of anticipated interruptions to South Franklin St. Provide copy of all public notices to the ENGINEER for review prior to placing notices.

**PART 2 - PRODUCTS** (Not Used).

### PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Examine conditions on site with ENGINEER prior to commencement of WORK.

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

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

3.2 DEMOLITION, SALVAGE AND DISPOSAL

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

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

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

D. Stockpile salvaged materials at OWNER designated location. Take measures to ensure stockpiled materials are safe and secure.

E. Repair any damaged structures or materials designated to remain.

F. Coordinate removal and salvage of trees, site furnishings and all other materials to be salvaged as shown on the plans, with OWNER or as directed on the Plans.

**END OF SECTION**

## SECTION 02201- CLEARING AND GRUBBING

### PART 1 - GENERAL

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

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

3.1 GENERAL

A. The ENGINEER will establish the limits of the work and will designate all trees, plants, shrubs and other items to remain. The CONTRACTOR shall protect and preserve all items designated to remain.

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

C. No trees, shrubs or other plantings shall be disturbed or otherwise damaged, unless shown on the Plans or directed by the ENGINEER. Trees, shrubs and other plantings which are to be salvaged shall be done so in coordination with the OWNER or as directed by the ENGINEER as shown on the Plans.

D. The Plan drawings do not necessarily show, or otherwise indicate all trees, shrubs, beach logs, pile remnants, shoreline debris or other vegetation. The CONTRACTOR shall clear and grub all trees, shrubs, beach logs, pile remnants, debris and other vegetation to the limits required to construct the project, except where otherwise indicated in the Contract Documents.

**END OF SECTION**

## SECTION 02202- EXCAVATION AND EMBANKMENT

### PART 1 - GENERAL

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

### PART 2 - PRODUCTS

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

2.2 CLASS A SHOT ROCK BORROW. Class A shot rock borrow shall consist of hard angular and blasted quarry rock having a percentage of wear of not more than 50 at 500 revolutions, as determined by ASTM C535. Class A shot rock borrow shall meet the following gradation.

| SIEVE SIZE | % PASSING BY WEIGHT |
|---|---|
| 6-Inch | 100 |
| 4-Inch | 70 – 100 |
| 2-Inch | 40 – 80 |
| No. 4 | 20 – 40 |
| No. 200* | 0 – 4 |
| *Gradation shall be determined on that portion passing the 3-inch screen. | |

2.3 CLASS B SHOT ROCK BORROW. Class B shot rock borrow shall consist of blasted quarry rock. Class B shot rock borrow shall consist of well-graded 24 inch minus pit run shot rock having no more than 6% passing the No. 200 sieve as determined by that portion of a sample passing the 3-inch screen. Material shall not consist of predominantly all one size or an open graded mix but rather a uniform grading of shot rock material smaller than 24 inch in size.

### PART 3 – EXECUTION

3.1 EXCAVATION

A. Clearing and grubbing in excavation areas must be completed prior to beginning excavation operations.

B. V-notch excavation at the toe of riprap may be disposed on-site or at a Contractor provided location off site. On site disposal shall be located within the lower Class A shot rock borrow prism and/or on the original ground within the project foot print. Disposal of excavated material on the original ground shall be spread uniformly in 12 inch maximum lifts prior to the placement of shot rock borrow. All excavated material disposed on site shall be placed at depths at least 6 feet below finish grade and at locations approved in advance by the ENGINEER.

C. Excavations shall be reasonably smooth and uniform to the lines, grades and cross sections shown in the Plans or as directed by the ENGINEER. Excavations shall be conducted to insure that material outside of excavation limits remains undisturbed.

D. Excavations shall be protected from erosion and maintained to drain freely at all times.

E. Where excavation to the limits indicated on the Plans encounters unsuitable underlying material, the ENGINEER may require the CONTRACTOR to remove the unsuitable material and backfill with approved material. The CONTRACTOR shall allow time to take the necessary cross section measurements before backfill is placed.

F. The CONTRACTOR is responsible for securing waste disposal sites if none are indicated on the Plans. The CONTRACTOR shall obtain the written permission of the Landowner for use of all disposal sites, and shall either obtain any required permits or assure that others have obtained them. If requested by the ENGINEER, the CONTRACTOR shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the CONTRACTOR.

H. If the CONTRACTOR fails to comply with the provisions of any city ordinance or permit pertaining to waste disposal or disposal sites; the City shall have the right, after giving 30 days written notice, to bring the disposal sites into compliance and collect the cost of the work from the CONTRACTOR, either directly or by withholding monies otherwise due under the Contract.

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

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

K. When frozen material is excavated and meets all other requirements for embankment material, it shall be allowed to thaw and drain prior to placing in the embankment. This material will be considered useable excavation and no additional payment will be made.

L. The CONTRACTOR shall provide added care including bracing and shoring as required when excavating adjacent to existing retaining walls, fences and buildings. Damage caused to existing walls, fences and buildings by the CONTRACTOR shall be repaired at the CONTRACTOR's expense.

3.2 EMBANKMENT

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

B. The underlying ground shall be properly prepared and graded prior to placing embankment material. Clearing and grubbing in embankment areas must be completed prior to embankment operations. Debris shall be removed and surface depressions or holes shall be filled with suitable material to a level uniform surface and compacted before the embankment is constructed.

C. When embankment is to be placed on hillsides steeper than a 4:1 slope, new embankment is to be placed alongside existing embankments, or embankments are to be built half width at a time; the foundation shall first be prepared by constructing benches of

sufficient width to accommodate placing and compacting equipment. Each bench shall begin at the intersection of the original ground and the vertical side of the previous cut. Material so excavated and suitable for embankment construction shall be incorporated into the new embankment. Benching is incidental to other items in the contract and no direct payment will be made therefore.

D. Wherever an existing compacted roadway surface containing granular material lies within three feet of the new embankment surface, such existing roadway shall be scarified to a depth of six inches and incorporated into the first layer of embankment.

E. Embankments over swampy ground may be constructed by end dumping an initial lift of sufficient depth to support hauling and spreading equipment.

F. Embankments shall meet the requirements as defined in Part 3.1 Excavation.

G. The finish subgrade surface shall not vary more than 0.1-foot when tested using a 10-foot straightedge, nor more than 0.1-foot from established grade. Additionally, the algebraic average of all deviations from established finished subgrade elevations taken at 100-foot intervals shall be less than 0.05-foot.

3.3 EMBANKMENTS CONSTRUCTED WITH MOISTURE DENSITY CONTROL. Except for embankments constructed predominantly of rock fragments or boulders, all embankments shall be constructed with moisture density control. Embankments shall be placed in horizontal layers not to exceed eight inches in depth, loose measurement, for the full width of the embankment, except as required for traffic, and shall be compacted before the next layer is placed. Embankments shall be compacted at the approximate optimum moisture content to not less than 95% of the maximum density as determined by AASHTO T 180 method D or Alaska T-12. Embankment materials may require drying or moistening to bring the moisture content near to optimum. In place field densities will be determined by Alaska T-3 or T-11. Sufficient time shall be allowed between layers to allow for field density tests.

3.4 EMBANKMENTS CONSTRUCTED WITH CLASS A SHOT ROCK BORROW.

A. The CONTRACTOR shall place grade stakes at all changes in grade and at maximum 50-foot intervals prior to placing Class A Shot Rock Borrow.

B. For embankments constructed with Class A Shot Rock Borrow, compaction shall be accomplished by a minimum level of compactive effort consisting of 6 complete coverage passes with a 10-ton vibratory steel drum roller suitably equipped by the manufacturer for compacting shot rock materials. Shot rock embankments adjacent to newly constructed concrete structures shall not be compacted until concrete has reached its full design strength. See section 03301 Structural Concrete.

3.5 EMBANKMENTS CONSTRUCTED WITH CLASS B SHOT ROCK BORROW

A. When embankment material consists predominantly of rock fragments or boulders too large to be contained in the lift thickness specified without crushing or further fracturing, such material may be placed in lifts not exceeding in thickness the approximate average size of the larger rocks, or two feet, whichever is less. The initial lift of shot rock may be increased in thickness up to three feet above zero-foot MLLW contour in order to support

haul and spread equipment. Below the zero-foot MLLW contour the initial lift may be increased up to the zero-foot contour to support haul and spread equipment.

B. Shot Rock Borrow shall not be dumped in final position but shall be deposited on the fill and distributed by blading or dozing so that voids, pockets and bridging will be reduced to a minimum. Intervening spaces and interstices shall be filled with smaller stones and earth to form a dense, well-compacted embankment. Hauling equipment shall be uniformly routed over the entire width of the embankment. Compaction shall be accomplished by a minimum level of compactive effort consisting of 6 complete coverage passes with a 15-ton vibratory steel drum roller suitably equipped by the manufacturer for compacting shot rock materials.

**END OF SECTION**

# SECTION 02203 - TRENCHING

## PART 1- GENERAL

1.1 GENERAL

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

## PART 2- PRODUCTS

2.1 TRENCH EXCAVATION

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

2.2 BEDDING

A. Stone for this WORK shall be hard angular quarry stones, having a percentage of wear of not more than 50 at 500 revolutions as determined by ASTM C535.

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

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

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

| SIEVE SIZE | % PASSING BY WEIGHT |
|---|---|
| 3-Inch | 100 |
| 1-Inch | 35-75 |
| No. 4 | 20-35 |
| No. 200 | 0-6 |

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

2.3 BACKFILL

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

2.4 IMPORTED BACKFILL

A. Imported Backfill shall consist of imported material meeting the following requirements:

| SIEVE SIZE | % PASSING BY WEIGHT |
|---|---|
| 6-Inch | 100 |
| 4-Inch | 70 – 100 |
| 2-Inch | 40 – 80 |
| No. 4 | 20 – 40 |
| No. 200* | 0 – 4 |
| *Gradation shall be determined on that portion passing the 3-inch screen. | |

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

2.5 AGGREGATE BASE

A. Aggregate base shall conform to Grading C-1 of Section 02204-Base Course.

2.6 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall conform to that specified in Section 03301-Structural Concrete.

**PART 3- EXECUTION**

3.1 EXCAVATION

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

B. Excavation for trenches shall conform to the lines and grades shown on the Plans. The CONTRACTOR shall also do any grading or other measures necessary to prevent surface water from entering the trench.

C. Excavation of any and all material more than two feet below the invert of a pipe or structure or as shown on the Plans shall be done only when ordered in writing by the ENGINEER. The material so excavated will be handled in the manner described below.

D. All excavated material suitable for use as backfill shall be piled in an orderly manner separately from unsuitable material, at a sufficient distance from the edge to prevent material from sloughing or sliding back into the trench; except that when the trench is in a traveled roadway the ENGINEER may require removal and temporary storage of excavated material elsewhere.

E. Material unsuitable for use as backfill shall be hauled to the overburden disposal site off the project, unless otherwise directed in writing by the ENGINEER. The CONTRACTOR is responsible for securing waste disposal sites if none are indicated on the plans. The CONTRACTOR shall obtain the written permission of the landowner for use of all disposal sites, and shall either obtain any required permits or assure that they have been obtained by others. If requested by the ENGINEER, the CONTRACTOR shall furnish the permit numbers of all required permits for the disposal sites. The cost of securing such sites shall be borne by the CONTRACTOR.

F. If the CONTRACTOR fails to comply with the provisions of any city ordinance or permit pertaining to waste disposal or disposal sites; the OWNER shall have the right, after giving 30 days written notice, to bring the disposal sites into compliance and collect the cost of the WORK from the CONTRACTOR, either directly or by withholding monies otherwise due under the Contract.

G. No more than 150 feet of trench shall be open in advance of laying of pipe, and not more than ten feet of trench shall remain open at the end of each working period. When the trench is in a traveled roadway, it shall be completely backfilled, in accordance with the Specifications, and opened to traffic at the end of each working period.

H. If explosives are used, the CONTRACTOR shall obtain all necessary permits and comply with all pertinent regulations. All utility companies shall be informed a minimum of 48 hours prior to the use of explosives in the vicinity of their facilities.

I. The CONTRACTOR shall protect and preserve all existing pavement throughout the entire construction period. No tracked equipment may be operated on any pavement without first protecting the pavement with pavement pads approved by the ENGINEER. All pavement which is damaged in any manner by the CONTRACTOR's operations shall be restored to original or better condition at the CONTRACTOR's expense.

J. Where required to prevent caving of the trench, or by any safety law or regulation, the CONTRACTOR shall furnish and install bracing and/or sheeting to protect the excavation. This bracing and/or sheeting shall be removed as trench backfill progresses.

K. The CONTRACTOR shall remove and dispose of all water entering the excavation. Disposal of water shall be done in a manner to prevent damage or nuisance to adjacent property, and in accordance with all applicable laws and regulations. Pumps shall be adequate to maintain a dry trench during the bedding, pipe installation, and initial backfill to an elevation at least one foot above the top of pipe. No backfill may be placed in standing water under any circumstance, except when the plans and/or Specifications specifically permit installation of HDPE water pipe in a wet trench.

L. Excavations for manholes and similar structures shall be per OSHA standards and large

enough to provide proper working room. Any over depth excavation shall be backfilled with concrete or other approved material at the CONTRACTOR's expense.

M. The CONTRACTOR shall provide temporary support of existing structures, as necessary to protect the structures from settlement or other disturbances caused by construction activities. All structures disturbed by the CONTRACTOR's activities shall be returned to original condition, or better.

N. Trench excavation shall be completed above the tideline to the extent possible. In areas where the waterline vertical alignment calls for trench excavation below the high tide line the Contractor shall coordinate Work according to tidal schedules such that Work is not conducted within the water. The CONTRACTOR recognizes all in-water work restrictions and shall adhere to the requirements set-forth by applicable agencies regarding such restrictions.

3.2 BEDDING

A. Bedding shall be placed in conformance with the lines and grades shown on the Plans and to the limits depicted in the Standard Details. Before placing any bedding material, the bottom of the trench shall be hand-raked ahead of the pipe laying operation to remove stones and lumps which will interfere with smooth and complete bedding of the pipe. The specified bedding material shall then be placed in layer(s) the full width of the trench, each layer not exceeding eight inches in thickness loose measure, and compacted to 95% of maximum density as determined by AASHTO T 180 D, until the elevation of the plan grade for the pipe invert is attained. The pipe bed shall then be fine-graded by hand and compacted as above. Bell holes shall be hand dug at the location of the joints and shall be of sufficient size to allow proper making of the joint and to prevent the collar or bell of the pipe from bearing on the bottom of the trench.

B. After the pipe has been laid and approved for covering, the specified bedding material shall be placed evenly on both sides of the pipe for the full width of the trench. Approval for covering does not imply final acceptance of the pipe, or relieve the CONTRACTOR in any way of responsibility to complete the project in conformance with the plans and Specifications. Bedding material shall be placed in layers. The thickness, loose measure, of the first layer shall be either one-half the outside diameter of the pipe plus two inches or eight inches, whichever is least. This layer shall be compacted as specified above to provide solid support to the underside of the pipe. For pipe ten inches and smaller nominal diameter, the next layer shall be of the thickness required to complete placement of the bedding to a plane six inches above the pipe, after compaction as specified above.

C. Bedding shall be considered incidental to all pipe, structures and utilities and shall be installed as shown in the Plans as part of other work.

D. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.

3.3 BACKFILL

A. The trench shall be backfilled above the bedding material, as shown on the Plans, or in the Standard Details, with approved material saved from trench excavation. If there is not sufficient approved material from the excavation, the backfilling of the trench shall be completed utilizing suitable material from roadway excavation, or imported backfill. The backfill and/or suitable material from roadway excavation shall be compacted to 95% of maximum density, as determined by AASHTO T 180-D. Lifts shall not exceed the lift 8 inches in thickness in loose measure unless otherwise directed by the Engineer. After backfilling of the trench is completed, any excess material from trench excavation shall be hauled to a CONTRACTOR furnished disposal site off the project.

B. Where trenches cross roadways, streets or driveways, backfilling shall be done immediately following excavation and laying of the pipe. All crossings shall be backfilled, compacted, and open to traffic at the end of each day's WORK. Major road crossings shall be excavated and backfilled in half widths of the traveled way so that at least one-half of the roadway is open to controlled traffic at all times during the WORK. All WORK performed within a right-of-way shall be done in conformance with the appropriate permits issued by the respective agency having jurisdiction over the right-of-way.

C. At least 24 hours prior to commencing backfilling operations, the CONTRACTOR shall notify the ENGINEER of the proposed method of compaction. No method will be approved until the CONTRACTOR has demonstrated, under actual field conditions, that such method will produce the degree of compaction required.

D. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.

3.4 AGGREGATE BASE

A. Aggregate base shall be placed in layers not exceeding six inches compacted depth, extending the full width of the trench and compacted to 95% of maximum density as determined by AASHTO T 180 D. The thickness of the top layer shall be such that, after compaction, the surface shall be at the elevation shown in the plans or Standard Drawings. Care shall be taken to assure proper compaction near the sides of the trench, and to avoid segregation.

3.5 ASPHALT CONCRETE PAVEMENT

A. Pavement to be removed shall be neatly saw cut full depth along straight lines. Only such pavement shall be removed as is necessary to excavate for the appurtenances, but the pavement shall be cut a sufficient distance outside the excavation to prevent damage to adjacent pavement by lifting or tearing the mat. All removed pavement shall be disposed of at the asphalt disposal stockpile in the CBJ/State Lemon Creek Gravel Pit.

B. After trench backfilling is complete, the edges of existing pavement shall be neatly saw cut vertically as shown on the Plans. All loose, cracked or undermined sections of existing pavement shall be removed. A tack coat shall be placed on the existing pavement edge just prior to placing new pavement.

C. Pavement shall be replaced in accordance with Section 02801 - Asphalt Concrete Pavement, and as shown on the Plans and Standard Details. Pavement shall be placed in all streets and highways as soon as possible after completion of backfilling. All trenched highway crossings shall be patched within five days from the date each trench is first opened, unless otherwise shown in the Contract Documents, or approved by the ENGINEEER. When weather conditions, unavailability of material, or time preclude placing permanent pavement with five days, temporary pavement shall be installed. Temporary paving will consist of at least a two inch thick layer of a pre-mixed, asphaltic surfacing material, and shall be installed and maintained flush with the existing surface until the permanent pavement is in place. Temporary pavement shall be removed prior to placing permanent pavement.

D. There shall be zero grade change perpendicular to the trench.

E. Permanently seal any cracks at joints with hot bitumen after the permanent asphalt is in place. The CONTRACTOR shall repair all failed seals at joints during the 12 months after the date of final payment.

3.6 PORTLAND CEMENT CONCRETE

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

**END OF SECTION**

## SECTION 02204 - BASE COURSE

## PART 1 - GENERAL

1.1 DESCRIPTION

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

## PART 2 - PRODUCTS

2.1 MATERIAL

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

1. Base course shall be sampled according to "WAQTC FOP for AASHTO T2 – Sampling Aggregates" as described in the *Alaska Test Methods Manual,* ATM 301 published by the Alaska Department of Transportation and Public Facilities.

2. Coarse aggregate (that material retained on the No. 4 sieve) shall be crushed stone and shall consist of sound, tough, durable rock of uniform quality. Rock shall be free of schist that cleaves along preferred foliation planes. Rock shall be free of platy mineral grains. Metamorphosed rock shall be free of slaty cleavage. All material shall be free from clay balls, vegetable matter or other deleterious matters. Coarse aggregate shall not be coated with dirt or other finely divided mineral matter. All aggregates shall be free of roots and wood. In addition, coarse aggregate shall meet the following requirements:

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

3. Aggregate shall not exceed eight (8) percent thin -elongated pieces as determined by ATM 306.
4. Fine Aggregate: Fine aggregate (passing the No. 4 sieve) shall meet the quality requirements of AASHTO M 29.

B. Base course material shall conform to one of the following gradations as specified:

BASE COURSE GRADATIONS
(Percent passing by weight)

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

C. For gradings C, D, & E at least 50% by weight of the particles retained on the No. 4 sieve shall have at least one fractured face as determined by WAQTC FOP for AASHTO TP 61 as described in ATM 305.

D. For gradings A, C-1, D-1 & E-1, at least 70% by weight of the particles retained on a No. 4 sieve shall have at least one fractured face as determined by WAQTC FOP for AASHTO TP 61 as described in ATM 305.

## PART 3 - EXECUTION

3.1 CONSTRUCTION

A. Prior to placement of the base course, the underlying surface shall be prepared by dressing, shaping, wetting or drying, and compacting of the underlying material to a minimum density of 95% as determined by AASHTO T 180-D or as specified under Section 02202 – Excavation And Embankment. Surfaces shall be cleaned of all foreign substances and debris.

B. Any ruts or soft yielding spots that may appear shall be corrected by loosening and removing unsatisfactory material and adding approved material as required, reshaping, and recompacting the affected areas to the lines and grades indicated on the Plans. If required by the ENGINEER, the CONTRACTOR shall proof load questionable areas with a loaded truck or other piece of equipment approved by the ENGINEER.

C. Blue tops shall be set to the top of base course. They shall be set by the CONTRACTOR at breaks in grade and on even grade at intervals not to exceed 50'.

D. Base course material shall be deposited and spread in a uniform layer to the required grades, and to such loose depth that when compacted to the density required, the thickness will be as indicated on the plans. Portions of the layer which become segregated shall be removed and replaced with a satisfactory mixture, or shall be remixed to the required gradation.

E. The maximum compacted thickness of any one layer shall not exceed six (6) inches. If the required compacted depth exceeds six (6) inches, the base shall be constructed in two (2) or more layers of approximately equal thickness. Each layer shall be shaped and compacted before the succeeding layer is placed.

F. Base course shall be compacted to at least 95% of its maximum density as determined by AASHTO T 180-D.

G. Blading, rolling, and tamping shall continue until the surface is smooth and free from waves and irregularities. If at any time the mixture is excessively moistened, it shall be aerated by means of blade graders, harrows, or other approved equipment, until the moisture content is such that the surface can be recompacted and finished as above.

H. The finished surface of the base course, when tested using a 10-foot straightedge, shall not show any deviation in excess of 3/8-inch between two contact points. The finish surface shall not vary more than 1/2-inch from established grade. Additionally, the algebraic average of all deviations from established grade of the finish base course surface elevations taken at 50-foot intervals shall be less than 0.02-foot.

I. The initial density test at any location will be paid for by the OWNER. If the initial test shows that the material compaction is not as specified, the CONTRACTOR shall modify the compaction methods used, as approved by the ENGINEER, and have the material retested until the tests show that the compaction meets the specification requirements. All tests, after the initial test at any given location, shall be paid for by the CONTRACTOR.

**END OF SECTION**

# SECTION 02205 - RIPRAP

## PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and placing a protective covering of stone, as shown on the Drawings, or as directed by the ENGINEER.

## PART 2 - PRODUCTS

2.1 MATERIALS

A. Stone for this WORK shall be hard angular quarry stones and have a percentage of wear of not more than 50 at 500 revolutions as determined by ASTM C 535. The least dimension of any piece of stone shall be not less than 1/4 its greatest dimension. Rounded boulders or cobbles shall not be used on slopes steeper than 2:1. Stones shall meet the following gradation requirement for the Class specified:

Class II

No more than 10% of the stones by total number shall weigh more than 400 pounds per piece and no more than 15% by total number of the stones shall weigh less than 50 pounds per piece. The stones shall be evenly graded and a minimum of 50% by total number of the stones shall weigh 200 pounds or more per piece.

## PART 3 - EXECUTION

3.1 CONSTRUCTION

A. Foundation or toe trenches and other necessary excavation shall be completed and approved by the ENGINEER before the placing of riprap is begun. Slopes to be protected with riprap shall be free of brush, debris, and other objectionable material and shall be dressed to a reasonably smooth surface.

B. The stones shall be handled or placed to secure a stone mass of the thickness, height and length shown on the Drawings, or as staked, with a minimum of voids.

C. Undesirable voids shall be filled with small stones or spalls. The rock shall be manipulated sufficiently by means of a bulldozer, excavator, rock tongs, or other suitable equipment to secure a reasonably regular surface and mass stability.

D. Riprap protection shall be placed to its full course thickness at one operation and in such manner as to avoid damaging the filter cloth or displacing the underlying material. Placing of riprap protection in layers or by dumping into chutes or by similar methods likely to cause segregation will not be permitted.

E. All riprap shall be so placed and distributed that there will be no large accumulation or area composed mainly of either the larger or small sizes of stone.

F. Unless otherwise authorized, the riprap protection shall be placed in conjunction with the construction of the embankment with only sufficient lag in construction of the riprap protection as may be necessary to place filter cloth and to prevent mixture of embankment and riprap material.

G. The CONTRACTOR shall provide a level, compact area of sufficient size to dump and sort typical loads of riprap at an approved location; and shall dump loads, as specified, in this area; and shall assist the ENGINEER as needed to sort and measure the stones for the purpose of determining if the riprap is within Specifications. Mechanical equipment as needed to assist in this sorting shall be provided by the CONTRACTOR at no additional cost.

**END OF SECTION**

## SECTION 02231 - PLANT PROTECTION AND SALVAGING

## PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.2 DEFINITIONS

A. Arborist: Personnel certified as an Arborist in good standing and meeting the requirements as set forth by the International Society of Arboriculture (ISA).

B. Critical Root Zone (CRZ): Expressed in feet as a circle concentric from the trunk of a tree equal to the dbh in inches multiplied by a factor of twelve (12). (The CRZ of a tree with a 12 inch dbh is 12 feet radius).

C. Diameter at breast height (dbh): The diameter of a tree's trunk in inches measured at a height of 4.5 feet above the natural ground level.

D. Drip Line: The area directly located below the outermost circumference of the tree canopy. Trees with an uneven circular canopy shall be measured from the greatest extent of the canopy and expressed as a circle concentric from the trunk as a constant radius distance.

E. Plant Salvage: The digging of existing plant material on site for the relocation and reuse of plant material. The digging of plants shall preserve as much of the root system in tact as possible.

F. Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line, or the CRZ, whichever is greater.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each type of protection-zone fencing and protection-zone signage.

C. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

D. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

E. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1.4 QUALITY ASSURANCE

A. Arborist Qualifications: Certified Arborist as certified by ISA, licensed arborist in jurisdiction where Project is located, current member of ASCA, or registered Consulting Arborist as designated by ASCA.

B. Preinstallation Conference: Conduct conference at Project site prior to beginning work with Arborist, Landscape Architect, and all involved in the salvaging of plant material.

1.5 PROJECT CONDITIONS

A. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Do not direct vehicle or equipment exhaust toward protection zones.

C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

**PART 2 - PRODUCTS**

2.1 MATERIALS

A. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements.

1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart. High-visibility orange color, nonfading.
2. Height of Fencing: 4 feet.

B. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering.

## PART 3 - EXECUTION

### 3.1 EXAMINATION AND PREPARATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Clearly flag each plant to remain and to be relocated.

### 3.2 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones in a manner that will prevent people from easily entering protected area except by entrance gates.

1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect.

C. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Landscape Architect.

D. Maintain protection-zone fencing and signage in good condition as acceptable to Landscape Architect and remove when construction operations are complete and equipment has been removed from the site.

### 3.3 EXCAVATION

A. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

B. Do not allow exposed roots to dry out before placing permanent backfill.

C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

3.4 PLANT SALVAGE

A. Root prune all plant material to be salvaged one growing season prior to removal at the drip line of all plant material. Prune roots to a depth greater than the depth of the roots as indicated in root pruning. Do not remove plants and water thoroughly during growing season in place until the plant is to be relocated. Dig plant material as follows:

1. Dig plants on the same day to be relocated.
2. Root prune as below cutting roots at 1.2 times the drip line to a depth to include full depth of root system.

B. When root pruning one growing season in advance is not possible. Dig plants as follows:

1. Dig plants on the same day to be relocated.
2. Root prune as below cutting roots at 1.2 times the drip line to a depth to include full depth of root system.
3. When large roots (greater than 2 inches in diameter) are encountered beyond root pruning limits follow roots using hand digging excavation to preserve as much of large and feeder root system as possible.

C. Support larger plant material from tipping our during root pruning and relocation operations.

D. Slide burlap or other approved material under root ball. Provide support for root ball to prevent the disturbance or removal of soil from root ball.

E. For larger plant material use mechanical methods to relocate plant while Arborist and Landscape Architect are present on site.

1. Support and move plants by root ball using netting or other approved material.
2. Support trunk for stabilization only, when needed with sling without damaging bark due to slippage or binding.
3. Do not lift plants by trunk, branching, or use chains, ropes or other damaging materials.

F. The digging and planting of material shall occur as one movement from original location to new location. Do not store dug plant material unless approved by Landscape Architect or Arborist.

G. When approved, temporarily store dug plant material in an area out of direct sun and drying winds and not to be disturbed by construction operations. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 ROOT PRUNING

A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:

1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.

2. Temporarily support and protect roots from damage until they are permanently covered with soil.
3. Cover exposed roots with burlap and water regularly.
4. Backfill as soon as possible according to requirements in Division 2 Section – Earthwork and Division 3- Planting Soils.

B. Root Pruning at Edge of Protection Zone: Prune roots by cleanly cutting all roots to the depth of the required excavation to preserve full depth of roots.

C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

## 3.6 CROWN PRUNING

A. Prune branches that are affected by temporary and permanent construction only if directed by Landscape Architect or Arborist.

## 3.7 REGRADING

A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

B. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.

C. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place planting soil in a single uncompacted layer and hand grade to required finish elevations.

## 3.8 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

## 3.9 REPAIR AND REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Have Arborist perform the root cutting, branch and crown pruning, and damage repair of trees and shrubs.
2. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
3. Perform repairs within 24 hours.
4. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

**END OF SECTION 02231**

## SECTION 02501 - STORM SEWER PIPE

## PART 1 - GENERAL

1.1 DESCRIPTION

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

1.2 SUBMITTALS

A. Storm Sewer Pipe: Material certifications.

## PART 2 - PRODUCTS

2.1 CORRUGATED POLYETHYLENE PIPE

A. Corrugated polyethylene pipe (CPP) shall be high density corrugated polyethylene (HDPE), smooth interior pipe, and shall be manufactured in conformity with the latest AASHTO M-294, Type S Specification, and shall meet the requirements of ASTM D3350 Cell Classification 324420C, or ASTM D1248 type III, Class C, Category 4, Grade P33.

B. Pipe shall be joined with Hancor, Inc. Hi-Q Sure-Lok (bell-and-spigot) joint, or approved equal, meeting the requirements of AASHTO M294. The bell shall be an integral part of the pipe and provide a minimum pull-apart strength of 400 lbs.

C. The bell-and-spigot joint shall incorporate a gasket making it silt-tight. Gaskets shall be installed in the bell by the pipe manufacturer.

D. Fittings shall conform to AASHTO M294. Fabricated fittings shall be welded on the interior and exterior at all junctions.

## PART 3 - EXECUTION

3.1 GENERAL

A. Excavation, Bedding, and Backfill shall conform to the requirements of Section 02203 - Trenching. All corrugated pipe shall have a minimum bedding cover of 12 inches.

B. The pipe laying shall begin at the downstream end. The lower segment of the pipe shall be in contact with the shaped bedding throughout its full length. Bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe shall be placed facing upstream.

C. Conduit shall be inspected before any backfill is placed. Any pipe found to be substantially out of alignment, unduly settled, or damaged shall be removed and relaid or replaced.

D. Installation of all pipe shall conform to the manufacturers' recommended procedures. These Specifications and the plans shall take precedence over the manufacturers' recommendations in the event of conflict, if more restrictive.

**END OF SECTION**

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

### 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 manholes, inlets, and catch basins as shown on the Drawings and the Standard Details.

1.2 SUBMITTALS

A. Storm Sewer Manholes, Inline Area Drains and Catch Basins: Catalog cuts and material certifications.

B. Frames and Grates: Catalog cuts and material certifications.

C. Joint Mortar mix design

### PART 2 – PRODUCTS

2.1 JOINT MORTAR

A Joint mortar shall be non-shrink-type, and shall consist of one part Portland cement and two parts approved sand with water as necessary to obtain the required consistency. Mortar shall be used within 30 minutes after its preparation. If mortar is submerged and cannot be kept dry until cured, a substitute approved by the ENGINEER shall be used.

2.2 FRAMES, GRATES, COVERS, AND LADDER RUNGS

A. Frames, grates, covers and ladder rungs shall conform to the plan dimensions and to the following Specification requirements for the designated materials:

1. All frames, grates, and covers shall be ductile iron, conforming to ASTM A 48, Class 30, and shall be designed for heavy duty traffic.
2. Carbon-steel castings shall conform to the requirements of AASHTO M 103. Grade shall be optional unless otherwise designated.
3. All manhole covers shall have the words “STORM DRAIN” cast into the top in letters approximately three inches high.
4. Structural steel shall conform to the requirements of AASHTO M 183.
5. Manhole steps shall be constructed of polypropylene conforming to ASTM D 4101 and shall meet current state and federal safety standards.
6. Galvanizing, where specified for these units, shall conform to the requirements of AASHTO M 111.
7. Malleable iron castings shall conform to the requirements of ASTM A 47. Grade shall be optional unless otherwise designated.

2.3 REINFORCING STEEL

A. Reinforcing steel shall conform to the following applicable requirements:

| | |
|---|---|
| Deformed Billet-Steel Bars | AASHTO M 31 (ASTM A 615, grade 60) |
| Welded Steel Wire Fabric | AASHTO M 55 (ASTM A 185) |
| Cold-Drawn Steel Wire | AASHTO M 32 (ASTM A 82) |
| Fabricated Steel Bar or Rod Mats | AASHTO M 54 (ASTM A 184) |

2.4 PRECAST CONCRETE UNITS

A. Precast concrete units shall conform to the requirements of AASHTO M 199, except that the absorption test will not be required.

B. Cracks in units will be cause for rejection. Honeycombed or patched areas in excess of 30 cumulative square inches will be cause for rejection.

C. Concrete shall conform to Section 03302 – Concrete Structures.

D. Manhole steps shall meet current state and federal safety standards.

## PART 3 – EXECUTION

3.1 CONSTRUCTION

A. Concrete construction shall conform to the requirements of Section 03302 – Concrete Structures.

B. Welding shall be done in accordance with the best modern practice and the applicable requirements of AWS D1.1 except as modified by AASHTO "Standard Specifications for Welding of Structural Steel Highway Bridges."

C. Metal frames shall be set in full mortar bed.

D. Manholes and catch basins shall be constructed in accordance with the Drawings and Standard Details. There shall be a minimum 16 inch catch constructed in the invert of the manholes or catch basins, unless otherwise specified. After the mortar is set, holding the pipe in place, the pipe is to be cut off evenly so that neither more than two inches, nor less than one inch, of the pipe protrudes into the manhole or catch basin.

E. When a pipe enters the manhole through a wall of a precast unit, the CONTRACTOR shall perform the cutting of the concrete and steel reinforcement in a manner that will not loosen the reinforcement in the wall. The steel reinforcement shall be cut flush with the wall face. All joints and openings cut in the walls shall be grouted.

F. Where indicated on the Drawings, a stub shall be provided for future connections to the manhole. The stub shall be sized and positioned as indicated. The end of the stub shall be stopped with a wooden plug, concrete biscuit, or other adequate methods to prevent water, earth, or other substances from entering pipe.

G. In case of poured-in-place manhole construction, if the CONTRACTOR elects to accomplish the manhole construction utilizing more than one continuous concrete pour, a keyed construction joint shall be used. These manholes shall have poured-in-place bases.

H. Existing storm flow shall not be impeded during construction.

I. Excavation, bedding and backfilling shall conform to the requirements of Section 02203 – Trenching.

J. Manhole pipe connections shall be made as shown on the Drawings and as required by the manufacturer's recommendations. A snug, watertight seal shall be provided for each pipe connection.

K. All manholes shall be bedded in accordance with CBJ Standard Detail 303 – Storm Drain Manhole Types I & II.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing the water system to include buried and suspended water pipe and fittings, meter enclosure and equipment, thrust blocks, tie rods, electrical continuity, disinfection, testing and the relocation of a fire hydrant. The CONTRACTOR shall install the water pipe and fittings to the horizontal and vertical alignment shown on the Plans and shall complete all associated WORK described in this Section.

### 1.2 REFERENCES

A. ASME - American Society of Mechanical Engineers

B. ASTM - American Society for Testing and Materials

C. AWWA- American Water Works Association

D. CBJ - City and Borough of Juneau

E. NSF - National Science Foundation

F. PPI - Plastics Pipe Institute

### 1.3 SUBMITTALS

A. Water pipe and fittings: Material certifications and catalogue cut sheets.

B. Waterline appurtenances: Catalogue cut sheets.

C. HDPE fusion technician: Certificate of fitness.

D. Flanges and backup rings: Material certifications and shop drawings

E. Meter Enclosure: Material certifications, shop drawings, and all component cut sheets.

F. Steel Component: Shop drawings and per §05120

G. Insulated pipe: Shop drawings, material certifications, cut sheets, and installation procedures.

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

## PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE (DIP)

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

2.2 DIP JOINTS

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

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

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

2.3 DIP FITTINGS

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

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

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

2.4 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

A. HDPE pipe shall be PE 3608. The material shall meet the requirements of ASTM D 3350 with a minimum cell classification of PE345464C. The pipe shall meet the requirements of AWWA C901 or C906, and be NSF-61 listed.

B. HDPE waterline pipe shall be SDR 11 rated for 160 psi.

C. HDPE fittings shall be PE3608 with the cell classification noted above. Fittings shall be molded or fabricated with pressure ratings at a minimum equal to that of the pipe. Fittings shall be butt fusion type unless otherwise noted on the plans or approved by the Engineer. Electro-fusion connections are allowed where shown on the Plans and elsewhere on a limited basis upon Engineer approval. Fittings and connections shall conform to the following:

1. Butt fusion fittings shall meet ASTM D3261
2. Electro-fusion fittings shall meet ASTM F1055
3. Socket fittings are not permitted.
4. All components shall be NSF-61 certified.

D. Flanged pipe connections are allowed where shown on the Plans and elsewhere on a limited basis upon Engineer approval. Flanges shall be PE 3608, with a minimum Cell Classification as noted above. Flanges shall conform to ASTM D 3261 or ASTM F 2206 as applicable. Flanges shall have a pressure rating equal to the pipe unless otherwise specified on the plans. Markings for molded or machined flanges shall be per ASTM D 3261. Fabricated flange adapters shall be per ASTM F 2206.

1. Back-up rings, bolts and associated hardware shall be 316 stainless steel where submerged and hot dip galvanized elsewhere unless otherwise noted in the Plans and shall be provided in accordance with Section 05120-Metal Fabrication. Bolt-holes and bolt-circles shall conform to one of these standards: ASME B-16.5 Class 150, ASME B-16.47 Series A Class 150, ASME B-16.1 Class 125, or AWWA C207 Class 150 Series B, D, or E. The back-up ring shall provide a long-term pressure rating at a minimum equal to the pressure-class of the pipe with which the flange adapter assembly will be used, and such pressure rating shall be clearly marked on the back-up ring.

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

1. Service connection outlet size shall be one inch IPS unless otherwise indicated on the Plans.

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

3. Tapping tees shall conform to ASTM D3261.

F. Transition fittings shall be full bore, butt fusion type with 316 S.S. IPS transitions unless otherwise noted on the plans.

G. HDPE ball valves shall be full bore type with a 2" operation nut. Valves shall have a pressure rating at a minimum equal to that of the pipe. The CONTRACTOR shall confirm compatibility with valve operation riser assembly prior to material order.

2.5 STEEL PIPE AND FITTINGS

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

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

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

2.6 INSULATED PIPE AND FITTINGS

A. The contractor shall supply insulated pipe and fittings with heat trace channel as shown in the Plans. The minimum service temperature range of all individual components and final products shall be -30° to 90°F. The pipe and fittings shall consist of an HDPE carrier pipe insulated with polyurethane insulation and protected with an HDPE outer jacket.

B. Carrier pipe shall be 6" HDPE SDR 11 and conform to the requirements of Article 2.4 herein.

C. Insulation between the carrier pipe and outer jacket of all pipe and fittings shall be low-density rigid closed-cell urethane foam. Foam shall be either spray applied or monolithically injected into the annular space between the carrier pipe and jacket such that the resulting insulation completely fills the annular space and is free of defects affecting its intended purpose. Urethane foam shall be bonded to the carrier pipe with a minimum shear strength of 15 psi and conform to the specifications as follows:

| | | |
|---|---|---|
| Maximum Thermal Conductivity | $0.17 \frac{btu \times in}{hr \times ft^2 \times °F}$ | ASTM C518 |
| Core Density Range | 2.0 to 4.0 pcf | ASTM D1622 |
| Minimum Compressive Strength (Parallel and perpendicular to pipe axis) | 35 psi | ASTM D1621 |
| Maximum Water Absorption | 0.05 pcf | ASTM D2842 |
| Dimensional Stability (Maximum Linear Change) | 1% at -20°F<br>3% at +100°F | ASTM D2126 |

1. A waterproof surface coating shall be applied to all exposed faces of urethane insulation. Coating shall be suitable for long term exposure to sunlight and salt water submersion as certified by the manufacturer.

D. The outer jacket shall have an outer diameter of 14" maximum, be a minimum of 150 mils thick and be constructed of HDPE with a minimum cell classification 335460C per ASTM D3350.

E. Heat trace channels shall be fully enclosed and in direct contact with the carrier pipe for its entire length. The inner surface shall be smooth and free of burrs or protrusions. Channel shall extend past the insulation a min. of 2" or as required to adequately make joints with no gaps in channel. Transition pieces shall be provided as required to connect heat trace channel through joints and fittings to maintain channel continuity.

1. Heat trace channel shall be of adequate size to "fish" heat trace cable through. Heat trace cable is not in this contract, but will be installed in the future by others, see item H below.

2. Provide water proof end caps for heat trace channel at locations shown in the Plans. Caps and exposed surfaces of channel shall suitable for long term UV exposure and saltwater submersion.

F. Insulated pipe joints and fittings shall be capable of field installation and meet the same thermal insulation and integrity requirements as the pipe. Pipe joints shall be waterproof and shall be installed per the manufacturer's printed instructions.

G. The carrier pipe shall be centered in the HDPE jacket. Centerline offsets shall be no more than ⅜" throughout the length of the pipe and ¼" at the ends. Heat trace channel offset shall be no more than ⅜". Jacket/insulation cutbacks shall be determined by the manufacturer to optimize ease of installation and joint connections.

H. The insulated pipe manufacturer shall submit shop drawings stamped by an AK registered professional engineer. Shop drawings will detail the insulated pipe with a heat trace system designated "future heat trace system, installed by others" and will specify a recommended heat trace cable with load demand and other applicable requirements. Shop drawings will certify that pipe, fittings, heat trace, and heat trace channel have been designed to protect potable water from freezing under the assumption of the following conditions:

1. Insulated pipe requiring heat trace shall be a maximum of 75' in length.
2. Pipe shall be located in exposed air conditions with a minimum ambient temperature of -30°F.
3. Pipe shall be subject to UV exposure, saltwater spray and saltwater submersion.
4. Pipe shall contain no more than (4) 90° or less bends and (1) flanged joint. All other joints shall be butt fused HDPE or per manufacturer's recommendations.
5. Potable water within the carrier pipe may have a flow rate of 0 GPM for extended periods of time.
6. Fittings and couplings shall be field installed.

2.7 LUBRICANT

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

2.8 THAW WIRE

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

2.9 UNDERGROUND MARKING TAPE

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

2.10 TIE RODS

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

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

2.11 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement material shall be 8-mils thick and conform to AWWAC105/ANSI A21.5.

2.12 CONCRETE

A. Concrete for thrust blocks shall conform to Section 03302 – Minor Concrete Structures.

2.13 BLOW OFF HYDRANT

A. The blow-off hydrant shall be *Maingaurd #77* as manufactured by *Kupferle Foundry Co.* or approved equal.

B. Hydrant non-freezing, self-draining type and will be furnished with a bronze 2" FIP inlet, and a bronze 2" MIP outlet.

C. The blow off service saddle shall be *Mueller IPDR2RS0659200* with FIP outlet and SS straps or approved equal.

2.14 DOMESTIC WATER METER ENCLOSURE AND COMPONENTS

A. Domestic water meter enclosure shall be *"Hot Box" model HB10ES* as manufactured by *Hubbell* with drain ports located such that surface drainage consistent with the Site Plan grading and drainage is achieved.

B. (2) 1900 watt, 208 volt single phase heaters shall be provided with the meter enclosure. Heaters shall be mounted on the enclosure wall per the manufacturer's recommendations.

C. Provide (1) 120 V outlet as per the Electrical Plans to be installed within the Hot Box. Electrical installation shall conform to all local state and federal code requirements; refer to the Electrical Specifications.

D. Domestic water meter enclosure components shall be located as indicated on the Plans and installed per manufacturer's printed instructions.

E. The domestic water meter enclosure base slab shall be sloped to drain consistent with the drainage direction of the area as indicated on the Site Plan.

F. Insulated pipe shall penetrate the slab as shown on the Plans.

G. The water meter shall be a 6" *Neptune Tru/Flo Compound Meter* with remote reader transmitter mounted to a nearby post as shown in the Plans. The meter shall provide readout in gallons. All remote reader cable shall be routed in conduit as indicated in the Electrical Plans.

H. The strainer shall be 6" *Neptune* Brand, or approved equal.

I. The backflow preventer shall be a 6" *Watts Series 909 Reduced Pressure Zone Assembly with Air Gap,* or approved equal, with (1) total rubber parts repair kit.

J. Pipe supports shall be hot dip galvanized and constructed in accordance with Section 05120-Metal Fabrication.

K. The meter enclosure and pipe supports shall be removable and anchored to the concrete base slab using ⅜" *Simpson Strong-Tie ET-HP Epoxy Anchors.* Anchors shall be installed per the manufacturer's explicit printed instructions.

L. Provide spare parts lists and operations and maintenance manuals for all equipment as per Section 01300- Contractor Submittals.

**PART 3 - EXECUTION**

3.1 GENERAL

A. The CONTRACTOR shall preserve and protect all existing utilities and other facilities including but not limited to: telephone, television, electrical, water and sewer utilities, surface or storm drainage, highway or street signs, mail boxes, and survey monuments.

B. The CONTRACTOR shall immediately notify the CBJ of utilities or other facilities damaged during construction and shall immediately repair or replace that which was damaged. The CONTRACTOR shall support and protect any underground utility conduits, pipes, or service lines where they cross the trench.

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

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

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

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

3.2 PIPE INSTALLATION

A. All water pipe and fittings shall be inspected for defects. Damaged pipe will be rejected and the CONTRACTOR shall immediately place all damaged pipe apart from the undamaged and shall remove the damaged pipe from the site within 24 hours.

B. Whenever it becomes necessary to cut a length of water pipe, the cut shall be made by abrasive saw or by special pipe cutter.

C. The water pipe shall be laid to the horizontal and vertical alignment shown on the Plans. A minimum five foot cover shall be maintained from finish grade to top of water pipe, unless otherwise shown on the Plans. Fittings shall be installed at the location shown on the Plans and elsewhere upon ENGINEER approval.

D. To prevent dirt, fluids, or other foreign material from entering the pipe and fittings during handling and installation, the open end of the pipe shall be protected by a water-tight plug at all times except when joining the next section of pipe.

E. Under no circumstances shall pipe deflections, either horizontal or vertical, exceed the manufacturer's printed recommendations. Where deflections would exceed the manufacturer's recommendations, fittings shall be used.

F. Existing water pipe and appurtenances to be removed or abandoned shall be as designated on the Plans or directed by the ENGINEER. Abandoned water services shall be plugged at the cut ends. Abandoned water pipes shall be removed as shown on the Plans, or mechanically plugged if not required to be removed.

3.3 DUCTILE IRON PIPE INSTALLATION

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

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

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

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

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

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

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

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

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

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

3.4 HDPE PIPE INSTALLATION

A. HDPE water pipe and fittings shall be joined using the butt fusion procedure outlined in ASTM F 2620 unless otherwise specified in the Plans or approved by the ENGINEER. All fusion joints shall be made in compliance with the pipe or fitting manufacturer's recommendations by certified technicians. The CONTRACTOR shall submit a certificate of fitness issued by the pipe manufacturer or similar for each technician prior to beginning pipe fusion operations.

1. At the request of the ENGINEER the CONTRACTOR shall demonstrate butt fusion fitness by making and testing a sample butt fusion joint using the procedures outlined in PPI TN-42. Test samples shall be created and tested in the presence of the ENGIEER.

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

C. Electro-fusion joining shall be done in accordance with the manufacturer's recommended procedure and ASTM F 1290. The electro-fusion transformer unit shall be the type capable of reading the electronic barcode associated each fitting and storing the fuse input and result information electronically. The CONTRACTOR shall maintain the data recorded by the electro-fusion unit throughout the warranty period of the WORK. This information shall be provided to the ENGINEER upon request. Electro-fusion joints shall be made by a qualified technician.

D. Socket fusion joints are not permitted.

E. Installation of flanged connections shall follow the guidelines of Plastic Pipe Institute Technical Note # 38.

3.5 INSULATED PIPE INSTALLATION

A. Insulated pipe, fittings joints, and heat trace channel shall be installed per the manufacturer's printed instructions. HDPE carrier pipe shall be butt fused as outlined in Article 3.4 herein.

3.6 SALVAGE AND RELOCATE EXISTING FIRE HYDRANT

A. The CONTRACTOR shall contact the effected fire district at least 24 hours prior to removing or interrupting service to existing fire hydrants.

B. The components of the existing fire hydrant assemblies shall be carefully removed. Damage to the fire hydrant, riser pipe or barrel impairing re-use shall be determined by the ENGINEER. Damaged components shall be replaced by the CONTRACTOR using factory-supplied parts from the same manufacturer.

C. The hydrant boot and valve shall be replaced as shown in the Plans.

D. The ENGINEER will determine the usefulness of the removed fire hydrant assembly components not designated for reinstallation. The CONTRACTOR shall deliver the useful components to the CBJ Public Works Department, Water Utility Division. The remaining components shall be disposed of by the CONTRACTOR.

E. The CONTRACTOR shall install the fire hydrant assembly in accordance with applicable AWWA Standards, the manufacturer's recommendations and the Plans. The interior components of the fire hydrant shall be cleaned of all foreign matter prior to installation. Fire hydrant legs shall be installed level and the barrel shall be installed plumb. Any adjustments to the traffic flange shall be accomplished with barrel extensions, in accordance with the fire hydrant manufacturer's recommendations. The extensions shall be made between existing barrel and hydrant. Fire hydrants shall be tied back to the water pipe using tie rods. The size and number of tie rods shall conform to Article 2.10 herein. Stuffing boxes shall be tightened and the fire hydrants shall be opened and closed in the presence of the ENGINEER to see that all parts are in working condition.

F. Remove the hydrant drain plugs, prior to installation.

G. Fire hydrants installed, but not available for use, shall be covered with burlap or heavy plastic and security tied.

H. Electrical continuity is required for fire hydrant assemblies. Electrical continuity tests shall be performed in accordance with Article 3.12 herein.

I. After installation, all fire hydrant assemblies shall be flushed, field-tested, and disinfected as outlined herein.

J. The contractor shall notify the controlling fire district when the hydrant is ready to be put into service.

3.7 FLUSHING, TESTING AND DISINFECTION

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

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

3.8 OPEN-BORE FLUSHING

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

3.9 HYDROSTATIC TESTING

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

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

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

D. Defective materials or poor quality of WORK, discovered as a result of the hydrostatic tests, shall be replaced by the CONTRACTOR. Whenever it is necessary to replace defective material or correct the workmanship, the hydrostatic test shall be repeated until a satisfactory test is obtained.

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

3.10 DIP HYDROSTATIC TESTING PROCEDURE

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

B. The hydrostatic pressure for fire line testing shall be a minimum of 200 psi for two (2) hours as defined by National Fire Protection Association (NFPA) 24. Acceptance pressure testing shall be done with all service lines installed, corporation stops open, and pressure against the closed curb stops. Pumping will cease after the required test pressure has been reached. If the pressure remains constant for two hours without additional pumping, or pressure drop is less than five psi, that section of water pipe is acceptable.

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

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

L= Allowable leakage in gallons per hour

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

D= Diameter of water pipe in inches

P= Test pressure in pounds per square inch

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

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

3.11 HDPE HYDROSTATIC TESTING PROCEDURE

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

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

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

D. HDPE hydrostatic testing shall be performed using the "pressure drop" method. The "make up water" test method will not be accepted. Testing shall be performed in accordance with ASTM F-2164 and the procedure described herein:

1. Fill the test section slowly with water ensuring all air is purged from the system. Filling should be performed from the point in the system lowest in elevation. If this point is inaccessible the CONTRACTOR shall take reasonable measures to ensure the system is purged of air prior to testing.

2. Allow the test section temperature to equalize throughout.

3. Slowly pressurize the test section to the test pressure as indicated in part B.

4. Add make-up water as necessary to maintain the test pressure for a minimum of 4 hours.

5. Reduce the pressure by 10 psi; this will be the test phase pressure.

6. Without increasing the pressure or adding make-up water monitor the system and visually inspect for leakage. A passing test is indicated if no visual leakage is observed and the pressure remains within 5% of the test phase pressure for a minimum of 1 hour.

E. If DIP fire hydrant assemblies are present in the system perform DIP test item # 3.10-D above.

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

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

3.12 ELECTRICAL CONTINUITY

A. Electrical continuity is required for six inch or smaller D I water pipe and fire hydrant assemblies, and shall be provided by two electrical continuity straps installed on each side of the water pipe joint or fittings. Electrical continuity tests will be performed by the CBJ Water Utility Division staff with a "Hovey" water pipe thawing machine, unless scheduling conflicts or mechanical problems with the thawing machine prevent the CBJ Water Utility Division staff from performing the testing within the time period required by the CONTRACTOR. In those cases that the CBJ Water Utility Division staff is unable to conduct the testing, the CONTRACTOR shall conduct the testing with its own personnel and equipment. The testing shall be performed in a manner that is approved by the ENGINEER.

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

C. If the initial testing of an installation within any Project phase fails (the continuity testing will be conducted by the CBJ at one time for each Project phase, as shown on the Plans, or as directed by the ENGINEER), the additional testing required shall be at the CONTRACTOR's expense. The CBJ Water Utility Division staff will maintain a circuit of 300 amps DC current for a period of 90 seconds. Current loss, through the test circuit, shall not exceed 10%. Continuity test sections shall not exceed 500 lineal feet. All test leads brought up to the surface shall be removed to a depth of two feet below finish grade upon completion of the tests.

3.13 DISINFECTION

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

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

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

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

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

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

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

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

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

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

## PART 4 - ACCEPTANCE

4.1 CITY AND BOROUGH OF JUNEAU

A. Prior to acceptance the Contractor shall contact the CBJ Community Development Department and have the meter enclosure inspected and approved a CBJ building official as per CBJ 19.06.105

**END OF SECTION**

# SECTION 02603 – FIRE HYDRANTS

## 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 fire hydrant assemblies, including the hydrant leg, auxiliary gate valve, valve box, electrical thaw wire and continuity straps, tie rods, and fire hydrants; for installing guard posts to protect fire hydrants; for installing the hydrant access pads; for furnishing and installing barrel extensions on existing fire hydrants and for removing, inspecting, salvaging, and delivering existing fire hydrant assemblies to the CBJ, Public Works Utilities Division.

### 1.2 SUBMITTALS

A. Fire Hydrants: Catalogue cuts.

## PART 2 – PRODUCTS

### 2.1 FIRE HYDRANTS

A. Fire hydrants shall conform to the requirements of AWWA C502 for Dry Barrel Fire Hydrants. Fire hydrants shall be:

1. Mueller Centurian 200 or 250, with Integral Storz Pumper Connection or approved equal;
2. Waterous 5 1/4" Pacer; or
3. Dresser M & H Style 929.

B. Fire hydrants shall be supplied with a 5¼ inch main valve opening, and a main valve seat ring threaded into a bronze bushing.

C. Fire hydrants shall be furnished with a six inch ASA Class 125 standard mechanical-joint inlet with two cast-on lugs for tie backs.

D. Fire hydrants shall be provided with a weathercap and an epoxy or bituminous-coated shoe.

E. Connections shall be mechanical joint with "Mega-lug" fittings, unless otherwise indicated on the Drawings.

F. Fire hydrants shall be three-way and furnished with two 2½-inch hose nozzles and one 4½ -inch pumper nozzle. Fire hydrants shall be left hand opening (counter clockwise). Operating and nozzle nuts shall be National Standard pentagonal with weather cap. Hose nozzle threading shall be in conformance with NFPA No. 194 for national (American) Standard Fire Hose Coupling Screw Threads.

G. Unless otherwise required by the Drawings, fire hydrants shall be furnished with a barrel length that will allow a five foot bury.

H. The main hydrant valves shall be of the compression type where water pressure holds the main valve closed permitting easy maintenance or repair of the entire barrel assembly

from above the ground without the need of a water shut-off. The main valve seat shall be an ether glycol urethane compound, or approved equal, that is abrasion and gravel resistant.

I. Fire hydrants shall be furnished with a breakaway traffic flange of the type which allows both barrel and stem to break clean upon impact from any angle. Traffic flange design must be such that repair and replacement can be accomplished above ground.

J. All working parts shall be bronze or non-corrosive metal in accordance with the requirements of AWWA C 502.

K. Painting and coating shall be in accordance with applicable AWWA specifications. After installation, the fire hydrant section from the traffic flange to the top of the operating nut shall be painted "OSHA Yellow," with wording stenciled in black. Refer to CBJ Standard Detail 403 – Fire Hydrant.

L. Gate valves and valve boxes shall be furnished and installed in accordance with Section 02602 – Valves.

M. Electrical thaw wire and continuity straps shall be No. 2 copper wire with THW insulation, and shall be connected with bolts with double nuts, to the tee at the main.

N. Flag assemblies shall be Flexi-Flag Assembly by Nordic fiberglass, Inc., or approved equal.

O. The CONTRACTOR shall provide the following spare parts for every group of ten (and fraction thereof) of Fire Hydrant Assemblies installed on the Project:

- Break Flange Repair Kit — One each
- Valve Seat Rubber — One each
- Cover Gasket — One each
- O-Rings — One set

2.2 HYDRANT ACCESS PADS

A. Hydrant access pads shall be constructed in conformance with the CBJ Standard Detail 405 – Hydrant Pad as shown, or as described in the Drawings.

B. Corrugated Metal Pipe (CMP) shall comply with the requirements of Section 02501 – Storm Sewer Pipe.

C. Rigid Board Insulation shall comply with Requirements of Section 02607 – Pipe Insulation.

D. Asphaltic concrete paving shall be furnished in accordance with Section 02801 – Asphalt Concrete Pavement.

2.3 BARREL EXTENSION

A. Barrel extensions shall conform to the requirements of AWWA C502 for Dry Barrel Fire Hydrants and shall include barrel extension, steel stem coupling, stainless steel clevis and cotter pins, solid flange, gasket, bolts and nuts, stem extension and lubricant.

**PART 3 – EXECUTION**

3.1 FIRE HYDRANTS

A. The CONTRACTOR shall install the fire hydrant assemblies in accordance with applicable AWWA Standards, the manufacturer's recommendations and the CBJ Standard Details. The interior components of the fire hydrant shall be cleaned of all foreign matter prior to installation. Fire hydrant legs shall be installed level and the barrel shall be installed plumb. Any adjustments to the traffic flange shall be accomplished with barrel extensions, in accordance with the fire hydrant manufacturer's recommendations. The extensions shall be made between existing barrel and hydrant. Fire hydrants shall be tied back to the water pipe using tie rods. The size and number of tie rods shall conform to Section 02601 – Water Pipe. Stuffing boxes shall be tightened and the fire hydrants shall be opened and closed in the presence of the ENGINEER to see that all parts are in working condition.

B. Remove the hydrant drain plugs, if any, prior to installation.

C. The top cap on fire hydrants serviced from the high-pressure system shall be painted yellow.

D. Fire hydrants installed, but not available for use, shall be covered with burlap or heavy plastic and security tied.

E. Electrical continuity is required for fire hydrant assemblies. Electrical continuity tests shall be performed in accordance with Section 02601 – Water Pipe.

F. After installation, all fire hydrant assemblies shall be flushed, field-tested, and disinfected as outlined in Section 02601 – Water Pipe. Each hydrant shall then be winterized by removing the water in the hydrant and barrel.

3.2 GUARD POSTS

A. Guard posts shall be installed where directed by the ENGINEER in accordance with the CBJ Standard Detail 404 – Hydrant Guard Posts. Guard posts shall not be installed in State of Alaska Department of Transportation and Public Facilities road right-of-ways.

3.3 HYDRANT ACCESS PADS

A. Hydrant access pads shall be installed where directed by the ENGINEER in accordance with the CBJ Standard Detail 405 – Hydrant Pad, and as shown or described on the Drawings. Culvert size shall be noted on the Drawings.

3.4 GRADE ADJUST EXISTING FIRE HYDRANTS

A. Grade adjustments to existing fire hydrants shall be accomplished with barrel extensions, in accordance with the fire hydrant manufacturer's recommendations. In addition, the existing fire hydrant shall be connected to the mainline water pipe with all necessary materials, including the tee at the mainline water pipe, thrust blocks, six inch gate valve, valve box, joint restraints, continuity wires, thaw wires, warning tapes, and any other required fittings, including pipe, to connect the hydrant leg to the mainline water pipe. After installation, the adjusted fire hydrant shall be flushed, field-tested, and disinfected as specified in Section 02601 – Water Pipe.

3.5 SALVAGE EXISTING FIRE HYDRANTS.

A. The CONTRACTOR shall contact the effected fire district at least 24 hours prior to removing or interrupting service to existing fire hydrants.

B. The components of the existing fire hydrant assemblies shall be carefully removed. Damage to the fire hydrant, valve, valve box, or barrel impairing re-use shall be determined by the ENGINEER. Damaged components shall be replaced by the CONTRACTOR using factory-supplied parts from the same manufacturer.

C. The ENGINEER will determine the usefulness of the removed fire hydrant assembly components. The CONTRACTOR shall deliver the useful components to the CBJ Public Works Department, Water Utility Division. The remaining components shall be disposed of by the CONTRACTOR.

D. If an existing fire hydrant assembly is removed at the tee, the tee shall be plugged in accordance with the CBJ Standard Details, and the existing water main shall be disinfected between isolating valves as specified in Section 02601 – Water Pipe.

E. At the discretion of the ENGINEER, a hydrostatic pressure test conforming to Section 02601 – Water Pipe shall be conducted between isolating valves along the existing water main.

F. The CONTRACTOR shall restore all surface features to preconstruction condition or better, including, but not limited to, sidewalks, curbs, gutters, mailboxes, culverts, and other facilities disturbed by the construction.

3.6 RELOCATE EXISTING FIRE HYDRANT

A. Relocation of existing fire hydrant shall conform to the requirements of Article 3.5 in this Section, except the fire hydrant piping shall be connected to the existing water valve, or to the piping on the street side of the water valve. If the fire hydrant is connected to the existing valve, this valve shall be fully opened with the existing valve box removed.

**END OF SECTION**

## SECTION 02702 - CONSTRUCTION SURVEYING

### PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to perform all surveying and staking necessary for the completion of the project in conformance with the plans and specifications, including all calculations required to accomplish the work.

B. The WORK shall include the staking, referencing and all other actions as may be required to preserve or restore land monuments and property corners which are situated within the project area, and to establish monuments as shown on the plans.

C. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to perform all surveying and staking necessary for the completion of Excavation and Embankment in accordance with SECTION 02202.

1.2 SUBMITTALS

A. All information necessary for as-built plan production from actual measurements and observations made by the CONTRACTOR’s own work force, including subcontractors,

### 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 surveyors’ notes, if requested by the ENGINEER, prior to each Pay Request, which payment for Item 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 work force, 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; 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 of right-of-way; 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 02714 – GEOTEXTILE REINFORCEMENT

## PART 1 - GENERAL

1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, material, tools, and equipment necessary for furnishing and installing geotextile reinforcement in accordance with the Contract Documents and as shown on the Plans.

1.2 SUBMITTALS

A. Manufacturer's Product Data and Material Certification for proposed geotextile reinforcement.

B. Geotextile Reinforcement Installation Plan. Detail methods to achieve taut fabric layers during construction.

## PART 2 - PRODUCTS

2.1 GEOTEXTILE REINFORCEMENT

A. Geotextile reinforcement shall be composed of plastic yarn fabricated into a pervious sheet with distinct pores or openings.

B. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85% by weight of propylene, ethylene, or vinylidene-chloride and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The cloth shall be calendered or otherwise finished so that the yarns will retain their relative position with respect to each other. The edges of the cloth shall be selvedged or otherwise finished to prevent the outer yarn from pulling away from the cloth.

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

| | |
|---|---|
| Grab tensile strength (ASTM D 4632) | 270 lbs. min. |
| Grab tensile elongation (ASTM D 4632) | 50% maximum |
| Burst Strength (ASTM D 3786) | 500 psi. min. |
| Trapezoid Tear Strength (ASTM D 4533) | 95 lbs. min. |
| Puncture Strength (ASTM D 4833) | 120 lbs. min. |
| Flow Rate (ASTM D 4491) | 50 gal/min/sf |

## PART 3 - EXECUTION

3.1 INSTALLATION

A. Geotextile reinforcement shall be installed as shown on the Plans.

B. Care shall be taken to assure that cuts and tears do not occur in the geotextile reinforcement during placement or during backfilling. If tears occur at any time during the construction, that section of fabric must be removed and replaced. In addition, the ENGINEER may require any section of geotextile reinforcement to be replaced if, in his opinion, it has been damaged excessively.

C. Geotextile reinforcement should be smooth with no bunching due to misalignment. Backfill or riprap material shall be placed in a manner that will not dislodge the fabric from its proper alignment. Geotextile reinforcement shall be secured in taunt configuration until the complete layer of overlying material is placed. Reinforcement that becomes detached from its holding during backfill operations shall be repaired at no additional cost to the OWNER.

D. Geotextile shall be unrolled directly onto the prepared surface. Geotextile reinforcement shall be joined with adjacent pieces by overlapping. The geotextile reinforcement shall be overlapped a minimum of 3 feet.

**END OF SECTION**

## SECTION 02726 –TIMBER DOCK

### PART 1 - GENERAL

1.1 DESCRIPTION. The WORK under this Section shall include all labor, materials, tools and equipment necessary to construct a pile supported dock and associated modifications to the existing timber dock as shown in the Plans.

1.2 REFERENCES

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

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

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

D. ASTM (American Society of Testing Materials) Specifications

E. AITC(American Institute of Timber Construction) Standard No. 117-87

1.3 SUBMITTALS

A. Structural Steel Submittals per Section 05120 – Metal Fabrication. Steel fabrication drawings must be approved by the ENGINEER prior to cutting, drilling and treatment of timbers.

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

B. Timber Grading and Pressure Treatment Certification.

### PART 2 - PRODUCTS

2.1 TIMBER

A. Timbers (decking, bullrail, handrail & miscellaneous members) shall be S4S sawn lumber and graded in accordance with the West Coast Lumber Inspection Bureau Standard No. 17, meeting Douglas Fir select structural grade for 4x members and No 1 or better for all other members. Timbers shall be pressure treated, after fabrication, with ACZA in accordance with AWPA C2 to a net retention of not less than 0.6 pounds per cubic foot. Fabrication and drilling of timber shall be done as much as possible before pressure treatment. Field cuts and minor damage areas shall be field treated per AWPA M-4 using copper napthenate. Field driller holes shall be field treated with copper napthenate then swabbed with mastic or approved equal. Bolts holes shall be 1/8 inch oversized. All timbers shall have a

B. All Glued-laminated timber stringers shall be manufactured with Coast Region Douglas Fir that conforms to AITC Standard No. 117-87 specifications and shall be manufactured combination 24F-V8 in balanced combinations having equal design values for both the positive and negative bending. The glulam members shall have an industrial finish, shall be for exterior use and have design values equal to or exceeding the following when loaded perpendicular to the widest faces of the laminations.

Bending (Fb) = 2,400 p.s.i.
Horizontal Shear (Fv) = 265 p.s.i.
Modulus of Elasticity (E) = 1,800,000 p.s.i.

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

C. All shims shall be constructed of treated plywood. Plywood shall be of exterior grade C-D or better and treated with ACZA in accordance with AWPA C9 to a net retention of .6 pounds per cubic foot.

2.2 HARDWARE

A. Bolts shall conform to ASTM A307 and shall be galvanized in accordance with ASTM A153.

B. Nuts shall conform to ASTM A563 and shall be galvanized in accordance with ASTM A153, unless otherwise specified.

C. Washers shall be round malleable iron washers unless otherwise specified and galvanized in accordance with ASTM A153. Round malleable iron washers shall have an outside diameter at least 4 times the diameter of the bolt with which it is used.

D. Steel shapes and plates shall conform to ASTM A36 and shall be galvanized after fabrication in accordance with ASTM A123. Plates and shapes shall be fabricated in accordance with AISC Code of Standard Practice.

E. Nails shall be hot dipped galvanized common nails conforming to Federal Specification FF-N-105B, unless otherwise specified.

2.3 FIELD TREATMENT COMPOUNDS

A. Treatment compounds for holes and cuts to treated timber shall be: Copper napthenate solutions in concentrations as specified by AWPA M-4 and mastic shall be applied to bolt holes after treatment with Copper napthenate per manufacturer’s instructions.

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

2.4 STRUCTURAL STEEL

A. All structural steel shall comply with Section 05120 Metal Fabrication.

2.5 STEEL DOCK SUPPORT PILES

A. All steel dock support piles shall comply with Section 02896 Steel Pipe Piles.

## PART 3 - EXECUTION

3.1 Field confirm all existing conditions and measurements required to complete WORK prior to installation. Notify ENGINEER of any discrepancies prior to installation.

3.2 Confirm final assembly of timber elements with ENGINEER prior to construction.

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

3.4 Field treat all holes and cuts made after pressure treatment and all timber damaged prior to final acceptance per AWPA M-4.

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

3.6 Field fit shims at existing dock framing to meet ADA required 2% cross-slope. Field treat cut or sanded surfaces per AWPA M-4.

**END OF SECTION**

## SECTION 02801 – ASPHALT CONCRETE PAVEMENT

## PART 1 - GENERAL

1.1 DESCRIPTION

A. WORK consists of the furnishing and mixing of aggregate, asphalt cement, and additives at a mixing plant and the hauling, spreading, and compaction of the asphalt concrete mixture on a previously prepared surface, all as specified in the contract and in conformance with the lines, grades and thicknesses shown on the Drawing.

B. Asphaltic concrete mix for this Project shall be **Type IIA, Class B.** See Table 02801-1.

TABLE 02801-1

| **ASPHALTIC CONCRETE MIX REQUIREMENTS** | | |
|---|---|---|
| DESIGN PARAMETERS | CLASS A | CLASS B |
| Stability, lbs. | 1,800 | 1,800 |
| Flow, 0.01 inch (0.25 mm) | 8-14 | 8-14 |
| Voids in total mix, percent | 3-5 | 3-5 |
| Compactions, number of blows each side of test specimen | 75 | 50 |
| Dust-asphalt ratio (1) | 0.6-1.0 | 0.6-1.0 |
| Percent oil content | 5.3-6.2 | 5.3-6.2 |
| Voids in the mineral aggregate (VMA) Minimum value | | |
| Type I | 13.0 | 12.0 |
| Type II or IIA | 14.0 | 13.0 |
| Type III | 15.0 | 14.0 |

(1) Dust-asphalt ratio is defined as the percent of material passing the U.S. No. 200 sieve divided by the percent of asphalt (calculated by weight of mix).

## PART 2 - PRODUCTS

2.1 COMPOSITION OF ASPHALT CONCRETE MIXTURES - JOB MIX DESIGN

A. Asphalt concrete mixtures shall be composed of aggregate, asphalt cement, and required additives combined within the limits for the type and class specified in the contracts.

B. It is the CONTRACTOR's responsibility to insure that, in addition to the aggregate gradation requirements, the aggregate material meets all the requirements of this Section and asphalt concrete mixture meets the applicable design parameters, when tested according to ATM T-17.

C. At least 15 days prior to the production of asphalt concrete pavement the CONTRACTOR shall submit a current mix design. The mix design shall be performed within six (6) months of the construction season. The following related items shall be submitted with the mix design:

1. Notification that aggregate proposed for the asphalt concrete mixture is available for sampling.
2. A letter stating the proposed gradation for the Trial Job Mix Design, gradations for individual stockpiles, and blend ratio for each aggregate stockpile.

3. A minimum of three (3) one-gallon samples of the asphalt cement proposed for use in the mixture, including name of product, manufacturer, test results as required, manufacturer's certificate of compliance, and a temperature viscosity curve for the asphalt cement.
4. A 1/2 pint sample of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current Materials Safety Data Sheet (MSDS).
5. The CONTRACTOR shall accompany the ENGINEER during sampling, and shall furnish all the assistance needed to assure that the ENGINEER obtains representative samples.
6. The mix design shall be **50 or 75** blow Marshall Method.

D. The ENGINEER will evaluate the gradation for the Trial Job Mix Design and suitability of the materials submitted. If the asphalt concrete mixture conforms to the design parameters specified in Table 02801-1 when tested according to ATM T-17, the ENGINEER will approve the Trial Job Mix Design and specify a target value for the asphalt cement content, mixing temperature and additives.

E. If the Trial Job Mix Design does not conform to the design parameters specified in Table 02801-1, when tested by the ENGINEER, the CONTRACTOR shall submit in writing to the ENGINEER another proposed gradation for a second Trial Job Mix Design. Samples of aggregate and additional asphalt cement shall be obtained in the same manner as for the original Trial Job Mix Design. The ENGINEER shall evaluate and test the second Trial Job Mix Design and either approve or disapprove the design based on the contract requirements. The above procedure shall be repeated until the Trial Job Mix Design is approved.

F. If the CONTRACTOR proposes a change in source of aggregate material, source of asphalt cement, or a change in the gradation target values after production has started, the CONTRACTOR shall submit in writing the proposed gradation target values to the ENGINEER and request a new Trial Job Mix Design be evaluated for approval. The CONTRACTOR shall accompany the ENGINEER during sampling and shall furnish all assistance needed to assure that the ENGINEER obtains representative samples. Approval of the new Trial Job Mix Design and/or aggregate material will require testing and evaluation. Trial Job Mix Design test results will be available within 15 calendar days of submittal. If the asphalt concrete mixture conforms to the design parameters specified in Table 02801-1 when tested in accordance with ATM T-17, the ENGINEER will develop a new target value for the asphalt cement content, mixing temperature and additives. The new target values for gradation and asphalt cement content will only be in effect on asphalt concrete mixture produced after the CONTRACTOR submittal of the new gradation target values for the Trial Job Mix Design.

G. The location and type of the mixing plant shall be included with the Trial Job Mix Design data. Asphalt concrete mixtures produced from different plants shall not be mixed.

H. All trial job mix designs as required will be assessed and paid for by the CONTRACTOR.

## 2.2 ASPHALT AGGREGATES

A. Aggregate for Plant Mix Asphalt Pavement:

1. Coarse Aggregate: Coarse aggregate (that material retained on the No. 4 sieve) shall be crushed stone and shall consist of sound, tough, durable rock of uniform quality. Rock shall be free of schist that cleaves along preferred foliation planes. Rock shall be free of platy mineral grains. Metamorphosed rock shall be free of slaty cleavage. All material shall be free from clay balls, vegetable matter or other deleterious matters. Coarse aggregate shall not be coated with dirt or other finely divided mineral matter. All asphalt aggregates shall be free of roots and wood. In addition, coarse aggregate shall meet the following requirements:

| | | |
|---|---|---|
| Nordic Abrasion Value | Nordic Abrasion Test Procedures[1] | 16.0 Max. |
| Percent of Wear | AASHTO T 96 | 25 max. |
| Degradation Value | ATM 313 | 30 min. |
| Percent Sodium Sulfate Loss | AASHTO T 104 | 10 max. |
| Percent Fracture | WAQTC FOP for AASHTO TP 61 | 100 min. single face/ 80 min. double face |

1

2. Asphalt concrete aggregate shall not exceed eight percent thin - elongated pieces as determined by ATM 306.
3. Fine Aggregate: Fine aggregate (passing the No. 4 sieve) shall meet the quality requirements of AASHTO M 29. Fine aggregate angularity shall be 40 minimum as determined by AASHTO T 304.
4. The several aggregate fractions for the mixture shall be sized, graded, and combined in such proportions that the resulting composite blend conforms to the grading requirements of Table 02801-2. Aggregates gradations shall be determined by ATM 301, except when the sample is obtained by extraction.
5. Asphalt aggregate may be a blend but shall be 80% mechanically crushed with no more than 20% natural sand.
6. The material furnished shall conform to the approved Job Mix Design within the tolerances specified, except the limits given in Table 02801-2 may not be exceeded.

[1] Nordic Abrasion Test Procedures will apply to both the coarse and intermediate aggregate for asphalt aggregate. Test procedures for Nordic Abrasion are available at AKDOT&PF SE Region Materials Laboratory.

| Sieve Size | Tolerance % Passing |
|---|---|
| ¾ inch | 100 |
| ½ inch | ± 6 |
| 3/8 inch | ± 6 |
| No. 4 | ± 6 |
| No. 8 | ± 6 |
| No. 16 | ± 5 |
| No. 30 | ± 4 |
| No. 50 | ± 4 |
| No. 100 | ± 3 |
| No. 200 | ± 1 |

TABLE 02801-2

| ASPHALT CONCRETE AGGREGATE<br>Percent Passing by Weight | | | | |
|---|---|---|---|---|
| Sieve Design | Type I | Type II | Type II-A | Type III |
| 1-inch | 100 | | | |
| 3/4 inch | 80-95 | 100 | 100 | |
| ½ inch | 60-88 | 80-95 | 86-98 | 100 |
| 3/8 inch | 48-77 | 60-87 | 74-86 | 80-95 |
| No. 4 | 28-63 | 36-48 | 46-58 | 44-81 |
| No. 8 | 14-55 | 19-35 | 29-41 | 26-70 |
| No. 16 | 9-46 | 10-25 | 18-28 | 16-59 |
| No. 30 | 6-39 | 7-21 | 11-19 | 9-49 |
| No. 50 | 5-29 | 5-20 | 6-14 | 6-36 |
| No. 100 | 4-18 | 4-15 | 3-9 | 4-22 |
| No. 200 | 2-6 | 2-6 | 2-6 | 2-6 |

2.3 ASPHALT MATERIALS

A. The grade of asphalt cement material will be PG 58-22. The asphalt cement material shall conform to the applicable requirements of this Section and will be conditionally accepted at the source. If the material is to be conditionally accepted at the source, the CONTRACTOR shall provide a manufacture's certificate of compliance in accordance with this section and test results of the applicable quality requirements of this Section before the material is shipped. If there is a change in the source of the asphalt cement or if the kinematic viscosity (viscosity at 275°F) of the asphalt supplied for the Trial Job Mix Design by a factor of two (doubles or halves) or more, then operations shall be suspended while a new Trial Job Mix Design proposal is submitted for approval.

B. ASPHALT CEMENT

1. Asphalt cement shall be designated PG58-22 and conform to the requirements listed on the chart on the next page.

C. CUT-BACK ASPHALTS

1. Cut-back asphalts shall conform to the requirements of AASHTO M 81 and M 82 except as follows:

a. In Table 1 of M 82, reduce the minimum absolute viscosity on residue from distillation at 60ºC to 100, in the MC-30 and MC-250 columns, and revise the maximum distillate percentage by volume of total distillate at 225ºC for MC-30 to read: 35%.

| TEST FOR | SPECIFICATIONS | AASHTO TEST METHOD | SPECIFICATIONS |
|---|---|---|---|
| Penetration | (4ºC [39.2ºF], 200g, 60s), dmm RTFO Aged Residue Note 1 | T 49 | 15+ |
| Ductility | (7.2ºC [45ºF], 1 cm/min), cm RTFO Aged Residue | T 51 | 10+ |
| Absolute Viscosity | (60ºC [140ºF]), P<br>Original Binders<br>RFTO Aged Residue | T 202<br>T 202 | 1,100+<br>1,500-6,000 |
| Kinematic Viscosity | (60ºC [140ºF]), RTFO Viscosity/Orig. Viscosity | T 201 | 275+ |
| Absolute Viscosity Ratio | (60ºC [140ºF]), RTFO Viscosity/Orig. Viscosity | | 4.0- |
| Flash Point, Cleveland Open Cup | C(F) Original Binder | T 48 | 232º+(450º+) |
| Solubility in Trichloroethylene | %, Original Binder | T 44 | 99.0+ |
| Ductility | (25ºC [77ºF], 5 cm/min), cm RTFO Aged Residue | T 51 | 75+ |

Note 1 "RTFO Aged Residue" means the asphaltic residue obtained using the rolling thin film oven test (RTFO Test), AASHTO T 240.

D. EMULSIFIED ASPHALTS

1. CCS-1 cationic emulsified asphalts shall comply with the requirements listed in Table 020801-3.
2. CCS-1 Cationic Emulsified Asphalt shall conform to the requirements of AASHTO M 208.

TABLE 02801-3

| | |
|---|---|
| TESTS ON EMULSION | |
| Viscosity @ 77ºF., SSF | 30 max. |
| Storage Stability, 1 day, % | 1 Max. |
| Demulsibility 35 ml. 0.8% SDS, % | 25 min. |
| Particle Charge | Positive* |
| Sieve, % retained | 0.10 max. |
| Distillation Oil by Vol. of Emulsion, % | 5 max. |
| Distillation Residue by Wt. of Emulsion, % | 45 min. |
| TESTS ON RESIDUE | |
| Penetration @ 77ºF. | 100-200 |
| Ductility @ 77ºF., 5 cm/min., cm | 40 min. |
| Solubility in TCE, % | 97.5 min. |

* If particle charge test is inconclusive, material having a max. Ph value of 6.7 will be acceptable.

E. STORAGE AND APPLICATION TEMPERATURES

1. Asphalt materials required by the Specifications shall be stored and applied within the temperatures ranges indicated below:

TABLE 02801-4
STORAGE AND APPLICATION TEMPERATURES

| Type and Grade of Material | Spray ºF | Mix ºF | Storage ºF |
|---|---|---|---|
| MC-30 | 85+ | | 140 Max |
| MC-250 | 165+ | 165-220 | 240 Max |
| RC-800 | 200+ | | 200 Max |
| CRS-2 | 125-175 | | 100-175 |
| CMS-2 | 125-175 | 120-160* | 100-175 |
| CSS-1 | 90-120 | 90-160* | 50-125 |
| AC-2.5 | 270+ | 235-280** | 325 Max |
| AC-5 | 280+ | 250-295** | 325 Max |
| AC-10 | 280+ | 250-315** | 325 Max |
| STE-1 | 70-140 | 70-150 | 50-125 |
| PG58-22 | | 350 max | 275-325°F |

* Temperature of the emulsified asphalt in the pugmill mixture.

** As required to achieve Kinematic viscosity of 150-300 centistokes.

2.4 ANTI-STRIP ADDITIVES

A. Anti-strip agents shall be used in the proportions determined by ATM 414 and shall be included in the approved Trial Job Mix Design. At least 70% of the aggregate shall remain coated when tested in accordance with ATM 414.

2.5 PROCESS QUALITY CONTROL

A. The CBJ Docks and Harbors Department has the exclusive right and responsibility for determining the acceptability of all materials incorporated into the Project. It is expressly understood, however, that the CONTRACTOR is solely responsible for the sampling and

testing of material for process control of the asphalt concrete mixture including screening, crushing, blending, stockpiling of the aggregate, production of the asphalt concrete mixture and monitoring compaction of the asphalt concrete mixture.

B. The results of the acceptance testing performed by the ENGINEER may not be available to the CONTRACTOR until a period of at least seven working days has elapsed from the date of sampling.

## PART 3 - EXECUTION

### 3.1 WEATHER LIMITATIONS

A. The asphalt concrete mixture shall not be placed on a surface with standing water, on an unstable roadbed when the base material is frozen, or when weather conditions prevent the proper handling or finishing of the mixture. No asphalt concrete, Type II mixture shall be placed unless the surface temperature is 40ºF or warmer.

### 3.2 EQUIPMENT

A. All equipment shall be in good working order and free of asphalt concrete mix buildup. All equipment shall be available for inspection and demonstration 72 hours prior to placement of asphalt concrete.

B. Bituminous Mixing Plants:

1. Mixing plants shall conform to AASHTO M 156.
2. Proportioning (batch) scales shall not be used for weighing material for payment. Weigh scales used in conjunction with a storage silo may be used to weigh the final product for payment, provided the scales are certified.

C. Hauling Equipment:

1. Trucks used for hauling asphalt mixtures shall have tight, clean, smooth metal beds which have been thinly coated with a minimum amount of either paraffin oil, lime water solution approved by the ENGINEER. Diesel or fuel oil shall not be used.
2. Each truck shall have a watertight canvas cover of such size as to extend at least one foot over the sides and end of the truck bed and be adequately secured to protect the asphalt concrete mixture. The use of the canvas cover shall be at the ENGINEER's direction.

D. Asphalt Pavers:

1. Asphalt pavers shall be self-propelled units, provided with a heated vibratory screed. Grade and cross slope shall be controlled through the use of automatic grade and slope control devices. The paver screed control system shall be automatically actuated by the use of a string line, or minimum 30-foot long ski. The length of the string line shall be adjusted to produce the required surface smoothness.

2. The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.
3. The screed assembly shall produce a finished surface of the required smoothness, thickness, and texture without tearing, shoving, or displacing the asphalt concrete mixture. Screed extensions used for paving a constant width shall be heated and vibrated. Auger extensions shall be the same length as the rigid screed extensions.
4. The use of a pickup machine to transfer the asphalt mixture from a windrow to the paver hopper will be permitted, provided the pickup machine is capable of collection of the windrowed material without damage to the underlying course. The ENGINEER will not allow the continued use of the pickup machine if segregation, excessive temperature loss, or any detrimental effects are observed.
5. Paver hopper wings shall either be left in the top or down position throughout the paving operation. If the CONTRACTOR wishes to dump the wings during paving, the material on the wings and in the hopper shall not be incorporated into the finish mat or included in the quantity for payment.
6. The screed assembly shall have a joint compaction device and a joint edge restrainer.

E. Rollers

1. The CONTRACTOR shall supply a sufficient number and weight of rollers to compact the mixture to the required density while maintaining the pace of the paving operations. Rollers shall be of the static steel wheel, vibratory steel wheel, and pneumatic tire type, self propelled and capable of reversing without backlash. They shall be specifically designated to compact hot asphalt concrete mixtures. The use of equipment which results in crushing of the aggregate will not be permitted. Pneumatic tire rollers shall be fully skirted; shall be at least six (6) feet wide; and shall be configured so that the rear group of tires align to cover the spaces between the front group of tires. The roller shall have an operating weight per tire of at least 3,000 pounds. Tires shall be of equal size, a minimum of 20 inches in diameter, shall be inflated to at least 80 psi and maintained so that tire pressures do not vary more than 5 psi between any two (2) tires

## 3.3 PREPARATION OF EXISTING SURFACE

A. The existing surface shall be prepared in conformance with the Drawings and Specifications. Existing paved surfaces shall be cleaned of loose material by sweeping with a power broom, supplemented by hand sweeping, if necessary.

B. Contact surfaces of curbing, gutters, manholes, and other structures shall be coated with a thin, uniform coating of tack coat material in conformance with Section 02802 - Tack Coat prior to the asphalt mixture being placed.

C. Surfaces which have received a prime coat shall be allowed to cure such that the prime coat is not picked up by the haul vehicles. Surfaces which have received an emulsion tack coat shall be allowed to break prior to placement of asphalt concrete mixture.

D. The grading, shaping, and strengthening where applicable, of the road surface shall be as specified in Section 02204 - Base Course.

E. A string line installed by the CONTRACTOR at the direction of the ENGINEER will be the edges of paving.

F. Prior to paving over any existing pavement, the surface shall be thoroughly cleaned and an application of tack coat applied that will provide a strong bond between the two layers.

3.4 PREPARATION OF ASPHALT

A. A continuous supply of the asphalt cement shall be supplied to the mixer at a uniform temperature, within 25ºF of the Job Mix Design mixing temperature.

3.5 PREPARATION OF AGGREGATES

A. The aggregate for the asphalt concrete mixture shall be heated and dried to a temperature compatible with the mix requirements specified. Flames used for drying and heating shall be properly adjusted to avoid damage to the aggregate and to avoid the presence of unburned fuel on the aggregate. Any asphalt concrete mixture in which soot or fuel is present shall be wasted and no payment made.

B. Drying operations shall reduce the aggregate moisture content to the extent that the moisture content of the asphalt concrete mixture, sampled at the point of acceptance for asphalt cement content, shall be no more than 0.5% (by total weight of mix), as determined by WAQTC FOP for AASHTO T 329 as described in ATM 407.

3.6 MIXING

A. The aggregate, asphalt cement additives shall be combined in the mixer in the amounts required by the Job Mix Design.

B. The materials shall be mixed such that a complete and uniform coating of the aggregate is obtained. For batch plants, dry aggregate shall be placed in motion immediately prior to the addition of asphalt cement. Wet mixing time shall be adequate to obtain 98% coated particles when tested in accordance with AASHTO T 195.

C. The temperature of the asphalt concrete mixture at the time of the mixing shall be as determined by the Job Mix Design.

3.7 TEMPORARY STORAGE OF ASPHALT CONCRETE MIXTURE

A. Temporary storing or holding of hot asphalt concrete mixture in silo type storage bins will be permitted.

B. All the asphalt concrete mixture drawn from the silo type storage bins shall conform to all of the requirements for asphalt concrete mixtures as if loaded directly into hauling equipment from the mixing plant. Signs of visible segregation, heat loss, changes from the Job Mix Design, change in the characteristics of asphalt cement, lumpiness or stiffness of the mixture will be cause for rejection.

C. Unsuitable asphalt concrete mixture shall be disposed of by the CONTRACTOR at no cost to the OWNER.

3.8 SPREADING AND PLACING

A. The CONTRACTOR shall submit a Paving Plan for the ENGINEER's review a minimum of five (5) working days prior to initiating the paving operation. The Paving Plan shall consist of, but not be limited to, the following:

1. Paving schedule to include sequence of operations.
2. Paving schedule distributed to residents within the Project boundary.
3. Operational details to include:

a. Plant operating capacity and target production rate.
b. Number and capacity of trucks, cycle time, and delivery rate.
c. The manufacturer and model of the paver and pickup machine, to include information on grade followers, sensors, operating speed and production rate of the pavers.
d. Number, type, weight, and operating speed of rollers.
e. Location of longitudinal joints.
f. Method of constructing transverse joints.
g. Construction plan for paving intersections and driveways.
h. The manufacturers, model number, and the last certified calibration date for the CONTRACTOR's nuclear densometer gauge.

B. The asphalt concrete mixture shall be laid upon a surface approved by the ENGINEER, spread and struck off to the required compacted thickness. Asphalt pavers shall be used to distribute the asphalt concrete mixture in lanes of such widths as to hold to a practical minimum the number of longitudinal joints required, subject to the requirements of this Section.

C. When laying asphalt concrete mixtures, the paver shall be operated at uniform forward speeds consistent with the delivery of asphalt concrete mix to avoid unnecessary stopping and starting of the paver.

D. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the asphalt concrete mixture shall be spread, raked and luted by hand tools. For such areas the asphalt concrete mixture shall be placed to the required compacted thickness.

E. Any asphalt concrete mixture which is observed to be contaminated or segregated will be rejected.

F. When the section of roadway being paved is open to traffic, adjacent traffic lanes shall be paved to the same elevation within 24 hours unless prevented by weather or other factors beyond the CONTRACTOR's control.

G. When multiple lifts are specified in the contract, the final lift shall not be placed until all other lower lift pavement throughout that section, as defined by the Paving Plan, has been

placed and accepted. Paving shall not begin until all adjacent curb has been poured and cured for 72 hours or until satisfactory strength is achieved.

H. Manholes, cleanouts and water valve boxes shall be raised in accordance to CBJ Standard 126 - Concrete Collar. The manhole frames and lids shall be replaced with current CBJ Standard 206A - Sanitary Sewer Manhole Cover and Frame, or CBJ Standard 306 - Storm Drain Manhole Cover and Frame.

I. Paving shall be approximately 24 feet in width with the exception of cul-de-sac's and intersection radius returns. The ENGINEER shall determine the paving limits of the cul-de-sac's and intersection radius returns.

J. Unless waived by the ENGINEER both lanes shall be paved in a single day's operation.

3.9 COMPACTION

A. Immediately after the asphalt mixture has been spread, struck-off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.

B. Minimum compaction shall be 94% of AASHTO T 209. The target value for density will be 94 to 97% of the maximum specific gravity (MSG) as determined in accordance with AASHTO T 209 for the first sample from each lot of asphalt concrete mixture, as defined in this Section. Acceptance testing for field density will be determined in accordance with WAQTC TM 8 as described in ATM 411, or ASTM D-2950, as directed in writing by the ENGINEER.

C. The asphalt concrete mixture, including the leveling course, shall have a minimum of three (3) complete passes with a pneumatic-tired roller prior to cooling to 175ºF. A pass is defined as once over each point on the pavement surface.

D. Areas not accessible to the rollers shall be graded with rakes and lutes and compacted with mechanical tampers. For depressed areas a trench roller may be used to achieve the required compaction.

E. Any asphalt concrete mixture that becomes loose and broken segregated, mixed with dirt, or is any other way defective shall be removed and replaced with fresh hot asphalt concrete mixture, which shall be compacted to conform with the surrounding area. Any area showing an excess or deficiency of asphalt cement shall be removed and replaced.

F. Rollers or other vehicles shall not be parked or left standing on pavement that has not cooled sufficiently to prevent indentation by wheels.

3.10 JOINTS

A. Joints shall be made to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture and smoothness as other sections of the course.

B. When joining old existing pavement and new pavement, the old pavement shall be cut in a neat line, with a power driven saw.

C. Improperly formed joints resulting in surface irregularities or rock segregation shall be removed, full road width, replaced with new material, and thoroughly compacted. Rolling of joints after the material has cooled below 160ºF shall not be allowed. All pavement removal shall be precut to a neat line using a power driven saw.

D. A thin tack coat of asphalt cement or asphalt emulsion shall be applied on all cold joints prior to placing any fresh asphalt concrete mixture against the joint. This WORK shall be completed by the CONTRACTOR just prior to paving.

E. Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course or by using a removable bulkhead.

F. The longitudinal joints in one layer shall offset those in the layer immediately below by at least six (6) inches. The joints in the top layer shall be at centerline or lane lines except where pre-formed marking tape striping is required, in which case the longitudinal joint in the top layer shall be offset not more than one (1) foot.

G. The density at the joints shall not be more than 2% lower than the density specified in the lanes away from the joint.

H. Rolling at the longitudinal joint should be done from the hot side with a vibratory roller as soon as possible. The hot side should always overlap the cold side by 1 to 1.5 inches at the joint.

I. The finished asphalt surface along the edge of curb and gutter shall be ¼ inch above the top edge of the gutter pan.

3.11 SURFACE TOLERANCE

A. The surface will be tested after final rolling at selected locations using a ten (10) foot straightedge. The variation of the surface from the testing edge of the straightedge between any two (2) contacts with the surface shall not exceed 3/16 inch. The asphalt concrete mixture in all defective areas shall be removed and replaced. All costs associated with removal and replacement of asphalt concrete mixture in the defective areas shall be borne by the CONTRACTOR.

B. All asphalt surfaces segregated with single large stones void of intermediate aggregate on the surface shall be removed and replaced full lane width. The surface particles shall be consistent and conform to the contract gradation.

3.12 PATCHING DEFECTIVE AREAS

A. Any asphalt concrete mixture that becomes contaminated with wood or foreign material or is in any way defective shall be removed. Defective materials shall be removed for the full thickness of the course. The pavement shall be saw cut so that the sides are perpendicular and parallel to the direction of traffic and so that the edges are vertical. Edges shall be coated with a thin tack coat material in accordance with Section 02802 – Tack Coat. Fresh asphalt concrete mixture shall be placed in sufficient quantity so that the finished surface will conform to grade and smoothness requirements. The asphalt

concrete mixture shall be compacted to the density specified. No payment shall be made for material replacing defective material. All costs associated with the patching of defective areas shall be borne by the CONTRACTOR.

3.13 ACCEPTANCE SAMPLING AND TESTING

A. Asphalt concrete pavement will be accepted for payment based on the ENGINEER's approval of: the Job Mix Design; the materials; the placement and compaction of the asphalt concrete pavement to the specified depth, finished surface requirements, tolerances, and densities. Any area of finished surfacing that is visibly segregated, fails to meet surface tolerance requirements or specified thickness or densities, or is in any way defective, shall be removed and replaced with new asphalt concrete pavement. Removal and replacement of defective pavement shall be at no additional cost to the OWNER. The full depth of the new asphalt concrete mixture will be replaced; surface patching will not be allowed.

B. Acceptance sampling and testing shall be performed by the ENGINEER. Acceptance testing will determine whether the materials, installation and compaction efforts used by the CONTRACTOR have met these specifications. The results of the acceptance testing performed by the ENGINEER may not be available to the CONTRACTOR until a period of at least seven working days has elapsed from the date of sampling.

C. A lot will be the total asphalt placed on the Project per season. A sublot will be one Day's production on the Project. Each sublot shall be randomly sampled and tested in accordance with this Subsection for asphalt cement content, maximum specific gravity using the Rice Method, density, and gradation.

D. Samples taken for the determination of asphalt cement content and gradation will be taken from behind the screed prior to initial compaction. Asphalt cement content shall be determined by ATM 405. The cost of this sampling (one per sublot) will be borne by the ENGINEER. The CONTRACTOR shall pay for additional testing if not in compliance.

E. ASTM D-2950 will be used to measure density. A minimum of six (6) random tests in locations determined by the ENGINEER will be taken from each sublot. When using ASTM D-2950, the MSG or laboratory pounds per cubic feet shall be determined by using the Rice Method, AASHTO T 209. The Rice Method, for the purposes of nuclear gauge compaction testing, replaces the Marshal Method. Acceptance testing for density will be completed by the ENGINEER in the following sequence:

1. The ENGINEER will randomly sample the in-place asphalt concrete mixture with a nuclear densometer gauge. Random is defined as having no specific pattern. Frequency of this testing will be determined. by the ENGINEER. The CONTRACTOR may request a re-test of any nuclear densometer sample not within Specification limits. The ENGINEER will select the sample location for the re-test. Only one (1) re-test per sample will be allowed. This acceptance testing will be paid for by the OWNER.
2. If the random density acceptance testing indicates that the density specified has not been met, further sampling and testing will be required by the ENGINEER. At the direction of the ENGINEER, the CONTRACTOR shall cut at least one (1) full depth six (6) inch diameter core sample (per lot) from the finished mat. The

samples shall be neatly cut by a core drill at the randomly selected locations. Core holes for sampling shall be backfilled and compacted with hot asphalt concrete mixture within two (2) hours of sampling. The core samples will be tested for compliance with these specifications at a certified laboratory specified by the ENGINEER. Any sampling and testing required beyond the nuclear densometer testing by the ENGINEER will be paid by the CONTRACTOR.

F. At the direction of the ENGINEER, samples taken for the determination of aggregate gradation may be obtained from one (1) of the following locations:

1. From the combined aggregate cold feed conveyor via a diversion chute, or from the stopped conveyor belt.
2. For dry batched aggregates, on batch plants, the pugmill shall be cleaned by dry batching at least two (2) dry batches or until no asphalt coating is found on the aggregate. One complete batch will be dropped in a loader bucket and hand mixed thoroughly with a shovel until a sample can be taken. The sample will be used for acceptance, gradation, control, and payment.

G. Additional materials testing will be required whenever a new Trial Job Mix Design is approved. The maximum specific gravity (MSG) for each lot will be determined from the first randomly selected sample from the first sublot. Materials testing includes, but is not limited to, gradations, extractions, density testing and core analysis.

H. If field density is determined in accordance with ASTM D-2950, additional core samples will be required whenever a new Trial Job Mix Design is approved or whenever there is a change in the typical section. The MSG for each lot will be determined from the first randomly selected sample from the first sublot. The CONTRACTOR shall reimburse the OWNER for all materials testing beyond the first $2,000.00. Materials testing includes but is not limited to gradations, extractions, density testing and core analysis.

I. All tests necessary to determine conformance with the requirements specified in this Section will be performed by the ENGINEER and paid for by the CONTRACTOR.

J. The frequency of materials testing for asphalt is determined by the CBJ Materials Frequency Guide. The CA/Inspector shall meet with the Project Manager prior to paving in order to determine the appropriate testing frequency. For testing frequency circumstances not covered by the CBJ Standard Specifications, the latest edition of the Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction shall be used and incorporated by reference herein.

**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 piles, pile driving tips, all miscellaneous appurtenances and hardware, and all other related WORK in accordance with the requirements of the Contract Documents and as shown on the Plans.

### 1.2 REFERENCES

A. ASTM A252 - Welded and Seamless Steel Pipe Piles

B. ASTM A139 – Electric-Fusion (Arc)-Welded Steel Pipe

C. Steel Structures Painting Council (SSPC) - Steel Structures Painting Manual

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

E. AWS D1.1 - Structural Welding Code - Steel

### 1.3 SUBMITTALS

A. Manufacturer's Mill Certificate: Steel Certification including chemistry, yield strength, and mill numbers.

B. Shop Drawings for all fabricated items per Section 05120 – Metal Fabrication.

C. Welding Procedures: All weld metal proposed to be used in the shop or in the field shall be submitted and approved for use prior to construction. The submittal shall contain all required information and the manufacturer’s recommendations for the use of the product on this project.

D. Welder Certificates: Certify welders employed in the WORK with AWS qualifications within the previous 12 months.

E. Pile Installation Plan: Provide narrative and illustrations 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. The CONTRACTOR shall not mobilize hammers and related equipment prior to receiving written approval, from the ENGINEER, for the Pile Installation Plan.

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

G. Galvanizing certificates verifying that coated material conforms to Specifications.

H. High Density Polyethylene (HDPE) Pipe: Submit Shop Drawings for all fabricated HDPE components, along with manufacturer’s material specifications and dimensional tolerance data.

## 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 Carbon Equivalency not exceed 0.45. Spiral weld pipe may be used provided it conforms to ASTM A139, Grade E with the following modifications:

2. Referenced Documents – Add the following: 2.2 American Welding Standards.
5. Manufacturing – Add the following:
5.2 All butt welds shall conform to AWS D1.1. Material shall be without coil butt splices.
5.3 All coils for fabrication shall be "pre-slit" prior to forming, unless otherwise approved by the ENGINEER.
6. Chemical Composition – Add the following:
6.1 …. In addition, the Carbon element shall be limited to 0.26% maximum as shown in Table 1.
6.2 Steel Carbon Equivalent shall not exceed 0.45% as calculated by AWS D1.1 Appendix XI.
12. Hydrostatic Test – Delete this item and all references in this section.
14. Number of Production Specimens – Substitute the following:
14.2 One reduced-section production weld test specimen specified in 19.5 shall be taken from a length of pipe from each lot of 1,000 feet, or fraction thereof, of each size and wall thickness.
16. Permissible Variation in Weight and Dimension – Add the following:
16.5 Butt Weld Offset – Butt weld offset shall not exceed the limitations of AWS weld procedure, nor a maximum of 10% of the pipe wall thickness, nor 3/32 of an inch.
19. Finish – Modify as follows:
19.1 Repair by Welding – Delete and replace with the following: Defects in the weld shall be repaired or the piece rejected at the option of the manufacturer. Repairs of this nature shall be made completely removing the defect, cleaning the cavity, and then rewelding.

B. All steel pipe piles shall be hot-dip galvanized, full length, in accordance with ASTM A123, unless otherwise noted on the Plans.

C. All steel pipe piles shall be furnished, complete with pile tips, in the lengths indicated on the Plans. Piles shall be delivered full length or field spliced in accordance with approved welding and galvanizing repair procedures.

D. High Density Polyethylene (HDPE) pipe sleeves shall conform to ASTM F714 and shall comply with the following requirements:

1. Guide Piles: HDPE Sleeve inside diameter shall be a minimum of 16.75 inches and a maximum of 17.00 inches for 16 inch diameter piles and a minimum 24.75 inches and a maximum of 25 inches for 24 inch diameter piles. Minimum wall thickness shall be 1.375 inches.

2. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density, and other physical properties. HDPE pipe sleeves shall be U.V. stabilized with 2% carbon black.

E. Miscellaneous steel plates, shapes and fabricated metal assemblies and weldments shall be ASTM A36, hot-dip galvanized per ASTM A123 or A153, and shall conform to the requirements of Section 05120-Metal Fabrication.

## PART 3 - EXECUTION

### 3.1 PREPARATION AND PROTECTION OF COATINGS

A. The CONTRACTOR shall become familiar with the site conditions prior to bid.

B. Galvanized coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired per Section 05120 – Metal Fabrication.

### 3.2 INSTALLATION

A. The CONTRACTOR shall submit a plan for pile driving. The plan shall include pile hammer type and driving method for all pile types, as well as manufacturers' recommendations and information on hammer 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. Piles shall be driven full length to the minimum required capacities and embedment to bedrock as indicated on the Plans. Acceptance of a driven pile and determination of pile refusal shall be made solely by the ENGINEER. Any hammer that causes damage to the piles during driving operations shall be substituted with an acceptable, alternate hammer at no additional expense to the OWNER. Impact hammers shall be supplied with new cap block cushions, which shall be changed at the manufacturer's recommended cycle. A pile hammer with a minimum rated energy of approximately 40,000ft-lb shall be used.

C. Piles shall be installed within 0.5% of specified vertical alignment and within 2 inch of specified location at cutoff. Batter piles with a two foot vertical to one foot horizontal slope shall be placed so their slope varies between 5.875 inches and 6.375 inches horizontal to one foot vertical. Batter piles shall be within 2 inches of 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 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. A tension load test maybe required for driven piles with an insufficient driving record.

E. All steel pipe pile cutoffs greater than five feet in length shall become the property of the OWNER. The CONTRACTOR shall remove the pipe from the project site and shall neatly stack the pipe, as approved by the OWNER, at a location within five miles of the site.

3.3 CONTINGENCY SPLICES

A. The WORK under this paragraph is contingent and includes providing all labor, materials, tools, and equipment necessary to perform pile splicing that is imperative due to unforeseen site conditions. This section does not include pile splices that make up the pile lengths shown in the pile schedule. This contingency item is only for pile lengths that are longer than shown in the pile schedule on the Plans. All WORK for contingency splices shall be performed in accordance with the requirements of the Contract Documents and as indicated on the Plans.

**END OF SECTION**

## SECTION 03301 - STRUCTURAL CONCRETE

## PART 1 - GENERAL

1.1 DESCRIPTION. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing Portland cement concrete for structures in conformance with the Drawings and Specifications.

## PART 2 - PRODUCTS

2.1 PORTLAND CEMENT

A. Portland cement shall conform to the requirements of AASHTO M 85.

B. Unless otherwise permitted by the ENGINEER, the product of only one mill of any one brand and type of Portland cement shall be used on the Project.

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

Delete section on deleterious substances and substitute the following:

The amount of deleterious substances shall not exceed the following limits:
Friable particles percent by weight .....5 max.
Coal and Lignite, percent by weight using a liquid of 1.95 specific gravity. Only material that is brownish- black shall be considered as coal or lignite .....0.5 max.
Material passing the No. 200 sieve, percent by weight .....3.0 max.

Delete paragraph 4.2 of AASHTO M 6.

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

Delete section on deleterious substances and substitute the following:

The amount of deleterious substances shall not exceed the following limits:
Coal and Lignite, percent by weight (only material that is brownish-black or black shall be considered coal or lignite.)..... 1.0 max.
Material passing the No. 200 sieve..... 1.0 max.
Thin-elongated pieces, percent by weight.
(Length greater than 5 times average thickness)..... 15 max.
Sticks and roots, percent by weight ..... 0.10 max.
Friable Particles, percent by weight..... 0.25 max.
Maximum loss from AASHTO T 96 shall be 50 percent.
Maximum loss from AASHTO T 104 shall be 12 percent.

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

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

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

B. Preformed fillers shall conform to AASHTO M 33 for bituminous type; AASHTO M 153 for sponge rubber (type I), cork (type II), and self-expanding cork (type III; AASHTO M 213 for non-extruding and resilient bituminous types and ASHTO M 220 for preformed elastomeric types as specified. The filler shall be punched to admit the dowels where called for on the plans. Joint filler shall be furnished in a single piece for the depth and width required for the joint unless otherwise authorized by the ENGINEER. When more than one piece is authorized for a joint, the abutting ends shall be fastened securely, and held accurately to shape, by stapling or other positive fastening satisfactory to the ENGINEER.

C. Foam filler shall be expanded polystyrene filler having a compressive strength of not less than 10 p.s.i..

D. Hot-poured sealants for concrete and asphaltic pavements shall conform to ASTM D 3405.

E. Hot-poured elastomeric type sealant for concrete pavements shall conform to ASTM D 3406.

F. Cold-poured silicone type sealant for concrete pavements shall conform to Federal Specification TT-S-1543, Class A. The sealant shall be a one part, low-modulus silicone rubber with an ultimate elongation of 1,200 percent.

2.5 CURING MATERIAL

A. Curing material shall conform to the following requirements as specified:

1. Burlap Cloth made from Jute Kenaf AASHTO M 182
2. Sheet Material for Curing Concrete AASHTO M 171
3. Liquid Membrane-Forming Compounds AASHTO M 148 for Curing Concrete, Type I

B. The requirements specified in AASHTO M 148 covering "Liquid Membrane-Forming Compounds for Curing Concrete" are modified by adding the following:

Liquid membrane-forming compounds utilizing linseed oil shall not be used.

2.6 SEALING COMPOUND

A. Non-colored concrete shall be sealed with the Ashford Formula sealing compound, or approved equal.
B. Colored concrete shall be sealed with Euclid Chemical Company Lusterseal 300, or approved equal.

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

2.8 MIXING WATER. Unless otherwise permitted in writing by the ENGINEER, all water shall be obtained from the CBJ potable water system.

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

2.10 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.

2.11 COMPOSITION OF CONCRETE

A. All Portland cement concrete shall be ready-mix, provided by an approved plant regularly engaged in the production of concrete, unless otherwise authorized in writing by the ENGINEER. Ready-mix concrete shall conform to the requirements of AASHTO M 157.

B. The CONTRACTOR shall furnish the mix design to the ENGINEER for approval. The mix design shall be suitable for its intended use. Concrete shall be designed using an absolute volume analysis. The CONTRACTOR shall be responsible for having each mix laboratory tested. Prior to the start of production of any mix design, the CONTRACTOR shall submit test results and certifications for all materials, detailed mix design data and results of laboratory tests to the ENGINEER for approval. Approval by the ENGINEER will be based on apparent conformity to these specifications. It shall remain the CONTRACTOR's responsibility during production to produce concrete conforming to the mix design and the minimum acceptance criteria in the contract. When requested by the ENGINEER, the CONTRACTOR shall submit samples of all materials for verification testing. Production shall not commence until the mix design is approved by the ENGINEER.

C. Unless otherwise specified the design mix shall meet the following:

Minimum cement content 6 1/2 sacks (611 lb.) per C.Y.
Maximum water/cement ratio 5.75 gal/sack (0.51 #/#)
28 day compressive strength (f'c) as indicated on plans.
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.

G. 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.

H. Sparkle Concrete Colors:

1. Color Additives:

Colored Sparkle Concrete Pigment: Davis Colors additive 'Dark Gray' or approved equal, with silicon carbide topping, by other manufacturer. Dosage rate shall be provided by manufacturer and based on weight of Portland cement, fly ash, silica fume, lime and other cementitious materials but not for aggregate or sand.

2. Silicon Carbide Topping: Sparkle Topping: 16 grit black silicon carbide.

Available Products: Sparkle Grains: Pacific Palette Concrete Products, (831) 457-4566.

I. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

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

2. Color: Davis Colors – Taupe 677, Willow Green 5376 and Dark Gray #860, black oxide based pigment as indicated.

## 2.12 SAMPLING AND TESTING

A. Field tests of all materials will be made by the ENGINEER when deemed necessary, in accordance with the applicable Specifications. When the results of the field tests indicate the material does not conform to the requirements of the Specifications, the re-tests required by the ENGINEER shall be at the expense of the CONTRACTOR.

B. Materials that fail to meet contract requirements, as indicated by laboratory tests, shall not be used in the WORK. The CONTRACTOR shall remove all defective materials from the site.

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

D. Three copies of all test reports shall be furnished to the ENGINEER.

2.13 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.

2.14 FORMS

A. Forms shall be so designed and constructed that they may be removed without injuring the concrete.

B. Unless otherwise specified, forms for exposed surfaces shall be made of plywood, hard-pressed fiberboard, sized and dressed tongue-and-groove lumber, or metal in which all bolt and rivet holes are countersunk, so that a plane, smooth surface of the desired contour is obtained. Rough lumber may be used for surfaces that will not be exposed in the finished structure. All lumber shall be free from knotholes, loose knots, cracks, splits, warps, or other defects affecting the strength or appearance of the finished structure. All forms shall be mortar tight, free of bulge and warp, and shall be cleaned thoroughly before reuse.

C. In designing forms and falsework, concrete shall be regarded as a liquid. In computing vertical loads a weight of 150 pounds per cubic foot shall be assumed. The lateral pressure for design of wall forms shall not be less than that given by the following formulas:

For walls with R not exceeding 7 feet per hour:

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

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

For walls with R greater than 7 feet per hour:

$$P = 150 + \frac{43{,}400}{T} + \frac{2800R}{T}\text{ , but not more}$$

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

Where:
P = lateral pressure for design of wall forms, p.s.f.
R = rate of placement, feet per hour
T = temperature of concrete in forms, °F
h = maximum height of fresh concrete in form, feet

D. The above formulas apply to internally vibrated concrete placed at 10 feet per hour or less, without the use of retarding agents, and where depth of vibration is limited to 4 feet below the top of the concrete surface. The CONTRACTOR shall state the placement rate and minimum concrete temperature on the working drawings for concrete form work. Deflection of plywood, studs, and walers shall not exceed 1/360 of the span between supports.

E. Forms shall be so designed that placement and finishing of the concrete will not impose loads on the structure resulting in adverse deflections or distortions.

F. The forms shall be so designed that portions covering concrete that is required to be finished may be removed without disturbing other portions that are to be removed later. As far as practicable, form marks shall conform to the general lines of the structure.

G. When possible, forms shall be daylighted at intervals not greater than 10 feet vertically, the openings being sufficient to permit free access to the forms for the purpose of inspecting, and working.

H. Metal ties or anchorages within the forms shall be so constructed as to permit their removal to a depth of at least 1 inch from the face without injury to the concrete. All fittings for metal ties shall be of such design that, upon their removal, the cavities which are left will be of the smallest possible size.

I. All exposed edges 90° or sharper shall be chamfered 3/4 inch unless otherwise noted. Chamfering of forms for re-entrant angles shall be required only when specifically indicated on the Plans.

J. Forms shall be inspected immediately prior to the placing of concrete. Dimensions shall be checked carefully and any bulging or warping shall be remedied and all debris and standing water within the forms shall be removed. Special attention shall be paid to ties and bracing and where forms appear to be braced insufficiently or built unsatisfactorily, either before or during placing of the concrete, the ENGINEER shall order the WORK stopped until the defects have been corrected.

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

construction joints.

L. The construction of concrete slabs with permanent steel forms shall conform to the requirements of this specification and as shown on the plans. Removable forms may be substituted for permanent metal forms with no adjustment in prices.

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

N. Form sheets shall not be permitted to rest directly on the top of the stringer or floor beam flanges. Sheets shall be securely fastened to form supports and shall have a minimum bearing one inch in length at each end. Form supports shall be placed in direct contact with the flange or stringer or floor beam. All attachments shall be made by permissible welds, bolts, clips or other approved means.

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

P. Falsework shall be built to carry the loads without appreciable settlement. Falsework that cannot be founded on solid footings must be supported by ample falsework piling. Falsework shall be designed to sustain all imposed loads.

Q. Detail drawings of the falsework shall be submitted for review, but such review shall not relieve the CONTRACTOR of any responsibility under the contract for the successful completion of the structure.

R. Forms and falsework shall not be removed without the consent of the ENGINEER. The ENGINEER's consent shall not relieve the CONTRACTOR of responsibility for the safety of the WORK. Blocks and bracing shall be removed at the time the forms are removed and in no case shall any portion of the wood forms be left in the concrete.

S. To facilitate finishing, forms used on ornamental work, railings, parapets, and exposed vertical surfaces shall be removed in not less than 12 nor more than 48 hours, depending upon weather conditions. The side forms for arch rings, columns, and piers shall be removed before the members of the structure which they support are placed, so that the quality of the concrete may be inspected. All such side forms shall be removed before the removal of shoring from beneath beams and girders.

T. In warm weather, falsework and forms shall remain in place under slabs, beams, girders and arches for 14 days after the day of last pour when Type I or Type II cement is used, or for 7 days when Type III cement is used. Forms for slabs having clear spans or cantilever spans of less than 10 feet may be removed after 7 days when Type I or Type II cement is used, or after 4 days when Type III cement is used. In cold weather, the length of time that forms and falsework are to remain in place shall be as approved.

U. Falsework supporting the deck of rigid frame structures shall not be removed until fills have been placed behind the vertical legs.

V. No superstructure load shall be placed upon finished concrete until the ENGINEER so directs, but the minimum time allowed for the curing of structural concrete in the

substructure before any load of the superstructure is placed thereon shall be 7 days when Type I or Type II cement is used and 2 days when Type III cement is used.

2.14 All reinforcing steel for concrete retaining walls and footings shall be galvanized. Galvanized reinforcing steel shall conform to ASTM A767, Class I, with steel conforming to: ASTM A706 Grade 60 for bent or welded bars; and ASTM A615 Grade 60 for straight bars. Galvanizing shall be performed after fabrication. CONTRACTOR shall submit certifications for all reinforcing shown on the plans to the ENGINEER for approval.

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

3.4 SLAB AND GIRDER SPANS

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

B. Girders spanning more than 30 feet may be cast in 2 operations, the first operation being the casting of the girder stems to the bottom of the slab haunches. Shear keys shall be

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

3.5 SLABS ON STEEL BEAMS

A. A concrete slab on simple steel girder spans may be placed in not more than three sections with the first section centered on the span.

B. On truss spans or continuous girders, the concrete slab shall be placed as shown on the Plans or as directed by the ENGINEER.

3.6 CONCRETE DEPOSITED UNDER WATER

A. If conditions render it impossible or inadvisable in the opinion of the ENGINEER to dewater excavations before placing concrete, the CONTRACTOR shall deposit under water, by means of a tremie or pump, a seal course of concrete of sufficient thickness to thoroughly seal the cofferdam. The concrete shall be carefully placed in a compact mass and shall not be disturbed after being deposited. Still water shall be maintained at the point of deposit.

B. A tremie shall consist of a watertight tube having a diameter of not less than 10-inches with a hopper at the top. When a batch is dumped into the hopper, the flow of concrete shall be induced by slightly raising the discharge end, always keeping it in the deposited concrete.

C. Tremie tubes or pump discharge tubes used to deposit concrete under water shall be equipped with a device that will prevent water from entering the tube while charging the tube with concrete. Such tubes shall be supported so as to permit free movements of the discharge end over the entire top surface of the work and to permit rapid lowering, when necessary to retard or stop the flow of concrete. The tubes shall be filled by a method that will prevent washing of the concrete. The discharge end shall be completely submerged in concrete at all times and the tube shall contain sufficient concrete to prevent any water entry. The flow shall be continuous until the WORK is completed and the resulting concrete seal shall be monolithic and homogeneous.

D. The exact thickness of the seal will depend upon the hydrostatic head, bond and spacing of piles, size of cofferdam, and other related factors, but in no case shall the seal be less than 2 feet in thickness, unless otherwise shown on the plans. Before dewatering, the concrete in the seal shall be allowed to cure for not less than five days after placing, or until the seal concrete has achieved a minimum compressive strength of 2,500 p.s.i. based on test cylinders cured under the same conditions as the in situ concrete, whichever occurs first.

E. If a seal which is to withstand hydrostatic pressure is placed in water having a

temperature below 45°F, the curing time before dewatering shall be increased as directed.

F. Periods of time during which the temperature of the water has been continuously below 38°F shall not be considered as curing time.

G. After sufficient time has elapsed to insure adequate strength in the concrete seal, the cofferdam shall be dewatered and the top of the concrete cleaned of all scum, laitance and sediment. Before fresh concrete is deposited, local high spots shall be removed as necessary to provide proper clearance for reinforcing steel.

3.7 CONSTRUCTION JOINTS

A. Construction joints shall be located where shown on the plans or as permitted by the ENGINEER. Construction joints shall be perpendicular to the principal lines of stress and in general shall be located at points of minimum shear.

B. At horizontal construction joints, gage strips 1-1/2 inches thick shall be placed inside the forms along all exposed faces to give the joints straight lines. Before placing fresh concrete, the surfaces of construction joints shall be washed and scrubbed with a wire broom, drenched with water until saturated, and kept saturated until the new concrete is placed.

C. Immediately prior to placing new concrete the forms shall be drawn tight against the concrete already in place. Concrete in substructures shall be placed in such manner that all horizontal construction joints will be truly horizontal and, if possible, in locations such that they will not be exposed to view in the finished structure. Where vertical

construction joints are necessary, reinforcing bars shall extend across the joint in such a manner as to make the structure monolithic. Special care shall be taken to avoid construction joints through large surfaces which are to be treated architecturally.

D. All construction joints shall be provided with concrete shear keys at least 1-1/2 inches deep and 1/3 of the concrete thickness in width, unless otherwise shown on the Plans.

3.8 EXPANSION JOINTS

A. Expansion joints shall be located and formed as required on the plans.

B. Open Joints. Open joints shall be placed in the location shown on the plans and shall be formed. The form shall be removed without chipping or breaking the corners of the concrete. Reinforcement shall not extend across an open joint, unless so specified on the plans.

C. Filled Joints. Unless otherwise shown on the plans, expansion joints shall be constructed with pre-molded expansion joint filler with a thickness equal to the width of the joint.

D. The joint filler shall be cut to the same shape and size as the adjoining surfaces. It shall be fixed firmly against the surface of the concrete already in place in such manner that it will not be displaced when concrete is deposited against it.

E. Immediately after the forms are removed, the expansion joints shall be inspected carefully. Any concrete or mortar that has sealed across the joint shall be removed.

F. Joint sealer for use in deck joints shall be of the type shown on the plans conforming to the requirements of Article 2.4 – Joint Fillers, of this Section. The faces of all joints to be sealed shall be free of foreign matter, paint, curing compound, oils, greases, dirt, free water, and laitance.

G. Elastomeric Compression Seals. The joint seal shall be shaped as shown on the plans. It shall be installed by suitable hand or machine tools and thoroughly secured in place with a lubricant-adhesive recommended by the seal manufacturer. The lubricant-adhesive shall cover both sides of the seal over the full area in contact with the sides of the joint.

H. The seal shall be in one piece for the full width of the joint. Any joints at curbs shall be sealed adequately with additional adhesive.

I. The seal may be installed immediately after the curing period of the concrete. Temperature limitations of the lubricant-adhesive as guaranteed by the manufacturer shall be observed.

J. Strip Seals. Expansion joint strip seals shall be as shown on the plans, and composed of a steel extrusion and an extruded strip seal. The steel shall conform to ASTM A242 or A588. The seal shall be manufactured of material conforming to the requirements of PART 2 of this Section. Strip seals shall be one-piece for the length of the joint.

K. Installation of the expansion joints shall be in accordance with the manufacturer's recommendations, except that the joint opening shall be adjusted for the dimensions indicated on the Plans.

L. Steel Joints. The plates, angles, or other structural shapes shall be accurately shaped at the shop to conform to the section of the concrete slab. The fabrication and painting shall conform to the requirements of the specifications covering those items. Care shall be taken to insure that the surface in the finished plane is true and free of warping. Positive methods shall be employed in placing the joints to keep them in correct position during the placing of the concrete. The opening at expansion joints shall be that designated on the plans at normal temperature.

3.9 ANCHOR BOLTS

A. Anchor bolt assemblies conforming to the details shown shall be accurately secured in the forms in the positions shown on the plans, before any concrete is placed in the forms. The positions shall be checked and any adjustments made as soon as the concrete has been placed.

B. When pipe sleeves or pre-cast holes are provided, no water shall be allowed to freeze in the cavity. If frost causes cracks in the concrete, the entire placement shall be removed and replaced at the CONTRACTOR's expense. When anchor bolts are installed in pipe sleeves or pre-cast holes, the cavity shall be completely filled with grout at the time the

grout pads are constructed or at the time the bearing assemblies or masonry plates are placed.

3.10 DRAINAGE AND WEEP HOLES

A. Drainage holes and weep holes shall be constructed as indicated on the plans or as required.

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

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

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

3.13 ORDINARY FINISH

A. An Ordinary Finish is defined as the finish left on a surface after the removal of the forms, the filling of all holes left by form ties, and the repairing of all defects. The surface shall be true and even, free from stone pockets and depressions or projections. All surfaces that cannot be satisfactorily repaired shall be given a Rubbed Finish.

B. The concrete in caps and tops of walls shall be struck off with a straightedge and floated to true grade. The use of mortar topping for concrete surfaces shall in no case be permitted.

C. As soon as the forms are removed, metal devices that have been used for holding the forms in place, and which pass through the body of the concrete, shall be removed or cut back at least 1 inch beneath the surface of the concrete. Fins of mortar and all irregularities caused by form joints shall be removed.

D. All small holes, depressions, and voids, that show upon the removal of forms, shall be filled with cement mortar mixed in the same proportions as that used in the body of the WORK. In patching larger holes and honeycombs, all coarse or broken material shall be chipped away until a dense uniform surface of concrete exposing solid coarse aggregate is obtained. Feathered edges shall be cut away to form faces perpendicular to the surface. All surfaces of the cavity shall be saturated thoroughly with water, after which a thin layer of neat cement mortar shall be applied. The cavity shall then be filled with stiff mortar composed of 1 part of Portland cement to two parts of sand, which shall be

thoroughly tamped into place. The mortar shall be pre-shrunk by mixing it approximately 20 minutes before using. The length of time may be varied in accordance with brand of cement used, temperature, humidity, and other local conditions. The surface of this mortar shall be floated with a wooden float before initial set takes place and shall be neat in appearance. The patch shall be kept wet for a period of five days.

E. For patching large or deep areas, coarse aggregate shall be added to the patching material. All mortar for patching on surfaces which will be exposed to view in the completed structure shall be color matched to the concrete. Test patches for color matching shall be conducted on concrete that will be hidden from view in the completed WORK and shall be subject to approval.

3.14 RUBBED FINISH

A. When forms can be removed while the concrete is still green, the surface shall be pointed and wetted and then rubbed with a wooden float until all irregularities and form marks are removed and the surface is covered with a lather composed of cement and water. If permitted, a thin grout composed of one part cement and one part fine sand may be used in the rubbing. This lather shall be allowed to set for at least five days. The surface shall then be smoothed by being rubbed lightly with a fine Carborundum stone.

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.

E. Immediately after substrate surface has been leveled and wood floated, before bleed water has appeared, apply Sparkle Grains evenly while there is sufficient moisture in the slab to saturate at least two dust-on coats. Trowel to complete all operations without use of additional water on the surface.

F. Trowel concrete surface and Sparkle Grains uniformly into surface after each shake coat.

G. After the second shake coat of SPARKLE GRAIN has been troweled once, sprinkle Pacific Palette Sparkle Grain over the surface. The surface must be uniformly covered. Use a steel trowel to leave grains at surface covered with a thin film of cement paste.

H. The final finish may be lightly troweled to produce a smooth surface free from defects or blemishes. Finish troweling shall be delayed until surface has set sufficiently to avoid burying the SPARKLE GRAIN, but must be accomplished before finish has hardened.

3.15 CONCRETE DECKS

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

B. Finishing of concrete placed in bridge decks shall consist essentially of striking off the surface of the concrete as placed and floating with longitudinal floats the surface so struck off.

C. The placing of concrete in bridge roadway decks will not be permitted until the ENGINEER is satisfied that the rate of producing and placing concrete will be sufficient to complete the proposed placing and finishing operations within the scheduled time, that experienced finishing machine operators and concrete finishers are employed to finish the deck, and all necessary finishing tools and equipment are on hand at the site of the WORK and in satisfactory condition for use.

D. Finishing machines shall be set up sufficiently in advance of use to permit inspection during the daylight hours before each placement. Before any fresh concrete is deposited on the deck, the finishing machine shall be moved on its rails across the length of the scheduled placement and the clearance between the strike off and deck reinforcing steel shall be checked to ensure that the required minimum concrete cover will be maintained with due consideration for deflections.

E. Unless adequate lighting facilities are provided by the CONTRACTOR, the placing of concrete in bridge decks shall cease at such time that finishing operations can be completed during daylight hours.

F. Rails for support and operation of finishing machines and headers for hand-operated strike off devices shall be completely in place and firmly secured for the scheduled length of concrete placement before placing of concrete will be permitted. Rails for finishing machines shall extend beyond both ends of the scheduled length of concrete placement a sufficient distance that will permit the float of the finishing machine to fully clear the concrete to be placed. Rails or headers shall be adjustable for elevation and shall be set to elevations with allowance for anticipated settlement, camber, and deflection of falsework, as required to obtain a bridge roadway deck true to the required grade and cross section.

G. Rails or headers shall be of a type and shall be so installed that no springing or deflection will occur under the weight of the finishing equipment, and shall be so located that finishing equipment may operate without interruption over the entire bridge roadway deck being finished.

H. Details for supporting finishing machine rails shall be submitted and must be approved before any deck slab concrete is placed.

I. The rate of placing concrete shall be limited to that which can be finished before the beginning of initial set, except that concrete for the deck surface shall not be placed more

than 10 feet ahead of strike off.

J. After the concrete has been placed and consolidated, the surface of the concrete shall be carefully struck off by means of a hand-operated strike board, operating on headers, or by a finishing machine operating on rails. A uniform deck surface true to the required grade and cross section shall be obtained.

K. Following strike off, the surface of the concrete shall be floated longitudinally. In the event strike off is performed by means of a hand-operated strike board, two separate hand-operated float boards for longitudinal floating shall be provided. The first float shall be placed in operation as soon as the condition of the concrete will permit and the second float shall be operated as far back of the first float as the workability of the concrete will permit.

L. In the event the strike off is performed with a finishing machine, longitudinal floating of the concrete shall be performed by means of a hand-operated float board or a finishing machine equipped with a longitudinal float. The longitudinal float on the finishing machine shall have a length of not less than 8 feet nor more than 12 feet.

M. Any finishing machine having a wheel base six feet or less used for strike off shall be followed by two separate hand-operated float boards for longitudinal floating. All the provisions in this section pertaining to hand-operated float boards shall apply to the two separate float boards for longitudinal floating.

N. Longitudinal floats, either hand-operated or machine-operated, shall be used with the long axis of the float parallel to the centerline of the bridge roadway. The float shall be operated with a combined longitudinal and transverse motion planing off the high areas and floating the material removed into the low areas. Each pass of the float shall lap the previous pass by 1/2 the length of the float. Floating shall be continued until a smooth riding surface is obtained. The driving surface of the concrete shall have a heavy broom finish. Decks to receive waterproof membranes shall be float finished.

O. Hand-operated float boards shall be from 12 feet to 16 feet long, ribbed and trussed as necessary to provide a rigid float, and shall be equipped with adjustable handles at each end. The float shall be wood, not less than 1 inch thick and from 4-inches to 8-inches wide. Adjusting screws spaced at not to exceed 24-inches on centers shall be provided between the float and the rib. The float board shall be true and free of twist.

P. Hand-operated float boards shall be operated from transverse finishing bridges. The finishing bridges shall span completely the roadway area being floated and a sufficient number of finishing bridges shall be provided to permit operation of the floats without undue delay. Not less than two transverse finishing bridges shall be provided when hand-operated float boards are used. When a finishing machine is used for longitudinal floating one finishing bridge equivalent to the transverse finishing bridge specified herein shall be furnished for use by the ENGINEER.

Q. All finishing bridges shall be of rigid construction.

R. Immediately following completion of the deck finishing operations, the concrete in the deck shall be cured as specified in Article 3.17, Curing Concrete, of this Section.

S. The finished surface of the concrete shall be tested by means of a straightedge 10 feet long. The surface shall not vary more than 0.01 foot from the lower edge of the straightedge, except bridge decks receiving asphalt wearing courses shall not vary more than 0.02 foot from the lower edge of the straightedge. All high areas in the hardened surface in excess of 0.01 foot as indicated by testing shall be removed by abrasive means. After grinding by abrasive means has been performed, the surface of the concrete shall not be smooth or polished. Ground areas shall be of uniform texture and shall present neat and approximately rectangular patterns.

T. Devices for supporting finishing machine rails shall be of such design that those portions which are to remain embedded in the concrete deck will be covered by a minimum of two inches of concrete when finishing is completed.

3.16 CURB AND SIDEWALK SURFACES.

A. Exposed faces of curbs and sidewalks shall be finished to true surfaces and conform to Section 3303 – Sidewalk, Curb and Gutter. Concrete shall be worked until coarse aggregate is forced down into the body of the concrete and a layer of mortar approximately 1/4 inch thick is flushed on the top. The surface shall then be floated to a smooth but not slippery finish.

3.17 CURING CONCRETE

A. Water Curing

1. All concrete surfaces shall be kept wet for at least seven days after placing if Type I or II cement has been used or for three days if Type III cement has been used. Concrete shall be covered with wet burlap, cotton mats, or other materials meeting the requirements of AASHTO M 171 immediately after final finishing of the surface. These materials shall remain in place for the full curing period or they may be removed when the concrete has hardened sufficiently to prevent marring and the surface immediately covered with sand, earth, straw, or similar materials.

2. In either case the materials shall be kept thoroughly wet for the entire curing period. All other surfaces, if not protected by forms, shall be kept thoroughly wet, either by sprinkling or by the use of wet burlap, cotton mats, or other suitable fabric, until the end of the curing period. If wood forms are allowed to remain in place during the curing period, they shall be kept moist at all times to prevent opening at joints.

B. Membrane Curing/Sealant. Liquid membrane curing/sealant compound meeting the requirements of AASHTO M 148, Type I, may be permitted, subject to approval by the ENGINEER, except compounds utilizing linseed oil shall not be used. All finishing of concrete surfaces shall be performed to the satisfaction of the ENGINEER prior to applying the impervious membrane curing compound. The concrete surfaces must be kept wet with water continuously until the membrane has been applied. The manufacturer's instructions shall be carefully followed in applying the membrane, and in all cases the membrane curing compound must always be thoroughly mixed immediately before application. In case the membrane becomes marred, worn, or in any way

damaged, it must immediately be repaired by wetting the damaged area thoroughly and applying a new coat of the impervious membrane curing compound. Membrane curing will not be permitted for concrete slabs that are to be covered with waterproof membranes, polymer modified concrete or at construction joints.

3.18 BACKFILLING AND OPENING TO TRAFFIC

A. Unbalanced backfilling against concrete structures will not be permitted until the concrete has attained a compressive strength of not less than 100% of the ultimate strength (f ’c) shown on the Plans.

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

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

3.19 FIELD QUALITY CONTROL

A. Testing and Inspecting: OWNER will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

C. 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 exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

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 the 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.

D. Measure floor and slab flatness and levelness within 24 hours of finishing.

3.20 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 03303 - SIDEWALK, CURB AND GUTTER

### 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 sidewalk, curb, and gutter as shown on the Drawings and Standard Details.

### PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall conform to the requirements of Section 03301 – Structural Concrete, except "Concrete International Corporation" Ashford Formula, or approved equal, shall be used instead of the specified curing materials on curbs.

### PART 3 - EXECUTION

3.1 METHODS OF CONSTRUCTION

A. Sidewalk, concrete slabs, curb and gutter, and valley gutter shall conform to the applicable requirements of Section 03301 –Structural Concrete, and as shown on the Drawings, except "Concrete International Corporation" Ashford formula, or approved equal, shall be used as a curing compound.

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

B. All exposed or unprotected edges of sidewalks shall be tooled to a radius of not more than one-half inch. After floating, trowel finish the entire surface using steel trowels. Final finish shall be obtained by brooming the surface, including the tooled edge, to a gritty finish after all free moisture has disappeared from the surface. Sprinkling of cement or sand for blotting will not be permitted.

C. Concrete curb and gutter, curb, and valley gutter shall be integral, one course construction, and molded in place on a gravel subgrade. The face forms of the integral curb and gutter shall be removed as soon as practicable. The top and inclined surface

D. shall then be worked with float or steel trowels to a gritty finish. Glazing, sprinkling of sand or cement, or blotting will not be permitted. Both front and back edges shall be tooled to a radius of one-half inch.

E. Use of monolithic curb and gutter machines will be permitted only on the written approval of the ENGINEER. Mortar may be added to the curb machine in a quantity approved by the ENGINEER.

F. Expansion joints shall be placed at 30-foot, maximum, intervals along all structures and about all features that project into, through, or against the concrete. An expansion joint shall be constructed at the intersection of sidewalks, between sidewalk crossings and sidewalks and at the beginning and end of curb returns. Expansion joints shall not be placed between the sidewalk and the curb.

G. Expansion join material shall conform to the requirements of AASHTO M 213. This material shall extend the full width of the structure and shall be cut to such dimensions that the base of the expansion joint shall extend to the subgrade and the top shall be depressed not less than one-quarter inch nor more than one-half inch below the finished surface of the concrete. The material shall be one piece in the vertical dimension and shall be securely fastened to the existing concrete face against which fresh concrete is to be poured.

H. Transverse contraction joints, cut to a depth of one inch prior to the final set of the concrete, shall be tooled in the sidewalk at intervals approximately equal to the width of the sidewalk, and at ten foot intervals in the curb and gutter. Where the sidewalk adjoins the curb (parallel to it), contraction joints in the sidewalk and curb shall be made to match where practicable.

I. The top and face of the finished curb shall be true and straight and the top surface of curbs shall be of uniform width, free from lumps, sags, or other irregularities. When a straightedge 10 feet long is laid on the top or face of the curb, or on the surface of gutters, the surface shall not vary more than 0.02 foot from the edge of the straightedge except at grade changes or curves. All discolored concrete shall be cleaned at the CONTRACTOR's expense. The concrete may be cleaned by abrasive blast cleaning or other methods approved by the ENGINEER. Repairs shall be made by removing and replacing the entire unit between scoring lines or joints.

J. Sidewalks at driveway approaches shall have a minimum thickness of six (6) inches.

**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 items in accordance with the requirements of the Contract Documents and as shown on the Plans.

1.2 REFERENCES

A. AISC (American Institute of Steel Construction) Code of Standard Practice - Manual of Steel Construction - Allowable Stress Design (ASD).

B. ASTM (American Society of Testing Materials) Specifications

C. ASTM A36/A36M - Structural Steel Plate.

D. ASTM A572/Gr.50- Structural Steel HP Pile Caps

E. ASTM A6 – General Requirements for Rolled Steel Plates, Shapes, Sheet piling, and Bars for Structural Use.

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 for Structural Steel Joints.

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

N. ASTM F594 – Stainless Steel Nuts.

O. ASTM A304- Stainless Steel Diamond Plate

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.

B. Manufacturer's Mill Certificate: Steel certification for all steel used shall include chemistry, yield strength, and mill numbers.

C. Galvanizing Certifications.

D. Galvanizing Repair Method and Materials.

E. Welding Procedures.

F. Welders Certificates: Certify welders employed in the work, verifying AWS qualification within the previous 12 months.

G. Provide fabrication shop QA/QC Plan for review by ENGINEER. Provide qualification data for firms and/or persons to demonstrate their capabilities and experience. Include lists of projects with project names and addresses, and names and addresses of engineers, architects and owners.

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, current edition, and AWS D1.2 Structural Welding Code – Aluminum, current edition.

1. Present evidence that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

2. Submit welding procedures in accordance with AWS Structural Welding Codes.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Fabricator's shop in such quantities and at such times to ensure continuity of installation.

B. Store materials to permit easy access for inspection and identification. Materials shall be protected during shipping and handling. Materials shall be stored above ground on pallets, platforms or other supports. Materials shall be kept clean and properly drained.

C. Store fasteners in a protected place. Clean and re-lubricate bolts and nuts that become dry or rusty before use.

D. Do not store materials or assembled structures in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

**PART 2 - PRODUCTS**

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

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

B. Square and rectangular HSS shall be ASTM A500, Grade B, hot-dip galvanized, unless otherwise noted.

C. Pipe less than 12-inch diameter shall be ASTM A53, Grade B, Type E or S, hot-dip galvanized, unless otherwise noted. Pipe greater than 12-inch diameter shall conform to Section 02896 Steel Pipe Piles.

D. Charpy V-notch toughness requirements are mandatory for materials used for main load carrying member components subject to tensile stress

E. Bolts and Miscellaneous Hardware: Unless otherwise noted, all bolts shall be ASTM A307, hot-dip galvanized. Washers are required under both the head and nut of all bolts, unless otherwise noted. All nuts and washers shall be hot-dip galvanized. Plate washers, with a diameter equivalent to a malleable iron washer, shall be used in all areas where the bolt head or nut bear against wood, except under economy head bolts. All bolts called out as ASTM A325 shall be hot-dip galvanized. A325 bolts shall be installed per AISC turn-of-nut method, unless otherwise indicated on the Plans. All galvanized nuts shall be lubricated with a lubricant containing a visible dye so a visual check can be made following installation.
All bolts, nuts, washers, screws, piano hinge connection rods, and miscellaneous hardware called out as Stainless Steel shall be Type 316 Stainless Steel.

All nails shall be hot-dip galvanized.

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

2.2 METAL COATINGS

A. Unless otherwise noted, all steel shall be hot-dip galvanized in accordance with ASTM A123 or A153 as appropriate.

**PART 3 - EXECUTION**

3.1 METAL FABRICATION

A. Shop Inspection: The CONTRACTOR shall furnish the ENGINEER with 30 days notice of the beginning of WORK at the mill or in the shop so that special fabrication inspections may be scheduled by the ENGINEER.

B. Fabricate and assemble components in a shop, to greatest extent possible. Workmanship and finish shall be equal to the best industry standards and in accordance with the requirements of AWS, AISC, and The Aluminum Association, as applicable.

1. Mark and match-mark materials for field assembly.
2. Fabricate for delivery in a sequence that will expedite erection and minimize field handling.
3. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
4. Holes: Drill holes perpendicular to metal surfaces; do not flame-cut holes or enlarge holes by burning.
5. Aluminum Fabrication: Edges shall be cut true, smooth and free of burrs. Flame cutting is not permitted. Corner edges shall be ground smooth. Holes shall be drilled or punched. Weld spatter and flash marks shall be removed and ground smooth. Mill stamps and markings shall be removed from all exposed surfaces.

C. Structural material, either plain or fabricated, shall be stored at the fabricating shop above ground, on platforms, skids or other supports. It shall be kept free from dirt, grease or other foreign matter, and shall be protected, as far as practical, from corrosion.

D. All holes required for steel hot-dip galvanizing shall be clearly identified on the Shop Fabrication Drawings for ENGINEER review and approval. Fabricator shall coordinate with Galvanizer to determine size and quantity of holes required. Some, or all of the holes, may be required to be fully repaired per AWS D 1.1, at the discretion of the ENGINEER.

3.2 METAL ERECTION

A. General: The CONTRACTOR shall provide and later remove all falsework, temporary shoring, and bracing necessary for erection and to complete assembly. All such devices shall be properly designed and constructed by the CONTRACTOR to meet anticipated construction and handling loads.

B. Handling and Storing of Materials: Material to be stored shall be placed on skids above the ground. It shall be kept clean and properly drained. Girders and beams shall be placed upright and shored. Handling and erection procedures shall be conducted in a manner to avoid over stressing any structural element. Stress and deflection calculations shall be provided by the CONTRACTOR, as deemed necessary by the ENGINEER, for any erection procedure.

C. Method and Equipment: Before starting the WORK of erection, the CONTRACTOR shall inform the ENGINEER fully as to the method of erection proposed, and the amount and character of equipment proposed to be used. Approval by the ENGINEER shall not be considered as relieving the CONTRACTOR of the responsibility for the safety of his method and equipment, or from carrying out the WORK in full accordance with the Plans and Specifications.

D. Assembling: Metal parts shall be accurately assembled as shown on the Plans, following applicable Industry Standards, Codes, erection drawings and fabricators' match-marks. Excessive force or manipulation of parts shall not be allowed as determined by the ENGINEER. The material shall be carefully handled so that no parts will be bent, broken, or otherwise damaged. Hammering, which will injure or distort the members will not be permitted. Bearing surfaces shall be cleaned before the members are assembled.

E. Bolt Holes and Bolting: Bolt holes and bolting shall follow the requirements as stated on the Plans and as indicated by applicable Industry Standards and Codes. Any steel to steel connections noted to be considered "slip-critical" shall be installed by the "turn-of-nut" tightening method per AISC. In addition to the requirements of AISC, bolting of slip-critical joints shall proceed in the following manner:

1. The joint shall be fitted up and aligned with drift pins.
2. Sufficient force shall be applied so as to bring the faying surfaces of steel into close contact. If high strength bolts are used for this purpose (i.e. used to pull steel into position), they shall be clearly marked for identification, and not used in the final connection.
3. High strength bolts shall be installed and brought up to snug-tight condition, such as can be produced by a few blows of an impact wrench, or by an ordinary spud wrench.
4. High strength bolts shall then be tightened by turn-of-nut method, progressing from the most rigid part of the joint toward the free edges.
5. Bolts used to pull steel into position (mentioned above) shall then be removed, replaced with high strength bolts, and tightened as described above.
6. The impact wrench used for bolt tightening shall be of adequate capacity so as to provide the required tightening in approximately 10 seconds.
7. Bolt lengths shall be such that 0" to ¼" of the bolt shall extend past the end of the nut after tightening.

F. Welding: All welding shall be in accordance with AWS D1.1 or AWS D1.2, current edition, as applicable. All welders shall be qualified per AWS for the type of welding anticipated. Welds will be spot tested by the ENGINEER by VT, MT, or UT and any welds which fail shall be repaired at the CONTRACTOR's expense, which will also include all costs for retesting. No welding through galvanized coatings will be permitted.

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

G. Galvanize Repair: Galvanizing and thermal sprayed metalizing coatings damaged due to fabrication, welding, material handling or occurring during installation shall be repaired by using the following hot-applied repair stick method:

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

**END OF SECTION**

## SECTION 13130 – TENSION MEMBRANE STRUCTURES

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section includes installation of prefabricated tension membrane structures designed for seasonal removal of the fabric. Steel frame and tension membrane fabric are owner furnished and are to be installed by the contractor.

### 1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:

1. Wind Loads: 120 mph.
2. Exposure D

### 1.3 SUBMITTALS

A. Obtain shop drawings for Owner furnished steel frame, from owner for reference. Coordinate concrete and rebar shop drawings with owner furnished steel frame shop drawings. Coordinate electrical submittals with electrical components to be installed on the owner furnished steel frame.

B. Welding certificates.

### 1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Pre-installation Conference: Conduct conference at Project site.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

A. Owner furnished steel frame, cable and fabric by EIDE Industries Inc..

B. Support Steel as specified in 051200 structural steel framing.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. Inspect Owner furnished steel frame, fabric, and hardware with owner present. Note any adverse conditions and document with photographs. condition damage Install tension membrane structures according to manufacturer's written instructions.

B. Set tension membrane structures plumb and aligned. Level base plates true to plane with full bearing on concrete bases.

C. Fasten tension membrane structures securely to cast-in concrete anchor bolts of engineered foundations.

D. Connect electrical power service to power distribution system according to requirements specified in Division 26 Sections.

E. Lubricate hardware and other moving parts.

F. After completing installation, inspect exposed finishes and repair damaged finishes.

**END OF SECTION 13130**

## SECTION 16073 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. RMC: Rigid metal conduit.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70.

### PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

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

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.; a division of Cooper Industries.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Tyco International, Ltd.
g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

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

1) Hilti Inc.
2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

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

1) Cooper B-Line, Inc.; a division of Cooper Industries.
2) Empire Tool and Manufacturing Co., Inc.
3) Hilti Inc.
4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

## PART 3 - EXECUTION

### 3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Existing Concrete: Expansion anchor fasteners.
4. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

**END OF SECTION**

# SECTION 16075 - ELECTRICAL IDENTIFICATION

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Identification for conductors.
2. Underground-line warning tape.

## PART 2 - PRODUCTS

### 2.1 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.

B. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.

C. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around conductor it identifies. Full shrink recovery at a maximum of 200 deg F (93 deg C). Comply with UL 224.

D. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

### 2.2 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.

### 3.2 IDENTIFICATION SCHEDULE

A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded branch-circuit conductors.

   a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
   b. Colors for 208/120-V Circuits:

      1) Phase A: Black.
      2) Phase B: Red.
      3) Phase C: Blue.

   c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

B. Locations of Underground Lines: Identify primary and secondary feeders with underground-line warning tape.

**END OF SECTION**

# SECTION 16120 - CONDUCTORS AND CABLES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Building wires rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

### 1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

## PART 2 - PRODUCTS

### 2.1 CONDUCTORS AND CABLES

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

1. Alcan Products Corporation; Alcan Cable Division.
2. Alpha Wire.
3. Belden Inc.
4. Encore Wire Corporation.
5. General Cable Technologies Corporation.
6. Southwire Incorporated.

B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.

C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type XHHW-2.

### 2.2 CONNECTORS AND SPLICES

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

1. AFC Cable Systems, Inc.
2. Gardner Bender.
3. Hubbell Power Systems, Inc.
4. Ideal Industries, Inc.
5. Ilsco; a branch of Bardes Corporation.
6. NSi Industries LLC.
7. O-Z/Gedney; a brand of the EGS Electrical Group.
8. 3M; Electrical Markets Division.
9. Tyco Electronics.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

C. Splices in Handholes and ornamental light pole bases: Multi-mold resin splice kit rated to 1 kV.

## PART 3 - EXECUTION

### 3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Branch Circuits: Copper, stranded; No. 10 AWG, minimum.

### 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Branch Circuits below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Complete raceway installation between conductor and cable termination points according to Section 16130 "Raceways and Boxes" prior to pulling conductors and cables.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

### 3.4 CONNECTIONS

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

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice, and termination.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 16075 "Electrical Identification."

**END OF SECTION**

# SECTION 16130 - RACEWAYS AND BOXES

## PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Nonmetal conduits, tubing, and fittings.
3. Boxes, enclosures, and cabinets.
4. Handholes and boxes for exterior underground cabling.

1.3 DEFINITIONS

A. GRC: Galvanized rigid steel conduit.

## PART 2 - PRODUCTS

2.1 METAL CONDUITS, TUBING, AND FITTINGS

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

1. AFC Cable Systems, Inc.
2. Allied Tube & Conduit.
3. Anamet Electrical, Inc.
4. Electri-Flex Company.
5. O-Z/Gedney.
6. Picoma Industries.
7. Republic Conduit.
8. Robroy Industries.
9. Southwire Company.
10. Thomas & Betts Corporation.
11. Western Tube and Conduit Corporation.
12. Wheatland Tube Company.

B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. GRC: Comply with ANSI C80.1 and UL 6.

D. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.

1. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

E. Joint Compound for GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

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

1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corporation.
6. Condux International, Inc.
7. Electri-Flex Company.
8. Kraloy.
9. Lamson & Sessions; Carlon Electrical Products.
10. Niedax-Kleinhuis USA, Inc.
11. RACO; Hubbell.
12. Thomas & Betts Corporation.

B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.

D. Fittings for RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.

2.3 BOXES, ENCLOSURES, AND CABINETS

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

1. Adalet.
2. Cooper Technologies Company; Cooper Crouse-Hinds.
3. EGS/Appleton Electric.
4. Erickson Electrical Equipment Company.
5. FSR Inc.
6. Hoffman.
7. Hubbell Incorporated.
8. Kraloy.

9. Milbank Manufacturing Co.
10. Mono-Systems, Inc.
11. O-Z/Gedney.
12. RACO; Hubbell.
13. Robroy Industries.
14. Spring City Electrical Manufacturing Company.
15. Stahlin Non-Metallic Enclosures.
16. Thomas & Betts Corporation.
17. Wiremold / Legrand.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Boxes:

1. NEMA 250, Type 4X, 316 stainless steel.

2.4 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. General Requirements for Handholes and Boxes:

1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.
2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.

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

a. Armorcast Products Company.
b. Carson Industries LLC.
c. NewBasis.
d. Oldcastle Precast, Inc.
e. Quazite: Hubbell Power System, Inc.
f. Synertech Moulded Products.

2. Standard: Comply with SCTE 77.
3. First option in "Configuration" Subparagraph below facilitates bottom conduit entry. Second option may be provided by a separate slab placed in the excavation under an open-bottom enclosure; third option is obtained by molding or fabricating the bottom integrally with the body of unit.
4. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
5. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.

6. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
7. Cover Legend: Molded lettering, "LIGHTING".

## PART 3 - EXECUTION

### 3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Underground Conduit: RNC, Type EPC-40-PVC.
2. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X.

B. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

C. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.

### 3.2 INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter.

B. Complete raceway installation before starting conductor installation.

C. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed.

D. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

E. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

F. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

G. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

H. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

I. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

J. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

K. Fasten junction and pull boxes to structure. Do not support boxes by conduits.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 02300 "Earthwork" for pipe less than 6 inches (150 mm) in nominal diameter.
2. Install backfill as specified in Section 02300 "Earthwork."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 02300 "Earthwork."
4. Underground Warning Tape: Comply with requirements in Section 16075 "Electrical Identification."

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade.

3.5 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

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

**END OF SECTION**

# SECTION 16135 - UNDERGROUND DUCTS AND UTILITY STRUCTURES

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the CONTRACT, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. This Section includes the following:

1. Conduit, ducts, and duct accessories for direct-buried and concrete-encased duct banks.
2. Manholes.

### 1.3 DEFINITION

A. RNC: Rigid nonmetallic conduit.

### 1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Duct-bank materials, including separators and miscellaneous components.
2. Ducts and conduits and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Accessories for manholes.
4. Warning tape.

B. Shop Drawings for Precast or Factory-Fabricated Underground Utility Structures: Include plans, elevations, sections, details, attachments to other work, and accessories, including the following:

1. Duct entry provisions, including locations and duct sizes.
2. Reinforcement details.
3. Frame and cover design and manhole frame support rings.
4. Ladder details.
5. Grounding details.
6. Dimensioned locations of cable rack inserts, pulling-in and lifting irons, and sumps.
7. Joint details.

### 1.5 QUALITY ASSURANCE

A. Comply with ANSI C2.

B. Comply with NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver ducts to Project site with ends capped. Store nonmetallic ducts with supports to prevent bending, warping, and deforming.

B. Store precast concrete and other factory-fabricated underground utility structures at Project site as recommended by manufacturer to prevent physical damage. Arrange so identification markings are visible.

C. Lift and support precast concrete units only at designated lifting or supporting points.

1.7 COORDINATION

A. Coordinate layout and installation of ducts and manholes, with final arrangement of other utilities, site grading, and surface features as determined in the field.

B. Coordinate elevations of ducts and duct-bank entrances into manholes with final locations and profiles of ducts and duct banks as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations from those indicated as required to suit field conditions and to ensure that duct runs drain to manholes and as approved by ENGINEER.

**PART 2 - PRODUCTS**

2.1 CONDUIT

A. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.

B. RNC: NEMA TC 2, Type EPC-40-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

2.2 PRECAST MANHOLES

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. Carder Concrete Products.
2. Christy Concrete Products.
3. Elmhurst-Chicago Stone Co.
4. Oldcastle Precast Group.
5. Riverton Concrete Products; a division of Cretex Companies, Inc.
6. Utility Concrete Products, LLC.
7. Utility Vault Co.
8. Wausau Tile, Inc.

B. Comply with ASTM C 858, and with interlocking mating sections, complete with accessories, hardware, and features.

1. Windows: Precast openings in walls, arranged to match dimensions and elevations of approaching ducts and duct banks plus an additional 12 inches (300 mm) vertically and horizontally to accommodate alignment variations.

    a. Windows shall be located no less than 6 inches (150 mm) from interior surfaces of walls, floors, or roofs of manholes, but close enough to corners to facilitate racking of cables on walls.
    b. Window opening shall have cast-in-place, welded wire fabric reinforcement for field cutting and bending to tie in to concrete envelopes of duct banks.
    c. Window openings shall be framed with at least two additional No. 4 steel reinforcing bars in concrete around each opening.

2. Duct Entrances in Manhole Walls: Cast end-bell or duct-terminating fitting in wall for each entering duct.

    a. Type and size shall match fittings to duct or conduit to be terminated.
    b. Fittings shall align with elevations of approaching ducts and be located near interior corners of manholes to facilitate racking of cable.

C. Concrete Knockout Panels: 1-1/2 to 2 inches (38 to 50 mm) thick, for future conduit entrance and sleeve for ground rod.

D. Joint Sealant: Asphaltic-butyl material with adhesion, cohesion, flexibility, and durability properties necessary to withstand maximum hydrostatic pressures at the installation location with the ground-water level at grade.

## 2.3 UTILITY STRUCTURE ACCESSORIES

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. Bilco Company (The).
2. Campbell Foundry Company.
3. Carder Concrete Products.
4. Christy Concrete Products.
5. East Jordan Iron Works, Inc.
6. Elmhurst-Chicago Stone Co.
7. McKinley Iron Works, Inc.
8. Neenah Foundry Company.
9. NewBasis.
10. Oldcastle Precast Group.
11. Osburn Associates, Inc.
12. Pennsylvania Insert Corporation.
13. Riverton Concrete Products; a division of Cretex Companies, Inc..
14. Strongwell Corporation; Lenoir City Division.
15. Underground Devices, Inc.
16. Utility Concrete Products, LLC.
17. Utility Vault Co.

18. Wausau Tile, Inc.

B. Manhole Frames, Covers, and Chimney Components: Comply with structural design loading specified for manhole.

1. Frame and Cover: Weatherproof, gray cast iron complying with ASTM A 48/A 48M, Class 30B with milled cover-to-frame bearing surfaces; diameter, 29 inches (737 mm).

a. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
b. Special Covers: Recess in face of cover designed to accept finish material in paved areas.

2. Cover Legend: Cast in. Selected to suit system.

a. Legend: "ELECTRIC-HV" for duct systems with medium-voltage cables.

3. Manhole Chimney Components: Precast concrete rings with dimensions matched to those of roof opening.

a. Mortar for Chimney Ring and Frame and Cover Joints: Comply with ASTM C 270, Type M, except for quantities less than 2.0 cu. ft. (60 L) where packaged mix complying with ASTM C 387, Type M, may be used.

C. Manhole Sump Frame and Grate: ASTM A 48/A 48M, Class 30B, gray cast iron.

D. Pulling Eyes in Concrete Walls: Eyebolt with reinforcing-bar fastening insert, 2-inch-(50-mm-) diameter eye, and 1-by-4-inch (25-by-100-mm) bolt.

1. Working Load Embedded in 6-Inch (150-mm), 4000-psi (27.6-MPa) Concrete: 13,000-lbf (58-kN) minimum tension.

E. Pulling-In and Lifting Irons in Concrete Floors: 7/8-inch- (22-mm-) diameter, hot-dip galvanized, bent steel rod; stress relieved after forming; and fastened to reinforcing rod. Exposed triangular opening.

1. Ultimate Yield Strength: 40,000-lbf (180-kN) shear and 60,000-lbf (270-kN) tension.

F. Bolting Inserts for Concrete Utility Structure Cable Racks and Other Attachments: Flared, threaded inserts of noncorrosive, chemical-resistant, nonconductive thermoplastic material; 1/2-inch (13-mm) ID by 2-3/4 inches (69 mm) deep, flared to 1-1/4 inches (32 mm) minimum at base.

1. Tested Ultimate Pullout Strength: 12,000 lbf (53 kN) minimum.

G. Expansion Anchors for Installation after Concrete Is Cast: Zinc-plated, carbon-steel-wedge type with stainless-steel expander clip with 1/2-inch (13-mm) bolt, 5300-lbf (24-kN) rated pullout strength, and minimum 6800-lbf (30-kN) rated shear strength.

H. Cable Rack Assembly: Steel, hot-dip galvanized, except insulators.

1. Stanchions: T-section or channel; 2-1/4-inch (57-mm) nominal size; punched with 14 holes on 1-1/2-inch (38-mm) centers for cable-arm attachment.
2. Arms: 1-1/2 inches (38 mm) wide, lengths ranging from 3 inches (75 mm) with 450-lb (204-kg) minimum capacity to 18 inches (460 mm) with 250-lb (114-kg) minimum capacity. Arms shall have slots along full length for cable ties and be arranged for secure mounting in horizontal position at any vertical location on stanchions.
3. Insulators: High-glaze, wet-process porcelain arranged for mounting on cable arms.

I. Duct-Sealing Compound: Nonhardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F (2 deg C). Capable of withstanding temperature of 300 deg F (150 deg C) without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.

J. Portable Manhole Ladders: UL-listed, heavy-duty fiberglass specifically designed for portable use for access to electrical manholes. Minimum length equal to distance from deepest manhole floor to grade plus 36 inches (900 mm). One required.

K. Cover Hooks: Heavy duty, designed for lifts 60 lbf (270 N) and greater. One required.

2.4 SOURCE QUALITY CONTROL

A. Test and inspect precast concrete utility structures according to ASTM C 1037.

**PART 3 - EXECUTION**

3.1 UNDERGROUND DUCT APPLICATION

A. Ducts for Electrical Cables Over 600 V: RNC, NEMA Type EPC-40-PVC, in direct burried duct bank, unless otherwise indicated.

3.2 UNDERGROUND ENCLOSURE APPLICATION

A. Manholes: Precast concrete.

1. Units Located in Roadways and Other Deliberate Traffic Paths by Heavy or Medium Vehicles: H-20 structural load rating according to AASHTO HB 17.

3.3 EARTHWORK

A. Excavation and Backfill: Comply with Section 02300 "Earthwork," but do not use heavy-duty, hydraulic-operated, compaction equipment.

B. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

C. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Cut and patch existing pavement in the path of underground ducts and utility structures according to Section 01731 "Cutting and Patching."

## 3.4 DUCT INSTALLATION

A. Slope: Pitch ducts a minimum slope of 1:300 down toward manholes and away from buildings and equipment. Slope ducts from a high point in runs between two manholes to drain in both directions.

B. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1220 mm), both horizontally and vertically, at other locations, unless otherwise indicated.

C. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.

D. Duct Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches (250 mm) o.c. for 5-inch (125-mm) ducts, and vary proportionately for other duct sizes.

1. Begin change from regular spacing to end-bell spacing 10 feet (3 m) from the end bell without reducing duct line slope and without forming a trap in the line.
2. Direct-Buried Duct Banks: Install an expansion and deflection fitting in each conduit in the area of disturbed earth adjacent to manhole or handhole.
3. Grout end bells into structure walls from both sides to provide watertight entrances.

E. Pulling Cord: Install 100-lbf- (445-N-) test nylon cord in ducts, including spares.

F. Concrete-Encased Ducts: Support ducts on duct separators.

1. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet (6 m) of duct. Secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches (150 mm) between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
2. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.

    a. Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's

written recommendations, or use other specific measures to prevent expansion-contraction damage.

b. If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch (19-mm) reinforcing rod dowels extending 18 inches (450 mm) into concrete on both sides of joint near corners of envelope.

3. Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
4. Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.
5. Forms: Use walls of trench to form side walls of duct bank where soil is self-supporting and concrete envelope can be poured without soil inclusions; otherwise, use forms.
6. Minimum Space between Ducts: 3 inches (75 mm) between ducts and exterior envelope wall, 2 inches (50 mm) between ducts for like services, and 4 inches (100 mm) between power and signal ducts.
7. Depth: Install top of duct bank at least 24 inches (600 mm) below finished grade in areas not subject to deliberate traffic, and at least 30 inches (750 mm) below finished grade in deliberate traffic paths for vehicles, unless otherwise indicated.
8. Warning Tape: Bury warning tape approximately 12 inches (300 mm) above all concrete-encased ducts and duct banks. Align tape parallel to and within 3 inches (75 mm) of the centerline of duct bank. Provide an additional warning tape for each 12-inch (300-mm) increment of duct-bank width over a nominal 18 inches (450 mm). Space additional tapes 12 inches (300 mm) apart, horizontally.

G. Direct-Buried Duct Banks:

1. Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
2. Space separators close enough to prevent sagging and deforming of ducts, with not less than 5 spacers per 20 feet (6 m) of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches (150 mm) between tiers.
3. Excavate trench bottom to provide firm and uniform support for duct bank. Prepare trench bottoms as specified in Section 02300 "Earthwork" for pipes less than 6 inches (150 mm) in nominal diameter.
4. Install backfill as specified in Section 02300 "Earthwork."
5. After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand-place backfill to 4 inches (100 mm) over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing

controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction as specified in Section 02300 "Earthwork."

6. Install ducts with a minimum of 3 inches (75 mm) between ducts for like services and 6 inches (150 mm) between power and signal ducts.
7. Depth: Install top of duct bank at least 36 inches (900 mm) below finished grade, unless otherwise indicated.
8. Set elevation of bottom of duct bank below the frost line.
9. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.

## 3.5 INSTALLATION OF CONCRETE MANHOLES, HANDHOLES, AND BOXES

A. Precast Concrete Handhole and Manhole Installation:

1. Comply with ASTM C 891, unless otherwise indicated.
2. Install units level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances.
3. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1-inch (25-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

B. Elevations:

1. Manhole Roof: Install with rooftop at least 15 inches (380 mm) below finished grade.
2. Manhole Frame: In paved areas and trafficways, set frames flush with finished grade.

C. Drainage: Install drains in bottom of manholes where indicated. Coordinate with drainage provisions indicated.

D. Manhole Access: Circular opening in manhole roof; sized to match cover size.

1. Install chimney, constructed of precast concrete collars and rings to support frame and cover and to connect cover with manhole roof opening. Provide moisture-tight masonry joints and waterproof grouting for cast-iron frame to chimney.

E. Waterproofing: Apply waterproofing to exterior surfaces of manholes after concrete has cured at least three days. After ducts have been connected and grouted, and before backfilling, waterproof joints and connections and touch up abrasions and scars. Waterproof exterior of manhole chimneys after mortar has cured at least three days.

F. Hardware: Install removable hardware, including pulling eyes, cable stanchions, and cable arms, as required for installation and support of cables and conductors and as indicated.

G. Field-Installed Bolting Anchors in Manholes: Do not drill deeper than 3-7/8 inches (98 mm) for manholes and 2 inches (50 mm) for handholes, for anchor bolts installed in the field. Use a minimum of two anchors for each cable stanchion.

H. Warning Sign: Install "Confined Space Hazard" warning sign on the inside surface of each manhole cover.

## 3.6 GROUNDING

A. Ground underground ducts and utility structures.

## 3.7 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
2. Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.

B. Correct deficiencies and retest as specified above to demonstrate compliance.

## 3.8 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump. Remove foreign material.

**END OF SECTION**

## SECTION 16145 - LIGHTING CONTROL DEVICES

### PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Lighting contactors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each type of lighting control device to include in emergency, operation, and maintenance manuals.

### PART 2 - PRODUCTS

2.1 LIGHTING CONTACTORS

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

1. Allen-Bradley/Rockwell Automation.
2. ASCO Power Technologies, LP; a division of Emerson Electric Co.
3. Eaton Corporation.
4. General Electric Company; GE Consumer & Industrial - Electrical Distribution; Total Lighting Control.
5. Square D; a brand of Schneider Electric.

B. Description: Electrically operated and electrically held, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.

## PART 3 - EXECUTION

3.1 CONTACTOR INSTALLATION

A. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration, unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.2 WIRING INSTALLATION

A. Wiring Method: Comply with Section 16120 "Conductors and Cables."

3.3 IDENTIFICATION

A. Identify components and power and control wiring according to Section 16075 "Electrical Identification."

1. Identify controlled circuits in lighting contactors.

B. Label contactor with a unique designation.

**END OF SECTION**

# SECTION 16521 - EXTERIOR LIGHTING

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps and ballasts.
2. Poles and accessories.

### 1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. HID: High-intensity discharge.

D. LER: Luminaire efficacy rating.

E. Luminaire: Complete lighting fixture, including ballast housing if provided.

F. Pole: Luminaire support structure, including tower used for large area illumination.

G. Standard: Same definition as "Pole" above.

### 1.4 ACTION SUBMITTALS

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

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
2. Details of attaching luminaires and accessories.
3. Details of installation and construction.
4. Luminaire materials.
5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
6. Ballasts, including energy-efficiency data.
7. Lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
8. Materials, dimensions, and finishes of poles.
9. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.

1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
2. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

**PART 2 - PRODUCTS**

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the WORK include, but are not limited to, product(s) indicated on Drawings.

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Metal Parts: Free of burrs and sharp corners and edges.

B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

C. Exposed Hardware Material: Stainless steel.

D. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

E. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

F. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

G. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

2.3 BALLASTS FOR HID LAMPS

A. Comply with ANSI C82.4 and UL 1029 and capable of open-circuit operation without reduction of average lamp life. Include the following features unless otherwise indicated:

1. Ballast Circuit: Constant-wattage autotransformer or regulating high-power-factor type.
2. Minimum Starting Temperature: Minus 22 deg F (Minus 30 deg C).
3. Normal Ambient Operating Temperature: 104 deg F (40 deg C).
4. Ballast Fuses: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast manufacturer.

B. High-Pressure Sodium Ballasts: Electromagnetic type with solid-state igniter/starter and capable of open-circuit operation without reduction of average lamp life. Igniter/starter shall have an average life in pulsing mode of 10,000 hours at an igniter/starter-case temperature of 90 deg C.

1. Minimum Starting Temperature: Minus 40 deg F (Minus 40 deg C).

2.4 HID LAMPS

A. High-Pressure Sodium Lamps: ANSI C78.42, CRI 21 (minimum), and average rated life of 24,000 hours, minimum.

2.5 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

A. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

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

1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.

3. Anchor-Bolt Template: Plywood or steel.

C. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.

D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Section 03300 "Cast-in-Place Concrete."

2.6 ALUMINUM POLES

A. Poles: ASTM B 209 (ASTM B 209M), 5052-H34 marine sheet alloy with access handhole in pole wall.

B. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Section 16060 "Grounding and Bonding," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.

2.7 FUSE HOLDERS

A. Insulated Fuse Holder: Waterproof, quick disconnect type kit for low voltage copper conductors, similar to SEC Model 1791.

**PART 3 - EXECUTION**

3.1 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

3.2 POLE INSTALLATION

A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.

B. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Section 03300 "Cast-in-Place Concrete."

C. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.

1. Use anchor bolts and nuts selected to resist seismic forces approved by manufacturer.
2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
3. Install base covers unless otherwise indicated.

D. Raise and set poles using web fabric slings (not chain or cable).

3.3 GROUNDING

A. Ground metal poles and support structures.

1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.4 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

**END OF SECTION**