Juneau International Airport

JUNEAU INTERNATIONAL AIRPORT (JNU) SNOW REMOVAL EQUIPMENT FACILITY (SREF) SITE INFRASTRUCTURE

Contract No. E12-280

AIP No. 3-02-0133-051-2011

File No. 1182.44a

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DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS, CONTRACT FORMS, AND CONDITIONS OF THE CONTRACT

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OBTAINING CONTRACT DOCUMENTS. The Contract Documents are entitled:

Juneau International Airport (JNU)
Snow Removal Equipment Facility (SREF)
Site Infrastructure
Contract No. E12-280

The Contract Documents may be obtained at the City & Borough of Juneau (CBJ) Engineering Department, 3rd Floor Marine View Center, upon payment of $35.00 (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 22, 2012 at the Juneau International Airport, with a walkthrough to follow. The object of the conference is to acquaint Bidders with the project and bid documents. Conference call capability will be available for the Pre-Bid meeting. Proposers intending to participate via conference call shall notify Netti Pahl in the CBJ Engineering Contracts Division, at (907) 586-0892, or email netti_pahl@ci.juneau.ak.us by 3:30 p.m., June 21, 2012.

DESCRIPTION OF WORK. This Project consists of installation of utility lines, construction of an access road and extension of Livingston Way to Maplesden Way, and other site development as described in these Contract Documents.

COMPLETION OF WORK. The WORK must be completed by October 31, 2012.

DEADLINE FOR BIDS: Sealed bids must be received by the Purchasing Division **prior to 2:00 p.m., Alaska Time on July 10, 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 Purchasing Division, which will establish the official time of receipt of bids. Bids will be opened immediately thereafter 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:
City and Borough of Juneau, Purchasing Division
105 Municipal Way, Room 300
Juneau, AK 99801

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

MAILING ADDRESS:
City and Borough of Juneau, Purchasing Division
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 **E** **A** **L** **E** **D**	**BID NUMBER:** **E12-280** **SUBJECT:** **JNU SREF SITE INFRASTRUCTURE** **DEADLINE DATE:** _____ **PRIOR TO 2:00PM ALASKA TIME**	**B** **I** **D**

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 located at the Juneau International Airport, 1873 Shell Simmons Drive in Juneau, Alaska.

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

DBE GOAL. ***The Disadvantaged Business Enterprise goal for this project is 5.8%.***

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. ***Since this Project has federal funding, however, the CONTRACTOR and all Subcontractors will be required to have a current Alaska Contractor's License and a current Alaska Business License prior to Notice of Intent 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.

SECTION 00030 NOTICE INVITING BIDS

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: _____ _____
Jennifer Mannix, Contract Administrator 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 01600 – Product Requirements and Substitutions.

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 CONTRACTOR'S GOOD STANDING WITH CITY FINANCE DEPARTMENT: CONTRACTORs and Subcontractors must be in good standing with the City prior to award, and prior to any contract renewals, and in any event no later than ***ten business days*** 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. Failure to meet these 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* +/-)**
		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

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

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

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

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

6. To all the foregoing, and including all Bid Schedule and information required of Bidder contained in this Bid Form, said Bidder further agrees to complete the WORK required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment 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)
- Bidder's Registration for Contractor, Section 00420

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
- Bidder's Registration form for each Subcontractor, Section 00420
- DBE Utilization Report, Section 00420, if DBE goals are not achieved, the Contact Reports, Section 00420, and Summary of Good Faith Efforts, Section 00420, is required.

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
- Vets-100 Federal Contractor Report, Section 00430
- Buy American Certificate, Section 00410

- EEO - 1 Certification, Section 00440
- EEO Estimated Employment Profile, Section 00440
- EEO Notice to Labor Unions, Minority/Women Organizations, Section 00440
- EEO Signature Page, Section 00440

END OF SECTION

ITEM NO.	BID ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	AMOUNT DOLLARS	AMOUNT CENTS
1505.1	Mobilization and Demobilization	LS	ALL REQ'D	LUMP SUM			
2315.1	Excavation	CY	1045				
2315.2	Mining Area Restoration and Road Cleaning Guarantee	CS	ALL REQ'D	Contingent Sum		$ 2,000	00
2370.1	Erosion and Sediment Control	LS	ALL REQ'D	LUMP SUM			
2501.1	18" CPP Storm Sewer Pipe	LF	66				
2502.1	Culvert Headwall	EA	2				
2510.1	8" HDPE Water Pipe	LF	120				
2510.2	8" Gate Valve	EA	1				
2530.1	Sanitary Sewer Pipe 2" SDR17 HDPE Force Main	LF	645				
2530.2	Sanitary Sewer 6" SDR21 PVC Pipe	LF	20				
2530.3	Type I Manhole	EA	1				
2530.4	2" Manhole Connection	EA	1				
2530.5	Lift Station Wet Well Manhole	EA	1				
2530.6	Duplex Pump Lift Station	EA	1				
2702.1	Construction Surveying	LS	ALL REQ'D	LUMP SUM			
2709.1	Topsoil	CY	270				
2710.1	Seeding, Hydraulic Method Type III	SU	6				
2721.1	Structural Fill	CY	700				
2722.1	Base Course Grading D-1	CY	700				
2760.1	Painted Traffic Markings	LF	908				
2801.1	A.C. Pavement Type IIA, Class B	TON	628				
2890.1	Sign Assembly	EA	15				
2806.1	Remove Existing Asphalt Surfacing	SY	456				

Total Bid $ _____

Company Name _____

SECTION 00320 - BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that_____

_____ as Principal, and _____

as Surety, are held and firmly bound unto **THE 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

JNU SREF Site Infrastructure
Contract No. E12-280

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

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

_____
CONTRACTOR, Authorized Signature

_____
CONTRACTOR, Printed Name

_____
COMPANY

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, JUNEAU INTERNATIONAL AIRPORT** (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. E12-280, JNU SREF Site Infrastructure.**

The WORK is generally described as follows: Installation of utility lines, construction of an access road and extension of Livingston Way to Maplesden Way, and other site development as described in these Contract Documents, 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.

The WORK must be completed by October 31, 2012.

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. E12-280, JNU SREF Site Infrastructure**, 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 00005-2, 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 00300-3, inclusive).
- Bid Schedule (pages 00310-1, inclusive).
- Bid Bond (page 00320-1, inclusive) or Bid Security.
- Subcontractor Report (pages 00360-1 to 00360-2, inclusive).
- 00410 through 00460 – Federal Contract Provisions and Requirements
- 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 00700-30, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-5, inclusive).
- Alaska Labor Standards, Reporting, and Prevailing Wage Determination (page 00830-1).
- Permits, (page 00852-1).
- Standard Details (page 00853-1).
- 00840 Federal Labor Standards, Reporting & Prevailing Wage Rate Determination
- Technical Specifications as listed in the Table of Contents.
- Drawings consisting of __16__ 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: Jeannie Johnson, Airport Manager (Printed Name)	By: _____ (Printed Name, Authority or Title)
Date: _____	CONTRACTOR Signature Date: _____
OWNER's address for giving notices:	CONTRACTOR's address for giving notices:
1873 Shell Simmons Drive, Suite 200	_____
Juneau, Alaska 99801	_____
907-789-7821 907-789-1227 (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:

JNU SREF Site Infrastructure
Contract No. E12-280

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

JNU SREF Site Infrastructure
Contract No. E12-280

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:

JNU SREF Site Infrastructure
Contract No. E12-280

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.

JNU SREF Site Infrastructure
Contract No. E12-280

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

SECTION 00700 - GENERAL CONDITIONS

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(Revised 04-2012)

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

ARTICLE 16 MISCELLANEOUS

ARTICLE 1 DEFINITIONS

Wherever used in these General Conditions or in the Contract Documents the following terms have the meanings indicated that are applicable to both the singular and plural forms.

Addenda - Written or graphic instruments issued prior to the opening of Bids that modify the originally prepared 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.

Change Order - A document approved by the Owner that 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 complete set of documents issued by the Owner, including 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 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 does not conform to the Contract Documents, or does not meet the requirements of any inspection, test, or approval referred to in the Contract Documents, or Work that has been damaged prior to the approval of the Contractor’s final payment request.

Drawings - The drawings, plans, maps, profiles, diagrams, and other graphic representations that indicate the character, location, nature, extent, and scope of the Work and have been prepared by the licensed design professional and are referred to in the Contract Documents.

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, or Engineer of Record - The individual, partnership, corporation, joint-venture or other legal entity that prepared and provided the professional seal for the Contract Documents.

Field Order - A written order issued by the Owner that may or may not involve a change in the Work.

Holidays - The legal holidays of the City & Borough of Juneau 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 - An authorized representative of the Owner assigned to make inspections for conformance to the Contract Documents.

Mechanic's Lien - A form of security, an interest in real property that 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 Substantial Completion - A form signed by the Owner and the Contractor acknowledging that the Work is substantially complete and available for use by the Owner for its intended purpose.

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.

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.

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.

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 illustrate some portion of Work.

Stop Notice - A legal remedy for Subcontractors and suppliers who contribute to public works, but who are not paid for their Work that 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.

Subcontractor - An individual, partnership, corporation, 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 Owner, it is sufficiently complete in accordance with the Contract Documents, so that the Work can be utilized for its intended purpose; or if no such notice is issued, when final payment is due.

Supplementary General Conditions - The part of the Contract Documents that make additions, deletions, or revisions to these General Conditions.

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, or other such facilities, and any encasements containing such facilities that have been installed underground to furnish any of the following services or materials: water, sewage and drainage removal, electricity, gases, telephone or other communications, traffic, or other control systems.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing or furnishing labor, 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 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.

2.2 STARTING THE WORK

A. The Contractor shall begin Work within 10 days after the commencement date stated in the Notice to Proceed, unless otherwise approved by the Owner.

B. Before undertaking each part of the Work, the Contractor shall carefully study and compare the Contract Documents and verify pertinent figures and field measurements. The Contractor shall promptly report in writing to the Owner any conflict, error, or discrepancy that the Contractor may discover and shall obtain a written interpretation or clarification from the Owner before proceeding with any affected Work.

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. Reference to standard specifications, manuals, or codes of any technical 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 any of its 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 the Contractor shall report it to the Owner in writing at once, and the Contractor shall not proceed with the Work affected thereby until a clarification 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:

1. Permits from other agencies as may be required by law
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.

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, and such other lands that 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.

4.2 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

A. Explorations and Reports. Reference is made to 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 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.

B. Existing Structures. Reference is made to 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) that 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 and opinions contained in such drawings are not to be relied on by the Contractor.

4.3 DIFFERING SITE CONDITIONS

A. The Contractor shall promptly upon discovery 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.
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 generally recognized as inherent in the WORK of 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 change 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.

4.4 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

A. Indicated. The Underground Utility information indicated in the Contract Documents at or contiguous to the site is based on information furnished to the Owner or the Engineer by the owners of such Underground Utilities. Unless it is expressly provided in the Supplementary General Conditions, the Owner and the Engineer shall not be responsible for the accuracy of any such information, and the Contractor shall have full responsibility for reviewing all such information, for locating all Underground Utilities indicated in the Contract Documents, for coordination of the Work with the utility owners, 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 at or contiguous to the site that was not indicated in the Contract Documents and that the Contractor could not reasonably have been expected to be aware of, the Contractor shall identify the utility owner and give written notice to the utility owner and the Owner’s Engineer.

4.5 REFERENCE POINTS

A. The Owner’s 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 Contract Documents, 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, the Contractor shall accurately replace such reference points as determined by a licensed design professional.

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. The price shall be specified in the Supplementary General Conditions.

B. Contractors proposing to use gravel from the CBJ/State pit must be in good standing for all amounts owed to the CBJ and for previous gravel operations. Contractors using the pit must comply with Allowable Use Permit USE 98-00047. Failure to meet these requirements 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 using 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. 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.

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 is not allowed. Contractor shall account for placement of materials removed from the pit. The CBJ may require 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 pit will not be weighed. All other material mined will be weighed at the CBJ scale. Contractor is responsible for loading and/or screening its own material. If asphalt pavement is removed as part of the Work, Contractor shall dispose of the material at a location within the pit area specified by the CBJ Pit 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 final payment. Upon completion of each excavation, Contractor shall notify the CBJ in writing and 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 is 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 directed by the Owner.

H. The hours of operation of the CBJ/State pit are from 7:00 a.m. to 6:00 p.m., Monday through Friday, from April 1 through October 15 each year. Contractor 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 is responsible for any additional CBJ 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. 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 or as directed by the CBJ.

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, the Contractor shall within 7 days thereafter substitute another Bond and Surety that 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. The Owner may notify the surety of any potential default or liability.

5.2 INSURANCE

A. The Contractor shall purchase and maintain the insurance required by the CBJ, as described in the Supplementary General Conditions.

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 coverage.

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 required insurance 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 insured" 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 that, 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 written in completed value form and shall protect the Contractor, the Owner, and the Using Agency against risks of damage to Work and materials. The amount of 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, the Owner, and the Using Agency, 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 Using Agency. The Builder's Risk policy shall insure against risks of direct physical loss or damage to property from any external cause. Allowable exclusions are earthquake, flood, mold, and fungus.

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 necessary to carry out the Work. The Contractor shall see that the completed Work complies fully with the Contract Documents.

B. The Contractor shall designate in writing 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. 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 binding. The Contractor shall issue all its communications to the Owner's designee.

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 sufficient labor from competent, qualified personnel to perform Work of the Contract. The Contractor shall furnish, maintain, and remove the construction plant and any temporary facilities required to carry out the Work. The Contractor shall at all times maintain good discipline and order at the site. All Work at the site shall be performed during regular working hours (7:00am-10:00pm) Monday through Saturday, unless otherwise indicated in the construction documents or specifically authorized by the Owner.

B. 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 to accomplish the Work. Overtime compensation rates may be paid to the Contractor for overtime work if specifically authorized for a Change Order.

C. All costs of inspection and testing performed during overtime work by the Contractor that is allowed solely for the convenience of the Contractor shall be borne by the Contractor. The Owner may deduct the cost of all such inspection and testing from payments otherwise due to the Contractor.

D. Unless otherwise specified in the Contract Documents, the Contractor shall furnish and be fully responsibility for all materials, equipment, labor, transportation, tools, utilities, and all other facilities and incidentals necessary for performance 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 required by the Contract Documents shall expressly run to the benefit of the Owner. 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.

F. Any person employed by the Contractor or by any Subcontractor who, in the opinion of the Owner, does not perform the Work in a proper and skillful manner, or is intemperate or disorderly shall, at the written request of the Owner, be removed from the project, and shall not be employed again in any portion of the Work without the approval of the Owner.

6.3 PROGRESS SCHEDULE. The Contractor shall submit updates of the progress schedule to the Owner in accordance with the provisions in Division 1 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 Division 1 General Requirements.

6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

A. The Contractor is responsible to the Owner 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, nor relieve the Contractor of any liability or obligation under the prime contract.

B. The Contractor shall perform Work of not less than 10% of the awarded Contract amount with its own forces or organization (without subcontracting). The 10% requirement will be calculated from the total of 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 Contract Documents, the Contractor shall obtain and pay for all construction permits, inspection fees, utility connections, 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.

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. 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 Permitee in the permits shall mean the Contractor. The Owner may secure permits 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 any additional requirements placed upon the permit.

C. The Owner shall apply for, and obtain the building permit for this Project, if required. However, the Contractor is responsible for scheduling and coordinating all necessary inspections. The CBJ Inspection number is 586-1703.

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 that is the subject of patent rights or copyrights held by others. The Contractor shall indemnify, defend and hold harmless the Owner 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, 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 that in any manner affect those engaged or employed on the Work or the materials used in the Work. If any discrepancy 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 Owner. The Contractor shall indemnify, defend, and hold harmless the Owner and its agents and employees against all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by Contractor, 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 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 and other similar taxes required to be paid by the Contractor in accordance with the Laws and Regulations of the CBJ.

6.10 USE OF PREMISES. The Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Project site and other areas described on the drawings and in Division 1 General Requirements.

6.11 SAFETY AND PROTECTION

A. The Contractor will initiate, maintain, and supervise all safety precautions and programs in connection with the Work in accordance with applicable local, state, and federal laws. 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 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 designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the supervision of safety precautions and program.

C. Materials that contain hazardous substances or mixtures may be required. The Contractor shall provide Material Safety Data Sheets to the Owner of any hazardous product used.

6.12 SHOP DRAWINGS AND SAMPLES. After checking and verifying all field measurements and after complying with applicable procedures, the Contractor shall submit to the Owner for review, all shop drawings and samples in accordance with Division 1 General Requirements.

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 and all designees 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 or its designees. 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 or equipment used in its construction, or by or on account of any act or omission of the Contractor, or its agents;
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;
3. Liability or claims arising directly or indirectly from the violation of any law, ordinance, regulation, or order, whether by the Contractor or its agents;
4. Liability or claims arising directly or indirectly from the use or manufacture by the Contractor, or its agents of any copyrighted or non-copyrighted component, 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 or its agents;
6. Liabilities or claims arising directly or indirectly from the willful or criminal misconduct of the Contractor or its 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 Owner for all 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 in enforcing the provisions of this Section.

C. The indemnification obligation under this Section 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 that includes total hours worked for each construction trade, major equipment on site, weather conditions, visitors on site, and other information requested by the Owner. The daily report shall be completed on forms provided by the Owner and submitted at the conclusion of each workday.

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.

6.17 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES. The Contractor shall pay for any utility turn-on or turn-off, line locates and any other work or assistance necessary by the CBJ Water Utilities Division, unless otherwise stated in the contract documents.

6.18 OPERATING WATER SYSTEM VALVES

A. The Contractor shall submit a written request to the Owner 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.

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

6.19 CONTRACTOR'S WORK SCHEDULE LIMITATIONS. 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 contracts. If such other work was not noted in the Contract Documents, written notice thereof will be given to the Contractor prior to starting any such other work.

B. 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, the Contractor shall inspect and report to the Owner in writing any delays, defects, or deficiencies that cause impacts to the Contractor’s Work. 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 defects and deficiencies in the other work.

ARTICLE 8 OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS

A. The Owner shall issue all its communications to the Contractor through a designated person.

B. The Contractor shall issue all its communications to the Owner through a designated person.

8.2 PAYMENTS. The Owner shall make payments to the Contractor as provided in these General Conditions.

8.3 CHANGE ORDERS. The Owner shall execute Change Orders as indicated in these General Conditions.

8.4 INSPECTIONS AND TESTS. The Owner's responsibility in respect of inspections, tests, and approvals is set forth in these General Conditions.

8.5 SUSPENSION OF WORK. In connection with the Owner's right to stop or suspend Work is described in these General Conditions.

8.6 TERMINATION OF AGREEMENT. The Owner's right to terminate this contract is described in these General Conditions.

ARTICLE 9 OWNER'S REPRESENTATION DURING CONSTRUCTION

9.1 OWNER'S REPRESENTATIVE. The Owner will designate a representative during construction. The duties, responsibilities and limitations of authority of the designee are set forth in the Contract Documents.

9.2 VISITS TO SITE. The Engineer will visit 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 supervise, direct, or have control over the Contractor's Work.

9.3 PROJECT REPRESENTATION. The Owner may furnish an Inspector to assist in observing the performance of the Work. The Inspector will act as directed by the Owner 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 Owner, Engineer, and the Contractor. Dealings with Subcontractors shall only be through, or with the full knowledge of, the Contractor. The specific duties, responsibilities, and limits of authority of the Inspector shall be described at the Pre-Construction conference.

9.4 CLARIFICATIONS AND INTERPRETATIONS. The Owner will issue written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the Owner may determine necessary that are consistent with, or reasonably inferred from, the overall intent of the Contract Documents.

9.5 AUTHORIZED VARIATIONS IN WORK. The Owner may authorize variations in the Work from the requirements of the Contract Documents. These may be accomplished by a Change Order or other contractual mechanism described in the Contract Documents.

9.6 REJECTING DEFECTIVE WORK. The Owner may reject Work that it believes to be defective in accordance with the Contract Documents.

9.7 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, interpretation of the requirements of the Contract Documents, and changes in the Contract Price or Contract Time will be promptly (but in no event later than 30 days) referred to the Engineer in writing within 30 days of the occurrence or event giving rise to the claim. Information submitted by the claimant shall thoroughly describe the claim. A formal decision will be rendered by the Engineer in writing within 30 days of receipt of the claim, unless the Engineer allows an additional period of time to gather additional data or information so as to ascertain an opinion of the claim.

B. The rendering of a decision by the Engineer with respect to any such claim or dispute 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.

9.8 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 or any other person or organization performing any of the Work.

B. Whenever in the Contract Documents the terms "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, or judgment of the Engineer is 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.

C. The Engineer will not supervise, direct, or have authority over or be responsible for the Contractor's means, methods, or procedures of construction or safety precautions, or for any failure of the Contractor to comply with Laws and Regulations applicable to the performance of the Work. The Engineer is not responsible for the Contractor's failure to perform the Work in accordance with the Contract Documents.

D. The Engineer is not responsible for the acts or omissions of the Contractor 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 order additions, deletions, or revisions in the Work through the use of a Change Order.

B. The Owner shall issue to the Contractor a Request for Proposal or Construction Change Directive to consider changes in the Work. If the Owner and Contractor agree on the value of changed work or construction time, the Owner will authorize Change Order and the Contractor shall proceed.

C. 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 Request for Proposal or Construction Change Directive, the Owner may direct the Contractor to proceed with the Work, and a claim may be made therefor as provided in these General Conditions.

D. The Contractor is not entitled to an increase in Contract Price nor an extension of Contract Time for any work performed that is not required by the Contract Documents as modified by Change Order, except in the case of an emergency and except in the case of uncovering work as provided in these General Conditions.

E. If notice of any change is required by the provisions of any Bond to be given to a surety, such notice will be made by the Contractor, and the amount of the Bond 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 under the Contract Documents. An adjustment in the Contract Price may be made for changes that 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. If part of the Work is eliminated and no lump sum or unit price is named in the Contract Documents for such eliminated work, the price 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 these General Conditions.

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 included 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 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 and shall be accompanied by the Contractor's written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) that the Contractor is entitled to as a result of said event. All claims for adjustment in the Contract Price shall be determined by the Engineer in accordance with these General Conditions 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 these General Conditions.

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.
3. On the basis of the cost of Work as determined by these General Conditions plus a Contractor's fee for overhead and profit.

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 weather. 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. Such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items:

1. 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, and other direct costs resulting from Federal, State or local laws including lawful collective bargaining agreements. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the cost 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 these General Conditions.
2. 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 and delivery, subject to the following:

a. Trade discounts available to the purchaser shall be credited to the Owner.
b. 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 Owner. Mark-up except for actual costs incurred in the handling of such materials will not be allowed.
c. 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.
d. If in the opinion of the Owner, 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.
e. The Owner may furnish materials for the extra work and no claim shall be allowed by the Contractor for costs and profit on such materials.

3. Equipment. The Contractor will be paid for the use of equipment at the rental rate listed in the current edition of "Rental Rate Bluebook." Rental rates not covered under this reference shall be comparable to the lowest, commercially available rental rate for similar equipment in the area of the project.

a. All equipment shall be in good working condition and suitable for the purpose for which the equipment is to be used.
b. Individual pieces of equipment or tools having a replacement value of $300 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made.
c. Rental time will not be allowed while equipment is inoperative due to breakdowns.

B. Equipment Usage Time. 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, 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 operator of such equipment only.
3. 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.

C. Specialty Work. Specialty work is work characterized by extraordinary complexity, sophistication, or innovation that is 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 Owner, 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 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.
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 the General Conditions, an allowance of 5 percent may be added to invoices for specialty work.

D. 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 under the original Agreement.

11.4 CONTRACTOR'S FEE

A. Contractor’s Fee for Work proceeding on a lump sum basis. The Contractor shall apply a combined percentage rate to the direct costs to compensate the Contractor for additional overhead and profit associated with a Change in the Work. The combined rate to the Owner of any change shall not exceed the rates set forth in the following schedule:

1. For the Contractor, for Work performed by the Contractor’s own forces, up to fifteen percent (15%) of direct costs.
2. For each Subcontractor, for Work performed by the Subcontractor’s forces, up to fifteen percent (15%) of direct costs.
3. For the Contractor, for work performed by subcontractors, up to ten percent (10%) of the Subcontractors direct costs.
4. For the Subcontractor, for Work performed by subcontractors of all tiers, up to ten percent (10%) of the sub-subcontractor’s direct costs.
5. The total Contractor and all subcontractors’ overhead and profit allowance shall not exceed

twenty-five percent (25%) of direct costs.

6. To the sum of the costs and Contractor fees provided for in this section, one percent (1%) shall be added as compensation for bonds.

B. Contractor's Fee for Work proceeding on a time and materials basis. The Contractor shall apply a combined percentage rate to the direct costs to compensate the Contractor for additional overhead and profit associated with a Change in the Work. The combined rate to the Owner of any change shall not exceed the rates set forth in the following schedule:

1. For the Contractor, for Work performed by the Contractor's own forces, up to fifteen percent (15%) of direct costs.
2. For each Subcontractor, for Work performed by the Subcontractor's forces, up to fifteen percent (15%) of direct costs.
3. For the Contractor, for work performed by subcontractors, up to ten percent (10%) of the Subcontractors direct costs.
4. For the Subcontractor, for Work performed by subcontractors of all tiers, up to ten percent (10%) of the sub-subcontractor's direct costs.
5. The total Contractor and all subcontractors' overhead and profit allowance shall not exceed twenty-five percent (25%) of direct costs.
6. To the sum of the costs and Contractor fees provided for in this section, one percent (1%) shall be added as compensation for bonds.

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

A. Payroll costs and other compensation of Contractor's officers, managers, engineers, estimators, attorneys' auditors, accountants, purchasing agents, clerks and other personnel employed by Contractor whether at the site or in Contractor's administrative office, 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 capital and charges against Contactor for delinquent payments.

D. Costs due to the negligence of Contractor, or anyone directly or indirectly responsible to the Contractor for whose acts may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied and correcting damage to property.

ARTICLE 12 CHANGE OF CONTRACT TIME

12.1 GENERAL

A. The Contract Time may only be changed by a Change Order. 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. If the Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Time may 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 these General Conditions. Delays beyond the control of Contractor may include acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work at the site, fires, or unprecedented weather conditions. Unprecedented or unusually severe weather is defined as an event, or events, with a greater than 50-year recurrence interval, as determined by the National Weather

Service. Delays attributable to and within the control of a Subcontractor or Supplier shall be considered delays within the control of Contractor.

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 that all Work is constructed in accordance with the Contract Documents and will not be defective. Prompt notice of defects known to the Owner shall be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected, or accepted as provided in these General Conditions.

13.2 ACCESS TO WORK. The Owner and its designees and representatives, 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 proper and safe conditions for such access and advise them of site safety procedures so that they may comply.

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 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 or tested, the Contractor shall pay all costs in connection therewith. The Contractor is also responsible for and shall pay all costs in connection with any inspection or testing required in connection with the Owner's acceptance of materials or equipment proposed as a substitution.

C. The Engineer will inspect and test 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 paid by the Owner. If inspections or tests reveal non-compliance with the requirements of the Contract Documents, the Contractor shall pay for the cost of corrective measures deemed necessary by the Engineer, as well as the cost of subsequent reinspection and retesting. Observations, inspections, tests, or approvals by the do not relieve the Contractor from its obligation to perform Work in accordance with the Contract Documents.

D. If any Work that is to be inspected, tested, or approved is covered without written concurrence of the Engineer, the Engineer may require it to be uncovered for observation. Such uncovering shall be at the Contractor’s expense unless the Contractor has given the Engineer timely written notice of the Contractor's intention to perform such test or to cover and the Engineer has not acted with reasonable promptness in response to such notice.

E. If the Engineer considers it necessary or advisable that covered Work be observed or tested, the Contractor shall uncover or otherwise make available for observation, inspection, or testing as the Engineer requires, 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 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 directly attributable to such uncovering, 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 these General Conditions.

13.4 OWNER MAY STOP THE WORK. If the Work is defective or the Contractor fails to perform Work in such a way that it conforms to the Contract Documents, the Owner may order the Contractor to stop the Work 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 correct all defective work or remove rejected Work from the site and replace it with non-defective work. The Contractor shall pay all costs and damages of correction or removal, including fees of engineers, attorneys, and other professionals made necessary thereby.

13.6 ONE YEAR CORRECTION PERIOD

A. If within one year after the date of Final Acceptance 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 costs and damages of such removal and replacement including fees 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 section, the correction period for 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. The Owner may choose to accept defective Work for less than full contract value rather than correction, removal, and replacement. The Contractor shall bear all costs attributable to the Owner's evaluation of and determination to accept such defective work and the value thereof. 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 BREAKDOWN). A 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 Owner.

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. The Contractor shall submit to the Owner 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. Applications for Payment shall occur at intervals established at the Pre-Construction conference, but in no case more often than once per month.

B. The Application for Payment shall be made on a format acceptable to the Owner and shall identify the amount of the Contractor's Total Earnings to Date, the Value of Materials Stored at the Site that have not yet been incorporated in the Work, and other information requested by the Owner.

C. Progress payments will be reviewed by the Owner and paid in full for Work complete and in accordance with these 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. final 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 or agreed to by the Owner and Contractor based on actual invoices. 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, 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. Payment for materials will not constitute final acceptance. It is the Contractor's responsibility to protect materials from damage, theft, or loss while in storage. The Value of Materials Stored at the Site may be paid up to a maximum of 85% of the Contract Price for those items.

14.4 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

A. The Owner shall promptly review the Application for Payment, which may include review by the Engineer. If the Owner disagrees with a portion of the Application, it may be returned to the Contractor for correction. Portions of the Application that are approved by the Owner may be authorized for payment without holding resolution of the disputed items.

B. The Owner may refuse to make payment of the full amount requested by the Contractor 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 stating the reasons for such action.

14.5 PARTIAL UTILIZATION

A. The Owner may utilize or place into service any item of equipment or other usable portion of the Work prior to final completion of the Work. The Owner shall notify the Contractor in writing when partial utilization is desired, identifying the specific portion or portions of the Work to be so utilized or placed into service and the specific date of such usage.

B. Until such written notification is issued, all responsibility for care and maintenance of all of the Work shall remain with the Contractor. The Owner is responsible for the protection and maintenance of all such items or portions of the Work once partial utilization is exercised.

C. The Contractor retains full responsibility for satisfactory completion of the Work regardless of whether a portion thereof has been partially utilized by the Owner. The Contractor's one year correction period shall commence only after the date of Final Acceptance of the Work.

14.6 SUBSTANTIAL COMPLETION. When the Contractor considers the Work ready for its intended use, it shall notify the Owner in writing that the Work is substantially complete. The Contractor shall attach a list of all work items that remain to be completed and a request that the Owner conduct a Substantial Completion Inspection. Within a reasonable time thereafter, the Owner and the Contractor shall make an inspection of the Work to determine the status of completion. If the Owner does not consider the Work substantially complete, or the list of remaining work items to be comprehensive, the Contractor will be notified with the reasons therefor. If the Owner considers the Work substantially complete, a Notice of Substantial Completion will be executed. The Notice of Substantial Completion signed by the Owner and Contractor shall fix the date of Substantial Completion and the deadline for Final Acceptance.

14.7 FINAL APPLICATION FOR PAYMENT. After the Contractor has completed all of the remaining Work and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, as-built documents and other documents required by the Contract Documents, and after the Owner has made final acceptance of the Work, the Contractor may apply 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 releases or waivers of all liens arising out of or filed in connection with the Work.

14.8 FINAL PAYMENT AND ACCEPTANCE

A. The Owner will promptly review the Contractor’s request for final payment.

B. After acceptance of the Work by the Owner final payment will be made to the Contractor for the amount remaining after deducting all prior payments and amounts to be kept by the Owner under the provisions of the Contract Documents, including the following items:

1. Liquidated damages, as applicable.
2. Two times the value of outstanding Work requiring correction or remaining incomplete. 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 waives any and all claims to all monies withheld by the Owner to cover the value of such uncompleted or uncorrected items.

14.9 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 shall release to the Contractor retained funds withheld pursuant to the Agreement, less any deductions to cover pending claims against the Owner.

B. After filing 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, the amounts withheld pursuant to the provisions of these General Conditions 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 all claims for all monies withheld by the Owner under the Contract to cover two times the value of such remaining uncompleted or uncorrected items.

14.10 CONTRACTOR'S CONTINUING OBLIGATION. The Contractor's obligation to complete the Work in accordance with the Contract Documents shall be absolute. Recommendation of any progress or final payment, the issuance of a Notice of Completion, any use or occupancy of the Work or any part thereof by the Owner, any act of acceptance by the Owner, any review of a submittal will not constitute acceptance of Work or a release of the Contractor's obligation to perform the Work.

14.11 FINAL PAYMENT TERMINATES LIABILITY OF OWNER. Final payment is the last progress payment made to the Contractor for earned funds, less monies withheld as applicable, pursuant to these General Conditions. The acceptance by the Contractor of the final payment shall be a release of the Owner 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; 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 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 of a notice of resumption of work issued by the Owner. 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 these General Conditions.

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: (1) declares bankruptcy, become insolvent, or assigns its assets for the benefit of its creditors; (2) fails to provide materials or quality of work meeting the requirements of the Contract Documents; (3) disregards or violates provisions of the Contract Documents; (4) fails to prosecute the Work according to the approved progress schedule; or, (5) fails 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 these General Conditions, the Owner may take possession of the Work and complete by whatever method or means the Owner chooses. The cost of completing the Work shall be deducted from the balance that 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 that would have been due, the Contractor shall pay the excess amount to the Owner. If such cost is less than the balance that 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 that would be needed in the Work and that 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 Owner.

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 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 fails to authorize payment to the Contractor for Work completed in accordance with the Contract Documents and within 60 days after a written request for payment has been presented to the Owner, and the Owner has failed to remedy 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 described in these General Conditions.

ARTICLE 16 MISCELLANEOUS

16.1 GIVING NOTICE. Whenever any provision of the Contract Documents requires that written notice be given, it will be considered validly given if delivered in person to the individual for whom it is directed, or if delivered at or sent by registered or certified mail 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 Owner's approval, 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 that 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 remove any material from within the Project location that is not within the grading limits shown on the Drawings without written authorization from the Engineer.

D. In the event the Contractor processes 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 Owner may retain possession of such materials without obligation to reimburse the Contractor costs of their production. When such materials are in a stockpile, the Engineer may require that it remain in stockpile, that the Contractor level such stockpile, 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 Owner from an agreement with the Contractor to produce material over and above the contract needs and pay in accordance with a written agreement.

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 may audit the Contractor's books relevant to the claim. This right includes 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 claimed to have been incurred or anticipated to be incurred in reference to the submitted claim. The right to audit includes inspection of the Contractor's plants 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 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 for auditing, all relevant accounting records, 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, or 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 Owner. No artifacts shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the Owner order suspension of the Contractor's operations in order to protect an archaeological finding, or order the Contractor to perform extra work, a Change Order will be issued by the Owner to address such conditions.

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 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. 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 its surety) against the Owner, or by the Owner against the Contractor (or its 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 its surety) shall reimburse the Owner for all legal and all other expenses as may be allowed and set by the court that were incurred by the OWNER because of the suit of the law. Further, it is agreed that the Owner may deduct such expense from any sum due the Contractor under the contract.

16.8 CERTIFIED PAYROLLS

A. All Contractors and Subcontractor who perform work on a public construction contract for the Owner shall file certified payrolls with the Alaska Department of Labor in accordance with ADOL requirements, and a copy of such report shall be filed with the Owner if directed.

B. A Contractor or Subcontractor who performs Work on public construction in Alaska 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 & Mechanics on Public Contracts, AS 36.05.070. The Contractor or Subcontractor shall pay all employees unconditionally and not less than once a week. Wages may not be less than those required by ADOL prevailing wage regulations, 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's or Subcontractor's 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).

B. Listing Contractors Who Violate Contracts, AS 36.05.090.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 Owner 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 affected by the proposed changes including 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 that may be submitted, nor is the Owner 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 may 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 an executed Change Order has not been issued by the decision date stated by the Contractor, 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.

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 that specifically states that the change is executed pursuant to this cost reduction proposal provisions of the contract. Such Change Order shall incorporate the changes

in the Contract Documents that are necessary to permit the cost reduction proposal to be put into effect and shall include any conditions upon which the Owner's approval is based. The Change Order shall also reflect the credit attributable to the cost reduction proposal.

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 of the accepted cost reduction proposal specified in the Change Order 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 may use all or part of any cost reduction proposal without obligation or compensation 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 00700

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 2.1 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 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 field measurements and visual inspection of the existing structures and surface conditions.

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: Builder's Risk is not required for this project.

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

F. 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. *Paragraph A reads as follows:*

The CONTRACTOR shall perform not less than 10% of the WORK with its own forces (i.e., without subcontracting). The 10% requirement shall be understood to mean that the CONTRACTOR shall perform, with its own organization, WORK amounting to at least 10% of the original contract amount. The 10% 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 14.8 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 00840 – Federal Labor Standards, Reporting, and Prevailing Wage Rate Determination.

Add the following SGC 16.12.

SGC 16.12 EQUAL EMPLOYMENT OPPORTUNITY (EEO)

The CONTRACTOR may not discriminate against any employee or applicant for employment because of race, religion, color, national origin, age, disability, sex, marital status, changes in marital status, pregnancy or parenthood. The CONTRACTOR shall post a notice setting out the provisions of this paragraph in a conspicuous place available to employees and applicants for employment.

The CONTRACTOR and each Subcontractor shall state in all solicitations and advertisements for employees to work on this Project, that it is an Equal Opportunity Employer and that all qualified applicants will receive consideration for employment without regard to race, religion, color, national origin, age, disability, sex, marital status, changes in marital status, pregnancy or parenthood.

The CONTRACTOR shall include the provisions of this EEO article in every contract relating to this Project and shall require the inclusion of these provisions in every agreement entered into for this Project, so that those provisions will be binding upon the CONTRACTOR and each Subcontractor.

Add the following SGC 17**:**

SGC 17 GENERAL INFORMATION. This Project is currently funded by the City and Borough of Juneau, Alaska and U.S. Department of Transportation Federal Aviation Administration.

Employment Security Tax Clearance

Date: _____

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

From: _____

Subject: JNU SREF Site Infrastructure
Contract No. E12-280

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:

Jennifer Mannix, Contract Administrator
Engineering Department
155 S. Seward Street
Juneau, Alaska 99801
FAX 907-586-4530

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

Remarks: _____

_____ _____
Signature Date

_____
Title

END OF SECTION

SECTION 00852 - PERMITS

DO NOT USE THIS SECTION UNLESS THERE ARE ACTUAL PERMITS
TO INCLUDE IN THE BID DOCS. IF WE HAVE THE ACTUAL PERMIT(S),
REFERENCE PERMIT NAMES & NUMBERS AND ATTACH PERMIT(S) WITHIN THIS SECTION
– Per Jen, Feb 08.

PART 1 - GENERAL

1.1 INDEX OF PERMITS

A. CBJ Right-of-Way Permit

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 00853 - STANDARD DETAILS

PART 1 - GENERAL

1.1 STANDARD DETAILS

A. Whenever references are made to the Standard Drawings or Standard Details in these plans or Specifications the intent is to refer to the current City and Borough of Juneau Standard Details (currently the 4th Edition dated August 2011), copies of which may be purchased from the CBJ Engineering Department.

B. City and Borough of Juneau Standard Details which specifically apply to this Project include but are not limited to the following:

LIST OF DETAILS

STANDARD DETAIL NO.	NAME OF DETAIL
220-1 through 220-10	Dump Station

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items for Work that are necessary to complete the various items of the Work in accordance with the requirements of the Contract Documents. Payment further includes all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction.

B. No separate payment will be made for any pay item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenant items of Work.

C. In addition to the other incidental items of Work listed elsewhere in the contract documents, the following items shall also be considered as incidental to the Work:

1. Maintenance of all services through the Project area including power, water, storm and sanitary sewers, garbage pickup, mail delivery, and emergency vehicles.
2. Traffic control, including flaggers, and installation and maintenance of traffic control devices in accordance with the Manual of Uniform Traffic Control Devices and the current Alaska DOT&PF supplements.
3. Repair or replacement of existing adjacent facilities including piping, landscaping, fencing, steel, concrete and asphalt items if damaged by the Contractor.
4. Final clean-up and site restoration.
5. All Work necessary for coordination of work to be accomplished by the private utility companies and property owners within the Project limits.
6. Removal and replacement of survey monuments and markers disturbed during construction, whether shown on the Drawings or not.
7. Watering of the roadway as necessary for dust control.
8. Removal and disposal of existing sign assemblies within the Project limits not shown to remain.
9. All fittings (except CPP and CMP saddle tees) required for storm, water and sanitary sewer pipes.
10. Restrained joints required for the water pipe.
11. Crack sealing all joints following paving operations.
12. Placement of trench blocks along pipe trenches.

1.3 MOBILIZATION (PAY ITEM NO. 1505.1) PRICE BASED ON LUMP SUM PAY UNIT

A. Measurement for payment for Mobilization will be based upon the completion of the entire Work as a Lump Sum Pay Unit in accordance with all contract requirements.

B. Payment for Mobilization will be made at the amount shown on the Bid Schedule under Pay Item No. 1505.1. Such payment will constitute full compensation for all Work

described in Section 01505 – Mobilization, as shown on the Drawings and as directed by the Engineer.

C. Partial payments may be made as the work progresses as follows:

1. When 5% of the total original contract amount is earned from other Pay Items, 50% of the amount bid for Mobilization, or 5% of the original contract amount, whichever is lesser, may be paid.
2. When 10% of the total original contract amount is earned from other Pay Items, 100% of the amount bid for Mobilization, or 10% of the original contract amount, whichever is lesser may be paid.
3. Upon completion of all Work on the project, payment of any amount bid for Mobilization in excess of 10% of the total contract amount may be paid.

1.4 EXCAVATION (PAY ITEM NO. 2315.1) PRICE BASED ON C.Y. QUANTITY PAY UNIT

A. Measurement for payment for Excavation will be based on the number of cubic yards of unclassified material actually excavated, as determined by the average end area method. Where impractical to measure by the average end area method, the Engineer may approve other acceptable methods involving three-dimensional measurements. Excavation outside the subcut limits indicated in the Drawings will not be measured for payment, unless otherwise directed by the Engineer.

B. No deduction in the measurement for Excavation will be made for the trenching required for pipe and structure installations above the bottom of, or within the subcut limit as shown on the typical sections.

C. Measurement for payment may be selected by the Contractor from one the following methods:
1. From actual cross Sections taken by the Contractor's surveyor (following pavement and concrete curbing, slabs or sidewalk removal where present), with the lower limits determined by the neat line subcut limits as indicated on the typical sections, or as directed by the Engineer.
2. The Contractor may review and utilize the Engineer's design earthwork quantity computations in lieu of providing its own quantity determinations.

D. The following will not be measured for direct payment. The cost of such Work will be considered incidental to other Work under contract:
1. Overburden and other spoil material from borrow sources.
2. Removal of water by aeration of material to obtain required moisture content.
3. Any volumes of water or other liquid material.
4. Materials used for a purpose other than directed.
5. Roadbed material scarified in place and not removed.
6. Material excavated when benching.
7. Slide or slipout material attributable to the carelessness of the Contractor.
8. The volume of conserved materials stockpiled at the option of the Contractor.
9. Placement of usable or otherwise suitable material from excavation, as determined by the Engineer, into the new roadway as embankment or selected embankment, or as embankment for any areas outside the roadway subcut within the project limits.

E. Payment for Excavation will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2315.1. Such payment will constitute full compensation for all Work

described in Section 02315 – Excavation and Embankment, as shown on the Drawings and as directed by the Engineer.

1.5 MINING AREA RESTORATION AND ROAD CLEANING GUARANTEE (PAY ITEM NO. 2315.2) PRICE BASED ON CONTINGENT SUM PAY UNIT

A. Measurement for this Item will be made as a Contingent Sum Pay Unit for completion of Mining Area Restoration and Road Cleaning.

B. The Contractor shall be responsible for removal of dirt, mud, rocks and other debris from CBJ and State Right-of-Ways accumulated from the hauling and quarry operations. The traveled public way shall be kept as clean as practical to minimize dust and to avoid unsafe traffic conditions. If the Contractor fails to perform necessary road cleaning, the Owner may hire outside forces to perform the work and deduct the cost from this contingent sum item.

C. Release of final payment for Mining Area Restoration and Road Cleaning Guarantee will be made upon determination of completeness by the Owner after deduction of Owner incurred costs for necessary road cleaning and/or mining area restoration not completed by the Contractor.

D. Payment for Mining Area Restoration and Cleaning Guarantee will be made at the amount named in the Bid Schedule under Pay Item No. 2315.3. Such payment will constitute full compensation for all Work described in Section 02315 – Excavation and Embankment, as shown on the Drawings and as directed by the Engineer.

1.6 EROSION AND SEDIMENT CONTROL (PAY ITEM NO. 2370.1) PRICE BASED ON LUMP SUM PAY UNIT

A. Measurement for payment for Erosion and Sediment Control will be based upon the completion of the entire Work as a Lump Sum Pay Unit, complete, all in accordance with the contract documents.

B. Work under this Pay Item includes obtaining all necessary permits for storm water control as required by Alaska Department of Conservation and the Environmental Protection Agency. This includes furnishing, installing and maintaining all measures required by these permits and paying penalties/fines associated with the permits.

C. Payment for Erosion and Sediment Control will be made at the amount shown on the Bid Schedule under Pay Item No. 2370.1. Such payment will constitute full compensation for all Work described in Section 02370 Erosion and Sedimentation Control, as shown on the Drawings and as directed by the Engineer.

1.7 18-INCH CPP STORM SEWER PIPE (PAY ITEM NOS. 2501.1 PRICE BASED ON QUANTITY, LINEAR FOOT PAY UNIT.

A. Measurement of CPP storm sewer pipe will be made along the slope of the pipe, from end to end, in linear feet. All fittings required for satisfactory installation of storm sewer pipe will be considered incidental to the storm sewer pipe pay items.

B. All trench excavation, bedding, backfill, sheeting and bracing, dewatering, cleaning and testing, and all other items necessary for a complete installation, will not be measured for payment, but will be considered incidental to other Work.

C. Payment for 18-Inch CPP Storm Sewer Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No 2501.1. Such payment will constitute full compensation

for all Work described in Section 02501 – Storm Sewer Pipe, as shown on the Drawings and as directed by the Engineer.

1.8 CULVERT HEADWALL (PAY ITEM NO. 2502.1) PRICE BASED ON QUANTITY, EACH PAY UNIT

A. Measurement for payment of Culvert Headwall will be based on the actual quantity of such culvert headwalls furnished and installed in accordance with the Contract Documents.

B. Payment for Culvert Headwall will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2502.1. Such payment will constitute full compensation for all Work described in Section 02502 - Storm Sewer Manholes, Inlets, & Catchbasins; Section 03302 Concrete Structures; and as shown on CBJ Standard Detail 104B, the Drawings, and as directed by the Engineer.

1.9 8-INCH HDPE WATER PIPE (PAY ITEM NO. 2510.1 PRICE BASED ON QUANTITY, LINEAR FOOT PAY UNIT.

A. Measurement of water pipe will be made along the slope of the pipe from the centers of the fittings and valves in linear feet. No deduction in length will be made for valves and fittings. All fittings, except valves, required for satisfactory installation of water pipe will be considered incidental to the water pipe pay items.

B. All restrained joints will be considered incidental to other Work under this Section.

C. All trench excavation, bedding, backfill, sheeting and bracing, dewatering, cleaning and testing, and all other items necessary for a complete installation, will not be measured for payment, but will be considered incidental to other Work.

D. Payment for 8-Inch HDPE Water Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No 2510.1. Such payment will constitute full compensation for all Work described in Section 02510 - Water System, as shown on the Drawings and as directed by the Engineer.

1.10 8-INCH GATE VALVE (PAY ITEM NO. 2510.2) PRICE BASED ON QUANTITY, EACH PAY UNIT

A. Measurement for payment of gate valves and valve boxes will be based on the actual quantity, each, of such valves and boxes furnished and installed in accordance with the Contract Documents.

B. Payment for 8-Inch Gate Valve will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2510.2. Such payment will constitute full compensation for all Work described in Section 02510 Water Distribution System, as shown on the Drawings and as directed by the Engineer.

1.11 SANITARY SEWER PIPE 2-INCH SDR17 HDPE FORCE MAIN (PAY ITEM NO. 2530.1) PRICE BASED ON QUANTITY, LINEAR FOOT.

A. Measurement of Sanitary Sewer Pipe 2-Inch SDR17 HDPE Forcemain will be made along the slope of the pipe from the centers of the manholes, fittings and valves in linear feet. No deduction in length will be made for manholes, valves and fittings. All fittings, except valves, required for satisfactory installation of sewage pipe will be considered incidental to the sewage pipe pay items.

B. All restrained joints will be considered incidental to other Work under this Section.

C. All trench excavation, bedding, backfill, sheeting and bracing, dewatering, cleaning and testing, and all other items necessary for a complete installation, will not be measured for payment, but will be considered incidental to other Work.

D. Payment for Sanitary Sewer Pipe 2-Inch SDR17 HDPE Force Main will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.1. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary Sewage System, as shown on the Drawings and as directed by the Engineer.

1.12 SANITARY SEWER 6-INCH SDR21 PVC PIPE (PAY ITEM NO. 2530.2) PRICE BASED ON QUANTITY, LINEAR FOOT.

A. Measurement of Sanitary Sewer Pipe 6-Inch SDR21 PVC Pipe will be made along the slope of the pipe from the centers of the manholes, fittings and valves in linear feet. No deduction in length will be made for manholes, valves and fittings. All fittings, except valves, required for satisfactory installation of sewage pipe will be considered incidental to the sewage pipe pay items.

B. All trench excavation, bedding, backfill, sheeting and bracing, dewatering, cleaning and testing, and all other items necessary for a complete installation, will not be measured for payment, but will be considered incidental to other Work.

C. Payment for Sanitary Sewer Pipe 6-Inch SDR21 PVC Pipe will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.2. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary System, as shown on the Drawings and as directed by the Engineer.

1.13 TYPE I MANHOLE (PAY ITEM NO. 2530.3) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment of Type I Manhole will be based on the actual quantity, each, of such manholes furnished and installed in accordance with the Contract Documents.

B. Payment for Type I Manhole will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.3. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary System, as shown on the Drawings and as directed by the Engineer.

1.14 2-INCH MANHOLE CONNECTION (PAY ITEM NO. 2530.4) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment of 2-Inch Manhole Connection will be based on the actual quantity, each, of such Manhole Connections furnished and installed in accordance with the Contract Documents.

B. Manhole connections to new structures shall be considered incidental to installation of new manhole, only connections to existing manholes will be measured for payment.

C. Payment for 2-Inch Manhole Connection will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.4. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary System, as shown on the Drawings and as directed by the Engineer.

1.15 LIFT STATION WET WELL MANHOLE (PAY ITEM NO. 2530.5) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment of Lift Station Wet Well Manhole will be based on the actual quantity, each, of such Lift Station Wet Well Manholes furnished and installed in accordance with the Contract Documents.

B. Payment for Lift Station Wet Well Manhole will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.5. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary System, as shown on the Drawings and as directed by the Engineer.

1.16 DUPLEX PUMP LIFT STATION (PAY ITEM NO. 2530.6) PRICE BASED ON QUANTITY, EACH

A. Measurement for payment of Duplex Pump Lift Station will be based on the actual quantity, each, of such Duplex Pump Lift Station furnished and installed in accordance with the Contract Documents.

B. The Work under this pay Item includes all coordination, labor and material required for a complete installation of the Work.

C. Payment for Duplex Pump Lift Station will be made at the Unit Price named in the Bid Schedule under Pay Item No 2530.6. Such payment will constitute full compensation for all Work described in Section 02530 Sanitary System, as shown on the Drawings, as shown on City and Borough of Juneau Standard Details 220-1 through 220-10, and as directed by the Engineer.

1.17 CONSTRUCTION SURVEYING (PAY ITEM NO. 2702.1) PRICE BASED ON LUMP SUM PAY UNIT

A. Measurement for payment of Construction Surveying will be based upon the completion of the entire Work as a Lump Sum Unit, complete, all in accordance with the requirements of the Contract Documents.

B. The Work required to remove and reset all survey monuments disturbed by construction activities will be considered incidental to other Work.

C. Payment for Construction Surveying will be made at the amount named in the Bid Schedule under Pay Item No 2702.1. Such payment will constitute full compensation for all Work described in Section 02702 – Construction Surveying, as shown on the Drawings and as directed by the Engineer.

1.18 TOPSOIL (PAY ITEM NO. 2709.1) PRICE BASED QUANTITY, CUBIC YARD PAY UNIT

A. Topsoil will be measured for payment by the cubic yard on the basis of truck measure for all Work performed in the contract under Section 02709 – Topsoil, completed and accepted.

B. Topsoil found to be in excess of 4-Inches thick in place and to final grade, will be deducted from the quantity measured by truck measure, based on depths measured at random selected locations. Deductions will be computed on the basis of average end area method.

C. Payment for Topsoil will be made at the Unit Price named in the Bid Schedule under Pay Item No 2709.1. Such payment will constitute full compensation for all Work described in Section 02709 - Topsoil, as shown on the Drawings and as directed by the Engineer.

1.19 SEEDING, HYDRAULIC METHOD, TYPE III (PAY ITEM NO. 2710.1) PRICE BASED ON QUANTITY, SLURRY UNIT PAY UNIT

A. Seeding by the hydraulic method will be measured for payment by the number of slurry units (to the nearest 1/10th unit) of mixture actually applied to the designated area, as directed by the Engineer.

B. Payment for Seeding, Hydraulic Method, Type III will be made at the Unit Price named in the Bid Schedule under Pay Item No 2710.1. Such payment will constitute full compensation for all Work described in Section 02710 - Seeding, as shown on the Drawings and as directed by the Engineer.

1.20 STRUCTURAL FILL (PAY ITEM NO. 2721.1) PRICE BASED ON QUANTITY, CUBIC YARD PAY UNIT

A. Structural fill will be measured by the number of cubic yards of material in place as determined by the average end area method and determined on a neatline basis. Where impractical to measure by the average end method, the Engineer may approve other acceptable methods involving three-dimensional measurements.

B. Water needed for compaction and added to the structural fill material on grade will be considered incidental.

C. Payment for Structural Fill will be made at the Unit Price in the Bid Schedule under Pay Item No. 2721.1. Such payment will constitute full compensation for all Work described in Section 02721 – Subbase Course, as shown on the Drawings and as directed by Engineer. Materials outside the lines, grades, and cross sections indicated in the drawings, will not be measured for payment unless otherwise directed but the Engineer.

1.21 BASE COURSE, GRADING D-1 (PAY ITEM NO. 2722.1) PRICE BASE ON QUANTITY, CUBIC YARD PAY UNIT

A. Base course, grading D-1, will be measured by the number of cubic yards of material in place as determined by the average end area method, and determined on a neatline basis. Where impractical to measure by the average end method, the Engineer may approve other acceptable methods involving three-dimensional measurements. Materials outside the lines, grades, and cross sections indicated in the drawings, will not be measured for payment unless otherwise directed but the Engineer.

B. Water needed for compaction and added to the base material on grade will be considered incidental.

C. Payment for Base course, Grading D-1 will be made at the Unit Price in the Bid Schedule under Pay Item No. 2722.1. Such payment will constitute full compensation for all Work described in Section 02722 – Crushed Aggregate Base Course, as shown on the Drawings and as directed by ENGINEER.

1.22 PAINTED TRAFFIC MARKINGS (PAY ITEM NO. 2760.1) PRICE BASED ON QUANITY, LINEAR FOOT PAY UNIT

A. Measurement for payment for Painted Traffic Markings will be measured by the linear feet as shown on plans and as directed by the Engineer, in accordance with the Contract Documents.

B. Work under this Pay Item includes the painted traffic markings as shown in the Contract Documents.

C. Payment for Painted Traffic Markings will be made at the unit price shown in the Bid Schedule under Pay Item No 2760.1. Such payment will constitute full compensation for all Work described in Section 2760 Pavement Markings, as shown on the Drawings and as directed by the Engineer.

1.23 A.C. PAVEMENT, TYPE II-A, CLASS B (PAY ITEM NO. 2801.1) PRICE BASED ON QUANTITY, TON PAY UNIT

A. Asphalt Concrete Pavement will be measured for payment by the ton.

B. The tolerance for thickness of asphalt concrete pavement under square yard measurement shall be plus or minus one-quarter inch from mat design thickness, as shown on the typical section. This one-quarter inch tolerance shall be the exception only, with the average variance for the job being not more than plus of minus one-eight inch from design mat thickness. All asphalt concrete placed outside the tolerance allowed will be corrected by the Contractor at no cost to the Owner.

C. No measurement will be made for asphalt concrete pavement that exceeds 12% more than the neat line quantity, as determined by the nominal design thickness multiplied by the actual area paved, with a conversion factor of 119 lb per square yard per inch of thickness.

D. All resealing of joints with existing pavement, including those resealed after the pavement has cooled to ambient temperatures, will not be measured for payment, but will be considered incidental to other Work under the contract.

E. Tack Coat applied to existing joint surfaces and along edge of gutters prior to placement of A.C. pavement, will be considered incidental to other Work.

F. Asphalt Pavement required for reconstructed collars around manholes and water valves, if any, will be considered incidental to other Work under this Section.

G. Payment under this Pay Item may include deductions in final price if, after testing, the asphalt pavement does not meet the required specification. Deductions are further described in Section 2801 – Asphalt Concrete Pavement, Part 3 – Execution, Article 3.13 Acceptance Sampling and Testing, Paragraph K.

H. Payment for A.C. Pavement, Type II-A, Class B, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2801.1. Such payment will constitute full compensation for all Work described in Section 02801 – Asphalt Concrete Pavement, as shown on the Drawings and as directed by the Engineer.

1.24 SIGN ASSEMBLY (PAY ITEM NO. 2890.1) PRICE BASED ON QUANTITY, EACH

A. Sign assemblies will be measured per each, as described in Section 2890 – Standard Signs, and as shown on the Sign Schedule on the Drawings.

B. Work under this Pay Item includes providing all new sign assembly materials.

C. Removal and disposal of existing signs not to be reused will be considered incidental to other Work under this Section.

D. Payment for Sign Assembly will be made at the Unit Price named in the Bid Schedule under Pay Item No 2890.1. Such payment will constitute full compensation for all Work described in Section 02890 - Standard Signs, as shown on the Drawings and as directed by the Engineer.

1.25 REMOVE EXISTING, ASPHALT SURFACING (PAY ITEM NO. 2950.1) PRICE BASED ON QUANTITY, SQUARE YARD PAY UNIT

A. Removing asphalt surfacing, including leveling course, will be measured for payment per square yard, complete, except that no measurement will be made for removing asphaltic surfacing less than one-Inch-thick.

B. Removal of existing asphalt surfacing will be measured per top square yard, which will include the full thickness of all layers of existing asphalt, including leveling courses and underlying pavement. Concrete slabs located in the street areas, if any, will be included under Pay Item No 2950.1.

C. Payment for Remove Existing Asphalt Surfacing will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2806.1. Such payment will constitute full compensation for all Work described in Section 02950 – Removal and Replacement of Pavement and Incidentals, as shown on the drawings and as directed by the Engineer.

END OF SECTION

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for administering the Project.

1.3 PROJECT INFORMATION

A. Project Identification: SREF Site Infrastructure.

1. Project Location: Juneau International Airport, Juneau, Alaska 99801.

B. Owner: Juneau International Airport, City and Borough of Juneau, Jeannie Johnson Airport Manager

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of the Project is defined by the Contract Documents and consists of the installation of utility lines, construction of an access road, and other site development indicated in the construction documents.

1.5 WORK BY OTHERS

A. General: Cooperate fully with Owner so Work may be carried out smoothly, without interfering with or delaying Work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Work by Others: Owner and other entities may perform the following construction operations at Project site prior to, or during, the start of Work of this Contract.

1. Airport Water Meters Project, contract E 12-049

1.6 ACCESS TO WORK

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to areas indicated for demolition and/or construction. Limit staging to designated area.

a. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
b. Schedule deliveries to minimize impacts to Owner operations.

2. Notify the Owner not less than 72 hours in advance of activities that will affect Owner's operations on or near the site.

3. Work in secure areas of the airfield shall be accomplished in compliance with all Federal, State and airport security regulations and policies.

1.7 DIFFERING SITE CONDITIONS. The Contractor shall immediately notify the Engineer in writing and specifically describe the alleged differing site condition if the Contractor discovers:

1. subsurface or latent physical conditions at the site, differing materially from those shown in the Contract documents that could not have been discovered by a careful examination of the site;

2. unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

A Failure to give the Engineer immediate written notice of the alleged differing site condition as required under this section constitutes a waiver of any future claim arising from or relating to the alleged differing site condition.

B. Unless otherwise directed by the Engineer, the Contractor shall leave the affected area undisturbed and suspend work in that area until the Engineer investigates the conditions.

C. If the Engineer finds that such conditions differ materially and increase or decrease the cost of, or the time required for, performance of the Contract, the Engineer will prepare a Change Order for an Equitable Adjustment to the Contract. The Contractor shall cooperate with the Engineer’s preparation of the Change Order.

D. The Contractor shall keep accurate and detailed records of the actual cost of the work done as a result of the alleged differing site condition and shall allow the Engineer access to those records. Failure to keep records, to provide the Engineer with access to those records, or to give the notice required above will bar any recovery for the alleged differing site condition.

1.8 WORK PLANS

A. Provide detailed written work plan with sketch of each Work area. Show limits of work enclosures, barricades, temporary partitions, or other items affecting the operation of the area. Work plan shall include a schedule for each major activity or trade.

B. Work that occurs on the secure airfield must be articulated on an Airport Security Plan and approved in writing by the Airport at least 30 days prior to the start of such work.

1.9 CONTRACTOR'S USE OF PREMISES

A. Assume full responsibility for protection and safekeeping of products and equipment.

B. Assume full responsibility for the protection of the existing adjacent property and contents, from damage due to construction operations.

1.10 MATERIAL SAFTEY DATA SHEETS

A. CONTRACTOR shall provide Material Safety Data Sheets for all volatile materials.

1.11 COORDINATION

A. Coordinate Work of the various elements of the work plan to assure efficient and orderly sequence.

B. Coordinate and schedule all construction activities that affect operations of JNU.

C. When the Contract requires the maintenance of vehicular traffic on an existing roadway, the Contractor shall keep such roadway open to all traffic, and shall provide such maintenance as may be required to accommodate traffic and to keep the roadway smooth and even. The Contractor shall furnish, erect, and maintain barricades, warning signs, flaggers, and other traffic control devices in reasonable conformity with the *Manual on Uniform Traffic Control Devices for Streets and Highways* (published by the United States Government Printing Office) and the *Alaska Traffic Manual Supplement*, unless otherwise specified by the Owner. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roadways.

D. The Contractor shall make its own estimate of, and pay for, all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified in this subsection.

1.12 WORK RESTRICTIONS

A. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless Owner has provided written permission at least two days in advance of proposed interruption.

C. Noise, Vibration, Odors, and Dust: Coordinate operations that may result in high levels of noise, vibration, odors, dust, or other disruption to Owner or adjacent properties.

D. Employee Identification: Federal identification (SIDA) tags are required for Contractor personnel working on secure side of the airfield.

1.13 SPECIFICATION AND DRAWING CONVENTIONS

A. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

B. Titles and headings of sections, subsections, and subparts are intended for convenience of reference and will not govern their interpretation. Working titles that have a masculine gender, and the pronouns and adjectives "he", "his" and "him" are intended to refer to persons of either gender. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

C. Cited publications refer to the most recent issue, including interim publications, in effect on the date of the Notice Inviting Bids, unless specified by year or date.

D. These Specifications are written to the Contractor. Unless otherwise noted, all actions required by the specifications are to be performed by the Contractor or its agent.

E. Some portions of these Specifications are written using imperative mood, abbreviated format, incomplete sentences, and/or active voice to communicate the Contractor's responsibilities in a direct and concise manner. Omission of words or phrases such as “a,” “an,” “the,” “the Contractor shall,” “unless otherwise specified,” or “unless otherwise directed” is intentional. Interpret the Contract as if they were included.

F. For all Specification language except the General Contract Provisions, whenever anything is, or is to be, done, if, as, or, when, or where “acceptable, accepted, approval, approved, authorized, determined, designated, directed, disapproved, ordered, permitted, rejected, required, satisfactory, specified, submit, sufficient, suitable, suspended, unacceptable, unsatisfactory, or unsuitable,” the expression is to be interpreted as if it were followed by the words “by the Engineer” or “to the Engineer.”

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS AND REQUIREMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes project management provisions for administering and coordinating construction operations on the Project.

1.3 PROJECT COORDINATION:

A. The Owner shall be the Administrative Authority on this project and will issue all orders to the Contractor. The Architect/Engineer is responsible to the Owner for periodic observation of the project. The Architect/Engineer is not authorized to make any changes in the Contract amount nor time for completion of the project.

B. The Owner's representative for this project is:

Catherine Fritz, AIA, JNU Airport Architect
1873 Shell Simmons Dr., Ste. 200
Juneau, AK 99801
Phone: 907-586-0452; Fax: 907-586-0407

C. The Architect/Engineer for this project is:

Terry Hyer, Principal, ECI Hyer Inc.
101 West Benson, Suite 306
Anchorage, Alaska 99503
Phone: 907-561-5543; Fax: 907-562-3213

1.4 PRECONSTRUCTION CONFERENCE

A. The Owner will schedule a preconstruction conference before construction starts, at a time convenient to the Owner and the Contractor, but no later than fifteen (15) days after execution of the Agreement. The conference will be held at the Project Site or another convenient location. The meeting will be conducted to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of Owner, Architect and subconsultants, Contractor and its Project Superintendent; major subcontractors; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project.

C. Agenda: The Owner will prepare the agenda that may include the following items (Contractor may submit additional agenda items):

1. Designation of responsible personnel

2. Distribution of Contract Documents
3. Procedures for processing field decisions and Change Orders
4. Contractor's tentative construction schedule including critical work sequencing
5. Submittal Process for Shop Drawings, Product Data, and Samples
6. Preparing and maintaining record documents
7. Procedures for processing Applications for Payment
8. Coordination and Progress Meetings
9. Procedures for testing.

D. Meeting minutes: Owner will prepare and distribute meeting minutes to all attendees.

1.5 SITE MOBILIZATION MEETING

A. Owner may schedule a meeting at the Project site prior to Contractor mobilization.

B. Agenda: The Owner will prepare the agenda that may include the following items; (the Contractor may submit additional agenda items):

1. Contractor's Mobilization Plan, including use of the premises, parking, temporary utilities, work and storage areas.
2. Equipment deliveries and priorities
3. Job Safety, Security, and First Aid procedures

C. Meeting minutes: Owner will prepare and distribute meeting minutes to all attendees.

1.6 PROGRESS MEETINGS

A. The Owner may conduct Progress Meetings at weekly intervals to review progress, coordinate, and arrive at approaches or solutions to problems.

B. Attendees: Project Superintendent and other key Contractor personnel, and major Subcontractors and Suppliers; Project Manager and others as appropriate to agenda topics for each meeting.

C. Agenda: Owner shall prepare agenda and provide to participants. Owner will notify Contractor of any requested agenda items at least 24 hours prior to meetings. Agenda may include the following:

1. Review minutes of previous meetings
2. Review Project Schedule including recently completed work and upcoming work, as submitted by Contractor
3. Review Quality Control Issues
4. Review Safety Issues

D. Meeting minutes: Owner will prepare and distribute meeting minutes to all attendees.

1.7 COORDINATION OF CONSTRUCTION OPERATIONS

A. Identification of Contractor key personnel: Prior to the Pre-Construction Conference, submit names and contact information of key Contractor and Subcontractor personnel,

including the Contractor's Project Manager; Project Superintendent; on-site Quality Control Representative; and Safety and Health person.

B. Coordinate scheduling and timing of required administrative procedures with other activities to avoid conflicts and assure orderly progress of the Work.

C. Coordinate construction operations included in the Contract Documents to assure efficient and orderly installation of each part of the work. Coordinate the work of all the trades and subcontractors, including assigned subcontractors.

D. Where necessary, provide memoranda for coordination of Owner supplied materials and equipment or Work performed by the Owner.

1.8 UTILITY INTERRUPTION NOTIFICATIONS

A. At least two weeks prior to the first outage, submit a schedule of all utility outages. Include proposed water and electrical outages. The Contractor may modify this schedule with approval by the Owner. The Contractor shall update the schedule as required to adhere to an accurate schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PROTECTION OF EXISTING FACILITIES

A. The Contractor shall locate and protect existing facilities of the Owner or any other public facilities on or adjacent to the site, or in a nearby public right-of-way.

END OF SECTION 01310

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 GENERAL SUBMITTAL REQUIREMENTS

A. Review submittals for completeness and accuracy prior to submittal.

B. Electronic submittals may be allowed by the Owner if Contractor meets submittal requirements. Submit electronic copy in .pdf format. Electronic file will be returned to the Contractor with comments or approval.

C. Submittals will be reviewed by the Owner and will be marked with one of the following:

1. No Exceptions Taken: Submittal conforms with information given in the Contract Documents.
2. Exceptions as noted: Submittal with the additional notations and corrections conforms with information given in the Contract Documents.
3. Revise and Resubmit: Submittal is incomplete or does not conform with information given in the Contract Documents. Resubmit in accordance with notations and corrections.
4. Rejected: Submittal is not in accordance with Contract Documents. Resubmit.

1.3 ADMINISTRATIVE SUBMITTALS

A. Construction Schedule, including updates.

B. Schedule of Values: Coordinate items, including subcontracted work, with the Project Schedule.

C. Submittal Schedule: Use a format acceptable to the Owner.

D. Contractor key personnel: Submit names, contact information, and experience documentation (when required by specifications) for key personnel within thirty (30) days of Notice of Award.

E. Certified payrolls: Submit one copy of the certified payrolls to Alaska Department of Labor and one copy to the Owner in format acceptable to the Alaska Department of Labor requirements.

1.4 TEST REPORTS AND CERTIFICATIONS:

A. Submit one copy of test reports and certifications for Owner’s records in accordance with this section and the individual technical section.

1.5 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Submittals are required for all materials of construction and all equipment specified and/or indicated on the drawings. Additionally, any item that is incorporated in the project work, whether or not listed on the submittal schedule, shall be submitted for review and approval when so requested by the Owner.

B. Coordinate submittals with requirements of Work and of contract documents in such sequence to avoid delay in the Work or work of other contracts. Submittals which, in the opinion of the Owner, require examination with reference to other submittals not yet delivered may, at the Owner's discretion, not be examined until the undelivered submittals are received.

C. Review submittal prior to transmission; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance and completeness of submittal with requirements of contract documents.

D. The Contractor shall certify on the submittal that the information is complete and accurate and the proposed component service conforms to the contract. Failure to review and certify the submittal may be cause for the Owner to return the submittal without review.

E. Do not fabricate products or begin Work that requires submittals until the return of the submittal with the Owner's acceptance.

1.6 PRODUCT DATA

A. Submit only pages that are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to specification section and paragraph number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.

C. Material submitted shall indicate the specific item(s) proposed for this project.

1.7 SHOP DRAWINGS

A. Present in a clear and thorough manner. Label each drawing with contract name and number. Identify each element of drawings by reference to sheet number and detail or specification number of contract documents.

B. Shop drawings are required for any product that is not a standard commercial catalog product and must be fabricated for or by the Contractor.

C. Shop drawings shall be clear, precise and with sufficient detail that the product can be fairly evaluated by the Engineer.

D. The Contractor is responsible for the field fit and compatibility of the fabricated product. Identify field dimensions and show relationship to adjacent or critical features of Work.

E. Furnish physical and performance data, including materials, manufacturers' name, model numbers, weights, sizes, capacities, finishes, colors, accessories and other data required to completely describe equipment and installation, and to indicate compliance with specifications and drawings.

F. Shop drawings shall be submitted for all major deviations from design. Major deviations shall be determined by the Owner.

G. Shop drawings shall be provided in electronic format (pdf files) or 11" x 17" print.

1.8 SAMPLES

A. Submit full range of manufacturers' standard colors, textures, and patterns for selection by Owner. Do not submit samples of products that are not available.

B. Submit samples to illustrate functional characteristics of the product with integral parts and attachment devices. Coordinate submittal of different categories for Include identification on each sample, giving full information.

1.9 RESUBMITTALS

A. When resubmittals are necessary, use same procedures as initial submittal.

B. Indicate resubmittal with summary of all changes and additions made to the previous submittal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01400 - CONTRACTOR QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for administering the Project.

B. The Contractor shall assure that all materials and completed construction conform to contract drawings, technical specifications and other requirements, whether manufactured by the Contractor or procured from subcontractors or vendors. The Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures to be used. Although guidelines are established, and minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

C. The purpose of this section is to enable the Contractor to establish a necessary level of control that will:

1. Adequately provide for the production of acceptable quality materials.
2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.
3. Allow the Contractor reasonable latitude to develop its own standard of control.

D. The Contractor shall discuss its understanding of the quality control requirements at the preconstruction conference. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed by the Engineer.

E. Quality control requirements contained in this section and elsewhere in the contract documents are in addition to, and separate from, the acceptance testing requirements that are the responsibility of the Engineer.

1.3 DESCRIPTION OF PROGRAM

A. The Contractor shall establish a Quality Control Program to perform inspection and testing of each item of work for which it is required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, work quality, and functional performance.

B. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document that shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall

be submitted to the Engineer for review at least 5 calendar days before the preconstruction conference.

C. The Quality Control Program shall address, as a minimum, the following items:
   1. Quality control organization
   2. Inspection requirements
   3. Quality control testing plan
   4. Documentation of quality control activities
   5. Requirements for corrective action when quality control and/or acceptance criteria are not met.

1.10 QUALITY CONTROL ORGANIZATION

A. The Contractor's Quality Control Program shall be described with an organizational chart of all quality control personnel and their roles with other construction functions and project personnel.

B. The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work.

C. The quality control organization shall consist of the following minimum personnel:

   1. Program Administrator with a minimum of 5 years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.
   2. A sufficient number of Quality Control Technicians necessary to adequately implement the Quality Control Program. These personnel shall be either engineers, or experienced specialists with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of 2 years of experience in their area of expertise.

1.10 INSPECTION REQUIREMENTS.

A. Quality control inspection functions shall provide visual inspections for all definable features of work. All inspections shall be documented by the Contractor and reports and tests submitted to the Owner.

B. Inspections shall be performed daily during construction activity to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

   1. During plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment utilized in proportioning and mixing shall be inspected to ensure its

proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized.

2. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and work quality. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

1.10 QUALITY CONTROL TESTING PLAN.

A. As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan that includes the minimum tests and test frequencies required by the technical specification item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production or construction processes.

B. The testing plan may be developed as a spreadsheet and shall, as a minimum, include:

1. Specification item number Item
2. Description
3. Test type, standard, and frequency
4. Control requirements (e.g., target, permissible deviations)

C. The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples according to ASTM D 3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

1.10 DOCUMENTATION

A. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

B. Records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily.

C. Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

1. Daily Inspection Reports of all inspections performed for all operations on a form acceptable to the Engineer. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed.
2. Daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

3. Daily Test Reports that record all quality control test results.
4. Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts.

1.10 CORRECTIVE ACTION REQUIREMENTS

A. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

B. The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

1.9 INSPECTION BY THE ENGINEER.

A. All items of material and equipment may be subject to inspection by the Engineer at the point of manufacture to verify an adequate quality control system in conformance with the requirements of this contract. In addition, all items of materials, equipment and Work in place shall be subject to inspection by the Engineer at the site for the same purpose.

B. Inspection by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

1.10 NONCOMPLIANCE

A. The Engineer will notify the Contractor in writing of any noncompliance with requirements. The Contractor shall immediately take corrective action.

B. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may order the Contractor to stop operations until appropriate corrective action is taken.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01400

SECTION 01410 - SITE SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This section establishes a general guide for preparation of the Contractor's site safety work plan for this project. This guide is not intended to be inclusive of all necessary items to be included in the Contractor's safety plan. In conjunction with these general requisite items comply with all conditions of the pertinent provisions of federal OSHA safety standards and state specific standards adopted by the State of Alaska Department of Labor (ADOL). This specification does not relieve the Contractor of any other reporting, documentation, adherence or other requirements of the State of Alaska Dept. of Labor or federal OSHA standards.

B. Safety of Contractor's employees and persons on site is and shall remain the sole responsibility of the Prime Contractor for this project.

1.3 SUBMITTALS

A. Submit at the time of the pre-construction conference the name and safety qualifications of the Contractor's safety and health person.

B. Submit Contractor's written accident prevention plan within 14 days of Notice of Award and prior to commencement of any work on the site.

1.4 ACCIDENT PREVENTION AND SAFETY PLAN

A. The Contractor shall initiate and maintain a safety and health program that complies with the standards adopted by ADOL.

B. Prior to commencement of Work at a job site and no later than 14 days after Notice of Award of contract, an acceptable accident prevention and safety plan written by the Contractor for the specific Work and implementing in detail the pertinent requirements of the OSHA, will be submitted for information only to the Owner. The Contractor's plan will include measures to be taken by the Contractor to control hazards associated with materials, services, or equipment provided by suppliers. Consideration will also be made to cover the prevention of alcohol/drug abuse on the job.

C. The plan shall provide for frequent and regularly scheduled safety inspections of the work site, material, and equipment by the competent person. Identified safety and occupational health deficiencies and corrective measures shall be recorded and forwarded to the Owner.

1.5 TRAINING AND MANAGEMENT

A. Each employee shall be provided initial instruction and such continued safety training to

enable them to perform their work in a safe manner.

B. Provide further instruction and training sessions as required by the ADOL or OSHA for specific job tasks.

C. Designate, to cover all hours of work at the project site(s), at least one competent or qualified safety and health person on site to manage the Contractor's Safety Program. This safety and health person shall be fully familiar with, and be responsible for, the Contractor's written accident prevention plan. The safety and health person shall be the point of contact with the Owner for all matters regarding job site safety.

D. Hold at least one safety meeting weekly for all workers. Provide report to the Owner of meeting date, time, attendance, and subjects discussed.

1.6 ACCIDENT REPORTING

A. Immediately report all accidents to the Owner.

B. The contractor shall be responsible for recording and reporting all accident exposure and experience incident to the work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01426 - DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 ACRONYMS. Wherever the following abbreviations are used in these Specifications or on the drawings, they are to be construed the same as the respective expression represented

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AIP	Airport Improvement Program
ANSI	American National Standards Institute
ASDS	Alaska Sign Design Specifications
ASTM	American Society for Testing & Materials
ATM	Alaska Test Method (See Alaska Test Methods Manual)
CTAF	Common Traffic Advisory Frequency
DOLWD	Alaska Department of Labor and Workforce Development
FOP	Field Operating Procedure (See Alaska Test Methods Manual)
ICEA	Insulated Cable Engineers Association (formerly IPCEA)
NEC	National Electrical Code
SSAC	DOT&PF Standard Specifications for Airport Construction
SSPC	Society for Protective Coatings
SPCC	Spill Prevention, Control, and Countermeasure (Plan)
SWPPP	Storm Water Pollution Prevention Plan
TCP	Traffic Control Plan
UL	Underwriters Laboratory

WAQTC Western Alliance for Quality in Transportation Construction (See Alaska Test Methods Manual)

1.3 DEFINITIONS

ACCEPTANCE TESTS. Tests and inspections by the Owner to determine the acceptability of materials incorporated into the work.

ACCESS ROAD. The right-of-way, the roadway, and all improvements constructed thereon connecting the airport to another public thoroughfare.

AIRPORT OPERATIONS AREA (AOA). Any area of the airport used or intended to be used for the landing, takeoff, surface maneuvering, or parking of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft, in addition to its associated runway, taxiway, or apron.

ALASKA TEST METHODS MANUAL. The materials testing manual used by the CBJ. It contains Alaska Test Methods, WAQTC Test Methods, WAQTC FOPs for AASHTO Test Methods, and Alaska Standard Practices for evaluating test results and calibrating testing equipment.

BASE COURSE. One or more layers of specified material placed on a subbase or subgrade to support a surface course.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF). A designated frequency for the purpose of carrying out airport advisory practices while operating to or from an airport that does not have a control tower or an airport where the control tower is not operational. CTAF is identified in appropriate aeronautical publications such as the current *Alaska Flight Information Supplement*, a civil/military flight information publication issued by FAA every 56 days.

COMPLETION DATE. The date on which all Contract Work is specified to be completed.

CONSTRUCTION. Physical activity by the Contractor or any Subcontractor using labor, materials or equipment within the Project, or within material sources planned for use on the Project.

CONTRACT ITEM (PAY ITEM). A specifically described item of Contract work listed on the Bid Schedule or in a Change Order.

CONTRACT TIME. The time allowed under the Contract, including authorized time extensions, for the completion of all work by the Contractor. Contract time may be specified either in calendar days or by completion date.

DAY. Calendar day unless preceded by the word “working”.

DIRECTIVE. A written communication to the Contractor from the Owner enforcing or interpreting a Contract requirement or ordering commencement or suspension of an item of work already established in the Contract.

EXTRA WORK. An item of work not provided for in the Contract as awarded but found essential by the Engineer for the satisfactory completion of the Contract within its intended scope.

FEDERAL AVIATION ADMINISTRATION (FAA). Branch of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.

INSPECTOR. The Engineer's representative authorized to make detailed inspections of Contract performance and materials.

MATERIALLY UNBALANCED BID. A mathematically unbalanced bid that either (a) gives rise to a reasonable doubt that it will ultimately result in the lowest overall cost to the Owner, even though it may be the lowest bid or (b) is so unbalanced as to be tantamount to allowing a significant advance payment.

MATHEMATICALLY UNBALANCED BID. A bid (a) where each pay item fails to carry its share of the cost of the work plus the bidder’s overhead and profit, or (b) based on nominal prices for some pay items and enhanced prices for other pay items.

NON-FROST SUSCEPTIBLE. Stone, gravel or sand, that contains 6 percent or less material passing the No. 200 screen as determined by sieve analysis performed with WAQTC FOP for AASHTO T27/T 11 on the minus 3-inch material, and has a plastic index of 6 or less as determined by WAQTC FOP for AASHTO T 90.

ORIGINAL GROUND (OG). The ground surface prior to the start of work.

PAVEMENT STRUCTURE. The combination of subbase, base course, and surface course placed on a subgrade to support and distribute the traffic load. Some layers may not be present, see Plans.

PLANS. The Owner’s contract drawings, profiles, typical cross sections, and supplemental drawings or reproductions showing the location, character, dimensions, and details of the work. Also known as drawings.

PROFILE. The vertical elevation of the surface of the layer at the location indicated. It is typically indicated at the longitudinal centerline of the top layer of pavement on the runway, taxiway, apron, or roadway. On a material or fabrication it may be used to indicate a shape, or a thickness of material or thickness of a coating.

QUALITY CONTROL. Tests and inspections by the Contractor to insure the acceptability of materials incorporated into the work. Also known as process control.

RIGHT-OF-WAY. Land or property or an interest in property available for a project. The uses allowed in portions of right-of-way may be restricted.

SECURITY PLAN. A Contract document that specifies methods of controlling the operations of the Contractor, subcontractors, and suppliers so as to provide for (1) security of workers, equipment, and public, (2) security of aircraft in the Air Operations Areas of the airport, and (3) security of the Airport property.

STANDARD SPECIFICATIONS. A book or electronic file of specifications approved by the Owner for general application and repetitive use.

STRUCTURE. Bridge, building, catch basin or inlet, cribbing, culvert, electrical duct, flexible and rigid pavements, handholes, junction boxes, lighting fixture and base, manhole, navigational aid, retaining wall, storm and sanitary sewer lines, transformer, underdrain, vault, visual aid, water line, and other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

SUBBASE. Layer of specified material between the subgrade and base course.

SUBGRADE. Soil or embankment upon which the pavement structure is constructed.

SUBSTANTIAL COMPLETION. The point at which the project (1) can be safely and effectively used by the public for its intended purpose without delays, disruption, or other impediments; and (2) pavement structure, shoulder, drainage, sidewalk, permanent signing and markings, guardrail and other traffic barrier, fencing, safety appurtenances, structures, utilities, and lighting is complete.

SURFACE COURSE. Top homogenous layer of the pavement structure. It is designed to withstand the wear of traffic and the disintegrating effects of climate.

TRAFFIC CONTROL PLAN (TCP). Drawings indicating the method or scheme for safely guiding and protecting motorists, pedestrians, bicyclists, and workers in a traffic control zone. Includes the traffic control devices, their placement and times of use.

UTILITY. Line, facility, or system for producing, transmitting, or distributing communications, power, electricity, oil, water, waste, storm water not connected with highway drainage, or other similar commodity, including a publicly owned fire or police signal system, or street lighting system, that directly or indirectly serves the public.

WORK. Depending on the context, (a) The act of furnishing all resources for the project and performing all duties and obligations required by the Contract or (b) the physical construction, facility or end–product that is contemplated under the Contract.

WORKING DAYS. Calendar days, except Sundays and CBJ holidays.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01426

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for administering the Project.

1.3 TEMPORARY UTILITIES

A. Power and water are not available on site. The Contractor shall provide these temporary utilities as may be necessary to complete the Work.

B. Provide general construction area lighting wherever work is in progress and wherever lighting is required for the safety of any person employed on the site.

C. There is no toilet or utility available on the site or available from the Owner. The Contractor shall provide and maintain a portable to all personnel on the site.

D. There is no telephone service available on the site. The Contractor shall use cellular telephones for Superintendent and essential personnel.

E. The Owner will not provide security of any kind and shall not be liable to anyone for, or for the lack of, security. Provide fencing and security as may be necessary to maintain a secure Work site.

1.4 PEDESTRIAN AND VEHICLE TRAFFIC CONTROL AND SAFETY

A. The Contractor shall provide barricades, signaling devices, signal crew, signs, and other facilities as may be necessary to control traffic through or around the Work.

1.5 STORAGE

A. An area will be assigned to the Contractor for materials stored in the closest possible proximity to the project site. Contractor shall provide security for the area.

B. The Contractor shall provide such special security measures and warehousing off site as may be necessary to accomplish the Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01500

SECTION 01505 - MOBILIZATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

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

1.3 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 Documents until all Mobilization items listed above have been completed as specified.

B. As soon as practicable, after receipt of Notice to Proceed, the Contractor shall submit a breakdown showing the estimated value of each major component of Mobilization to the Owner for approval. When approved by the Owner, 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 01550 - CONTROL OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for administering the Project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 COOPERATION BY CONTRACTOR

A. The Contractor shall give the Work the constant attention necessary for its progress and shall cooperate fully with the Architect/Engineer, Owner, and other contractors.

B. The Contractor shall employ, as its agent, a competent superintendent thoroughly experienced in the type of work being performed. The superintendent shall be available at all times to receive and execute directives and other instructions from the Owner, to supervise workers and to coordinate the work of subcontractors.

3.2 UTILITIES COORDINATION

A. Contractor is responsible for:

1. All utility work specified in the Contract as Work to be performed by Contractor;
2. Working around or through all permanent and temporary utilities shown on the drawings, in both their present and adjusted positions;
3. Accommodating the removal, adjustment, or relocation of utilities shown on the drawings by entities other than the Contractor;
4. Construction and removal of temporary utilities, to provide temporary utility service during the construction or repair of a permanent utility; and
5. Other utility work not specifically identified as compensable.

B. Approximate locations of utilities known to be within the work zone are shown on the drawings. Contractor shall expect that the location, elevation and nature of utilities may vary from what is shown on the drawings and shall factor contingencies into the bid for such variation. Additional utilities may exist that are not shown on the drawings.

1. The Contractor shall coordinate its activities with utility owners, and cooperate with utility owners to facilitate removal, adjustment, or relocation operations, avoid duplication of work, and prevent unnecessary interruption of services.

2. The Contractor shall make all necessary arrangements with utility owners to locate all utilities that may be within an area of work before excavation in that area at least 14 days prior to excavation.
3. Provide right-of-way staking and construction staking with lines and grades before excavation in affected areas.
4. Prevent damage to utilities or utility property within or adjacent to the project.
5. Carefully uncover utilities where they intersect the Work. When utility lines are found in areas of excavation, hand dig pot-holes every 100 feet along the cable to maintain visibility of the cable. This hand work is subsidiary to the item(s) of work being performed that require this service.
6. Immediately stop excavating in the vicinity of a found utility and notify the Architect/Engineer and the utility owner if an underground utility is discovered that was not field marked, was inaccurately field marked, or if accidental interruption of utility service occurs.
7. Keep the length of open trench excavation to a minimum, backfill trenches as work is completed. Cover open trenches with metal plates capable of bearing traffic where traffic will cross trenches.
8. Obtain plan approval from the local fire authority and provide for the continued service of fire hydrants before working around fire hydrants.
9. Do all pressure testing or camera testing required to verify utility acceptance in a timely manner.
10. Coordinate the Storm Water Pollution Prevention Plan (SWPPP) throughout the Work and the utility companies' work.

C. The Contractor shall prepare and follow a written plan to repair damaged utilities. The Contractor shall not work on or adjacent to utilities unless repair personnel are available to repair damaged utilities. Personnel repairing utilities shall be licensed for the work required, and shall have the tools and material required to repair damaged utilities within the time limits required.

3.3 SURVEY CONTROL

A. The Owner will provide sufficient horizontal and vertical control data to establish the planned lines, grades, slopes, shapes, and structures. The Contractor shall provide all additional survey work to maintain control during the project. The survey work shall meet the requirements set forth in the *Alaska Construction Surveying Requirements*.

B. The Contractor shall provide all survey work including, but not limited to: project layout, cross sections, slope stakes, grade stakes, as-built measurements, and quantity measurements. The Contractor shall take appropriate sections and shall provide the Architect/Engineer with reduced and checked notes from which quantity calculations for progress payment purposes can be accomplished. Notes shall be kept in a neat, orderly, and legible form according to professional surveying practices.

C. Upon completion of the Work, the Contractor shall furnish the Owner with all necessary measurements for completion of the as-built drawings. The Contractor shall include identification and location of project features where actual locations differ from locations shown on the drawings. All original survey notes and field books shall become the property of the Owner and delivered to Owner as a condition of final payment.

3.4 OWNER'S INSPECTOR

A. The Owner shall be represented on site throughout construction as described in the General Conditions. The Owner may employ inspectors who are authorized to examine all work done and materials furnished. Only the Architect/Engineer, working as the Owner's Representative, can approve Work or materials. The inspectors may not alter or waive any Contract requirements, issue instructions contrary to the Contract or act as foremen for the Contractor.

B. All materials and each part and detail of the Work shall be subject to inspection by the Owner. The Contractor shall allow safe access to all parts of the Work and provide information and assistance to the Inspector to ensure a complete and detailed inspection.

C. Any Work done or materials used without inspection by the Owner may be ordered removed and replaced at the Contractor's expense, unless the Owner failed to inspect after being given reasonable written notice that the Work was to be performed.

D. The Contractor shall remove and uncover portions of finished Work when directed. After inspection, the Contractor shall restore the Work to contract requirements. The cost to uncover and restore Work shall be at the Contractor's expense, except the Owner will pay the cost to uncover and restore Work if (1) an authorized Owner representative had previously inspected the Work or the Contractor had provided reasonable prior written notice that the Work was to be performed and (2) the Owner finds the uncovered Work to be acceptable. If the Owner finds the uncovered Work to be unacceptable, the cost to correct the Work shall be the Contractor's.

E. The Owner's observations, inspections, tests and approvals shall not relieve the Contractor from properly fulfilling its contract obligations and performing the Work according to the contract. Work that has been inspected but contains latent or hidden defects shall not be deemed acceptable even though it has been inspected and found to be according to the Contract.

END OF SECTION 01550

SECTION 01600 – PRODUCT REQUIREMENTS & SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for administering the Project.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss.

B. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

C. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

D. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

1.4 PRODUCT SUBSTITUTION REQUESTS

A. Substitutions will only be considered after bid opening when deemed by the Owner to be in its sole interest. Submit the Substitution Request Form to the Owner for consideration prior to the formal submittal process. Include the following:

1. Complete technical data and information to indicate product provides performance that will meet or exceed the specification.
2. Indicate if design changes will be required to incorporate product into the Work.
3. Impacts on other trades.
4. Cost proposal indicating cost savings.

B. The Owner will consider the request for substitution and advise the Contractor of acceptance or rejection prior to technical compliance in the formal submittal review.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01600

SECTION 01700 - PROJECT CLOSE-OUT

PART 1 - GENERAL

1.1 FINAL CLEAN UP

A. The Contractor shall promptly remove from the vicinity of the completed Work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by the Owner will not be made until the Contractor has satisfactorily complied with all requirements for final clean up of the project site.

B. The Contractor shall establish dates for equipment testing, acceptance periods, and on-site instructional periods as required by the contract documents. Such dates shall be established not less than one (1) week prior to beginning of Final Clean Up to allow the Owner and Engineer sufficient time to schedule attendance at such activities.

1.2 FINAL SUBMITTALS

A. Prior to requesting final payment, the Contractor shall obtain and submit the following items to the Owner, as specified in the contract documents:
   1. Written guarantees.
   2. Maintenance stock items; spare parts; special tools.
   3. Completed record drawings.
   4. Certifications of inspection and acceptance by local governing agencies having jurisdiction.
   5. Releases from all parties who are entitled to claims against the subject project or improvement pursuant to the provisions of law.
   6. Completed Compliance certificate and Release form, attached to the end of this Section.

B. Before final payment can be authorized by the Owner, the Contractor shall supply a copy of the “Notice of Completion of Public Works” from the Alaska Department of Labor & Workforce Development.

C. Before final payment, the Contractor shall provide the Owner with proof of clearance from the Alaska Department of Labor and Workforce Development for the Contractor and all Subcontractors that have worked on the Project. This clearance shall indicate that all Employment Security Taxes have been paid. A blank form is located at the end of Section 00800 – Supplementary General Conditions.

1.3 WARRANTY AND GUARANTEE

A. The Contractor shall comply with the warranty and guarantee requirements contained in the General Conditions.

B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as part of such Warranty and Guarantee required repair Work. Additionally, any repair or resurfacing constructed by the Contractor that is necessary due to such settlement shall likewise be considered part of required repair Work unless the Contractor obtains 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 form 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 its surety shall be liable to the Owner for the cost thereof.

PART 2 - PRODUCTS (NOT USED).

PART 3 - EXECUTION (NOT USED).

SECTION 01700 - PROJECT CLOSE-OUT

COMPLIANCE CERTIFICATE AND RELEASE FORM

Project: Juneau International Airport, SREF Site Infrastructure

Contract NO: E12-280

The Contractor must complete and submit this to the Owner with respect to the entire contract.

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

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

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

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

_____ Capacity: CONTRACTOR
Firm Name

_____ _____ _____
Signed Printed Name and Title Date

Return completed form to Jennifer Mannix, Engineering Contracts Administrator, City & Borough of Juneau, 155 South Seward Street, Juneau, AK 99801. (907) 586-0873

END OF SECTION

SECTION 01704 - FINAL CLEAN-UP AND SITE RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. 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

A. 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 CBJ/State pit, the excavated area shall be cleaned up and stipulations required by the Individual Mining Plan shall be completed. The gravel pit overhead charge shall be paid to CBJ within 60 days after removal of material from the pit.

END OF SECTION

SECTION 01720 - FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS AND REQUIREMENTS

A. Drawing and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Sections apply to this section.

1.2 QUALITY ASSURANCE

A. Surveyor Qualifications: Engage a land surveyor registered in the State of Alaska to perform required land-surveying services and construction surveying.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Identification: The Owner will identify existing control points and property line corner stakes.

B. Verify layout information shown on the Drawings in relation to the property survey and existing benchmarks before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.

2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.

C. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction.

1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.

3.2 PERFORMANCE

A. Work from lines and levels established by the property survey. Establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.

1. Advise entities engaged in construction activities of marked lines and levels provided for their use.

2. As construction proceeds, check every major element for line, level and plumb.

B. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference.

1. Record deviations from required lines and levels, and advise the Owner when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.

C. Site Improvements: Locate and lay out site improvements including pavements, stakes for grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels, and control lines and levels required for mechanical and electrical work.

E. Final Property Survey: Prepare a final property survey showing significant features (real property) for the Project. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines and levels of the Project are accurately positioned as shown on the survey.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section covers the furnishing of materials, labor, and equipment required to partially or entirely remove and/or demolish those items identified on the Plans; transport, salvage or dispose of said items; and restore any disturbed areas.

1.02 SITE CONDITIONS

A. Conditions of structures: CBJ assumes no responsibility for actual condition of structures to be salvaged or demolished.

B. Explosives: Use of explosives will not be permitted.

C. Traffic: Conduct demolition and removal operations to ensure minimum interference with taxiways, tug roads or other adjacent facilities being used.

D. Protection: Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, and persons.

E. Damages: Promptly repair damages caused to adjacent structures by demolition operations at no cost to CBJ.

PART 2 PRODUCTS

Not applicable.

PART 3 EXECUTION

3.01 GENERAL

A. Obtain utility locates in the vicinity of the designated items. Work around and preserve any facilities within the work limits. Backfill all excavations with approved embankment or excavated materials and compact in accordance with Section 02315 – Excavation and Embankment.
   1. Removed Structures Designated for Disposal. Removed structures designated for disposal become your property. Excavate, load, and haul structures to an approved disposal site off of airport property in accordance with applicable Federal and State regulations.

3.02 SITE SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this section will be performed. Determine the location and extent of demolition required by the contract documents and verify the work required by a careful site examination. Some previous demolition or removal may have occurred since preparation of contract documents.

3.03 DEMOLITION

A. Pavement Removal: Remove pavement as indicated on the Plans and as required to transition between new and existing construction. Existing pavement and concrete at interface shall be cut with equipment capable of producing straight even joints.
   1. Excavation. Excavate to the minimum depth necessary for removal of existing pavement where shown on the Plans. Saw cut where shown on the Plans.
   2. Disposal. Excavated pavement material becomes the property of the Contractor. Remove excavated material to an approved disposal site off of airport property in accordance with applicable Federal and State regulations.
   3. Drainage. Maintain drainage at all times. Install temporary drains and drainage ditches to intercept or divert surface water that may affect the prosecution or condition of the work.

END OF SECTION

SECTION 02230 - CLEARING AND GRUBBING

PART 1 GENERAL

1.01 GENERAL

A. The work in this project is to be performed in areas that have been disturbed by previous construction stages. These areas were covered with topsoil and seeded, or treated with dust palliative agent.

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

C. There are no known migratory bird nesting areas in the area of construction. However, should nesting areas be encountered: Comply with the following seasonal construction limitations to prevent impacts to migratory bird nesting areas:

To prevent impacts to migratory birds, the following construction activities are prohibited between May1 and July 31:

1. Clearing of vegetation.
2. Fill placement over vegetated areas.
3. Excavation of vegetated areas.
4. Other construction activities that cause disturbance of vegetation.

The prohibited activities specified in (1) through (4) above do not apply if the vegetated areas have been sufficiently disturbed or altered (e.g. by grubbing, excavation, fill placement or use of plastic or other materials that will cover the nesting habitat) prior to April 15 to eliminate the nesting habitat.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.01 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. All vegetation and debris to be removed shall be disposed of by the CONTRACTOR within areas indicated on the Drawings or areas approved by the ENGINEER. When burning is permitted, it shall be under the constant care of competent employees. Burning shall be performed in a manner such that anything designated to remain on the right-of-way, the surrounding forest cover, or other adjacent property will not be jeopardized. Burning shall be done in accordance with all applicable laws and ordinances. The CONTRACTOR shall obtain all required permits.

C. The CONTRACTOR is responsible for:

1. Securing waste disposal sites,
2. Obtaining written permission of the owner of the disposal site and
3. Securing any required permits, if none is indicated on the Drawings.

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

3.02 GRUBBING

A. All stumps, roots and other objects not designated to remain shall be cleared and grubbed. If the area is not to be benched, the removal of undisturbed stumps and roots and nonperishable solid objects that will be a minimum of four feet below the embankment surface and that do not extend more than six inches above the original ground line, will not be required.

B. In areas outside of the grading limits of cut and toe of embankment areas and to the established limits of the WORK, all stumps and nonperishable solid objects permitted to remain in place shall be cut off not more than six inches above the ground line or low water level.

C. Except in areas to be excavated, stump holes and other holes from which obstructions are removed shall be backfilled with suitable materials and compacted in accordance with the Contract Documents.

END OF SECTION

SECTION 02315 - EXCAVATION AND EMBANKMENT

PART 1 GENERAL

1.01 SUMMARY

A. This item consists of excavation, hauling, embankment (or waste disposal), placement, grading and compaction of all materials required to construct taxiways, aprons, drainage, buildings, roadways, parking, and other work. Construct according to the specifications, and conform to the dimensions and typical sections shown on the Plans.

B. All unused excavated material shall remain the property of the Airport. The contractor shall place excavated material in a neat stockpile at a designated location on the secure side of the airfield, near the Glacier Fire Station. Once stockpile is complete, haul routes shall be restored and stockpile shall be treated with an approved dust palliative.

PART 2 PRODUCTS

2.01 MATERIAL DEFINITIONS

A. The Contract will designate material to be removed from within the project lines and grades as classified excavation (common, rock or muck) or as unclassified excavation. Material obtained from outside the project lines and grades is borrow.

B. All material shall be described as defined below, but no quantity of material shall be defined or paid in more than one category:

1. Unclassified Excavation. All material, regardless of its nature, which is not paid for under another contract item. May include common, rock or muck.
2. Common Excavation. Suitable material such as silt, sand, gravel, and granular material that does not require blasting or ripping. Not rock or muck.
3. Rock Excavation. Rock that cannot be excavated without blasting or ripping, and boulders containing a volume of more than 0.5 cubic yard.
4. Muck Excavation. Soil, organic matter, and other material not suitable for embankment or foundation material, including material that will decay or produce subsidence in the embankment such as stumps, roots, logs, humus, or peat.
5. Drainage Excavation. Excavation made for the primary purpose of controlling drainage including: intercepting, inlet or outlet ditches; temporary levee construction; or any other type as shown on the Plans.
6. Borrow. Suitable material that is required for the construction of embankment or for other portions of the work. Borrow material shall be obtained from sources within the limits of the airport property but outside the project lines and grades, or from sources outside the airport property.
7. Foundation Soil. In-situ soil or undisturbed ground.
8. Non-frost susceptible. Stone, gravel or sand, that contains 10 percent or less material passing the No. 200 screen as determined by sieve analysis performed with WAQTC FOP for AASHTO T27/T 11 on the minus 3-inch material, and has a plastic index of 6 or less as determined by WAQTC FOP for AASHTO T 90.

2.02 UNSUITABLE MATERIAL

A. Material that doesn't meet the testing criteria for suitable material. Material containing vegetable or organic matter, such as muck, peat, organic silt, or sod is considered unsuitable for use in embankment construction. Material that is contaminated by hazardous substances, including fuel or oil, in greater quantity than state and federal standards allow is considered unsuitable for use.

B. **Hazardous Materials.** Hazardous materials include but are not limited to petroleum products, oils, solvents, paints, lead based paints, asbestos, and chemicals that are toxic, corrosive, explosive, or flammable. Except as otherwise specified in this Contract, the Contractor shall:

1. Not excavate, nor use for fill, any material at any site suspected of or found to contain hazardous materials or petroleum fuels;
2. Not raze and remove, or dispose of structures that contain asbestos or lead-based paints;
3. Not stockpile, nor dispose of, any material at any site suspected of or found to contain hazardous materials or petroleum;
4. Report immediately to the Engineer any known or suspected hazardous material discovered, exposed, or released into the air, ground, or water during construction of the project;
5. Report any containment, cleanup, or restoration activities anticipated or performed as a result of such release or discovery;
6. Handle and dispose of hazardous material with properly trained and licensed personnel who follow an approved Hazardous Material Control Plan as per Section P-157. Dispose of hazardous material according to federal, state and local laws and regulation.
7. Store, handle and dispose of hazardous material that the Contractor or subcontractors brought to or used on the project, at no cost to the owner.

2.03 SUITABLE MATERIAL

A. Suitable material may be obtained from classified excavation, unclassified excavation, or borrow. The Engineer will approve material as "suitable" for use in embankment when the material meets the following criteria:
   1. Sand, rock, gravel, silt, concrete, asphalt pavement, and other inorganic material;
   2. Gradation of 100% by weight passing 6 inch screen; and
   3. Meets definition of Non-Frost Susceptible in Section 2.01 B. 8. above.

B. The Engineer may, in their discretion, approve oversize material as "suitable" for use in embankment when the material meets the following criteria:
   1. Sand, rock, gravel, silt, concrete, asphalt pavement, and other inorganic material;
   2. Gradation of 100% by weight passing 24 inch screen;
   3. Meets definition of Non-Frost Susceptible in Section 2.01 B. 8. above.; and
   4. Rock is well graded with an even distribution of rock sizes, and can be compacted with a minimal amount of voids.

PART 3 EXECUTION

3.01 GENERAL

A. Perform all necessary clearing and grubbing in accordance with Item 02230, and construction surveying in accordance with Item 2702, including staking of lines and grades, prior to beginning excavation, grading, and embankment operations in any area.

B. The suitability of material to be placed in embankments shall be subject to approval by the Engineer. Material with organics, when approved by the Engineer as suitable to support vegetation, may be used on top of the embankment slope.

C. Unsuitable material shall be disposed of in waste areas shown on the Plans or in locations acceptable to the Engineer. Material contaminated by hazardous substances shall require special handling and disposal, performed according to section 2.02 B. above and using methods acceptable to the Engineer.

1. Waste Areas. All waste areas shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of waste areas shall not extend above the surface elevation of adjacent usable areas of the airport, unless specified on the Plans or approved by the Engineer. Unsuitable material shall not be left in windrows or piles, and shall not extend into the Obstacle-Free Zone (as defined in AC 150/5300-13, Subsection 306).

   All waste areas shall be protected from erosion according to the SWPPP. Areas where seeding is called for, in which the top layer of soil material has become compacted, by hauling or other activities of the Contractor shall be scarified and disked to a depth of 4 inches, in order to loosen and pulverize the soil.

   The Contractor shall obtain all permits required for placing waste in areas they choose, and which are not covered by Department obtained permits. When the Contractor is required to locate a disposal area outside the airport property limits at his/her own expense, he shall obtain and file with the Engineer, permission in writing from the property owner for the use of private property for this purpose.

2. Utility Work. Utility work shall be performed, and compensation claims for utility work made, according to section 1500. If it is necessary to work thorough or around existing utilities or associated structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve the utilities or provide temporary services. When utilities not shown on the Plans are encountered, the Contractor shall immediately notify the Engineer, and the Engineer will determine the disposition of the utility. The Contractor shall, at no additional cost to the Department, satisfactorily repair or pay the cost of all damage to utilities or associated structures which may result from any of the Contractor's operations.

3.02 EXCAVATION

A. No excavation shall be started until the Contractor has construction surveyed the work, including staking the lines and grades, and the Engineer has reviewed stakes, elevations and measurements of the ground surface. All Useable Excavation of suitable material shall be used in the formation of embankment or for other purposes shown on the Plans. All unsuitable material shall be disposed of in waste areas as shown on the Plans or as directed by the Engineer.

B. When the volume of the Useable Excavation exceeds that required to construct the embankments to the grades indicated, the excess material shall be used to grade the areas of ultimate development or disposed of as directed. When the volume of Useable Excavation is not sufficient for constructing the fill to the grades indicated, borrow shall be used to make up the deficiency.

C. The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work. All temporary drains and drainage ditches shall be constructed and maintained according to the SWPPP.

D. In cuts, all loose or protruding rocks on the back slopes shall be scaled or otherwise removed to line of finished grade of slope. All cut-and-fill slopes shall be uniformly dressed to the slope, cross section, and alignment shown on the Plans or as directed by the Engineer.

1. Selective Grading. When selective grading is required, the more suitable material as designated by the Engineer shall be used in constructing the upper layers of the embankment or pavement structure. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas.

2. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for runways, taxiways, safety areas, sub grades, roads, shoulders, or any areas intended for turfing shall be excavated to a minimum depth of 12 inches, or to the depth directed by the Engineer, below the top of subgrade. Muck, peat, matted roots, or other yielding material that is unsatisfactory for foundation soil compaction, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the Plans. The excavated area shall be refilled with suitable material, obtained from the grading operations or borrow areas and thoroughly compacted as specified. Where rock cuts are made and refilled with suitable material, any pockets created in the rock surface shall be drained according to the details shown on the Plans. The material removed will be paid as Unclassified Excavation.

3. Overbreak. Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work, as planned or authorized by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and their decision shall be final. All overbreak shall be graded or removed by the Contractor and disposed of as directed; however, payment will not be made for the removal and disposal of overbreak which the Engineer determines as avoidable. Unavoidable overbreak that must be removed will be paid as Unclassified Excavation.

4. Removal of Structures and Utilities. The Contractor shall accomplish the removal of existing structures and utilities that are specified to be removed or demolished, except when another entity is identified in the Contract to accomplish the work. All existing structural foundations shall be excavated and removed to a depth at least 2 feet below the top of subgrade or as indicated on the Plans, and the material disposed of as directed. Holes left after

removing foundations shall be backfilled with suitable material and compacted as specified. The material will be paid as Unclassified Excavation.

5. Foundation Soil Compaction Requirements. In areas of excavation, the top 6 inches of foundation soil under areas serving aircraft or vehicle traffic loadings shall be compacted to a density of not less than 95% of the maximum density as determined by WAQTC FOP for AASHTO T 99/T 180 or ATM 212. The in-place field density and moisture content shall be determined according to WAQTC FOP for AASHTO T 310.
   Compaction of the foundation soil is a subsidiary cost to excavation.

6. The Engineer may direct the Contractor to over excavate foundation soil that is soft or compresses excessively, and to backfill excavation with compacted suitable material. The material will be paid as Unclassified Excavation.

3.03 BORROW SOURCES

A. Borrow sources within the airport property are identified on the Plans. Excavation of borrow on airport property shall be made only at these identified locations and within the lines and grades staked.

B. Borrow sources outside of airport property may be identified in the Contract. The Contractor shall furnish additional borrow sources if necessary.

C. Removal of overburden and waste material, permit costs, mineral royalties, and other costs of material source development are subsidiary and shall be included in the unit price for borrow.

3.04 DRAINAGE EXCAVATION

A. Drainage excavation for intercepting, inlet or outlet drains; for temporary levee construction; or for any other type as designed or as shown on the Plans. The work shall be performed in the proper sequence with the other construction and according to the SWPPP. All suitable material shall be placed in fills; unsuitable material shall be placed in waste areas or as directed. Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All necessary work shall be performed to secure a finish true to line, elevation, and cross section.

B. The Contractor shall maintain ditches constructed on the project to the required cross section and shall keep them free of debris or obstructions until the project is accepted.

3.05 PREPARATION OF EMBANKMENT AREA

A. Where an embankment is to be constructed to a height of 4 feet or less, or where the embankment supports asphalt or concrete paving, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be completely broken up by plowing or scarifying to a minimum depth of 6 inches. Compact this area as indicated in Subsection 02315 – 3.06 B. 4..

B. When new embankment is placed against existing embankments or on slopes steeper than 4:1, the existing ground shall be continuously benched over the areas as the work is brought up in layers. Benching shall be of sufficient width to permit placing of material and compacting operations. Each horizontal cut shall begin at the intersection

of the original ground and the vertical side of the previous bench. Material thus cut out and deemed suitable shall be blended and incorporated into the new embankment.

C. No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

3.06 FORMATION OF EMBANKMENTS

A. Embankments shall be formed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross section, unless otherwise approved by the Engineer.

B. The grading and compaction operations shall be conducted, and the various soil strata shall be placed, to produce an embankment as shown on the typical cross section or as directed by the Engineer. Materials such as brush, hedge, roots, stumps, grass and other unsuitable material, shall not be incorporated or buried in the embankment.

1. Suspension of Operations. Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, moisture content or other unsatisfactory conditions of the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage.

2. Soft Foundations. When embankments are to be constructed across wet or swampy ground, which will not support the weight of heavy hauling and spreading equipment, the Contractor shall use methods of embankment construction, and use hauling and spreading equipment, that will least disturb the soft foundation (defined as having a California Bearing Ratio less than 3). When soft foundations are encountered, and when approved by the Engineer, the lower part of the fill may be constructed by dumping and spreading successive vehicle loads in a uniformly distributed layer of a thickness not greater than that necessary to support the vehicle while placing subsequent layers, after which the remainder of the embankment shall be constructed in layers and compacted as specified. The Contractor shall not be required to compact the soft foundation, and at the Engineer’s option, may not be required to clear and grub.

3. Moisture. The material in the layer being placed shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. In order to achieve a uniform moisture content throughout the layer, wetting or drying of the material and manipulation shall be performed when necessary. Should the material be too wet to permit proper compaction or rolling, all work on all of the affected portions of the embankment shall be delayed until the material has dried to the required moisture content. Watering of dry material to obtain the proper moisture content shall be done with approved equipment that will sufficiently distribute the water. Sufficient equipment to furnish the required water shall be available at all times.

4. Compaction. Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density as determined in accordance with ASTM D4253 or ASTM D1557. Under all areas serving aircraft or vehicle traffic loadings, the embankment shall be compacted to a

density of not less than 95% of the maximum density as determined in accordance with ASTM D4253 or ASTM D1557. The in-place field density and moisture content shall be determined according to WAQTC FOP for AASHTO T 310.

Keep dumping and rolling areas separate. Do not cover any layer by another until the proper density is obtained.

During construction of the embankment, the Contractor shall route their equipment at all times, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of embankments, layer placement shall begin in the deepest portion of the fill and progress in layers approximately parallel to the finished pavement grade line. Stones or fragmentary rock larger than 3 inches in their greatest dimensions will not be allowed in the top 6 inches of the embankment.

5. Oversize Material. At the Engineer's discretion and direction, the Contractor may use oversize material or rockfill, as defined in Subsection 02315 – 2.03 B., in the embankment. Place material in layers up to 2 feet thick. Fill voids with finer material. Level and smooth each layer with suitable leveling equipment. Use compaction equipment and construction methods that can form a dense, well-compacted embankment. Do not use oversize material within 2 feet of the top of finished subgrade.

Rock or boulders larger than 2 feet in thickness shall either be disposed of outside the excavation or embankment areas, in places and in the manner designated by the Engineer; or they may be crushed to less than 2 feet thickness and used in the embankment.

6. Subsidiary Costs. Excavation and embankment is a single pay item; there will be no separate measurement or payment. The costs for material source development, blasting, excavation, hauling, placing in layers, compacting, disking, watering, mixing, sloping, grading, and other necessary operations for construction of embankments, are subsidiary and shall be included in the contract unit prices for excavation, borrow, or other pay items.

7. Frozen Material. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material, unless this construction method is identified in the special provisions, or is part of a Contractor's Progress Schedule that the Engineer has approved.

3.07 FINISHING AND PROTECTION OF SUBGRADE

A. After the subgrade has been substantially completed, the full width shall be conditioned by removing any soft or other unstable material that will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to finish subgrade elevation with suitable material. Scarifying, blading, rolling and other methods

shall be performed to provide a thoroughly compacted subgrade, whose top is shaped to the lines and grades shown on the Plans.

B. Grading of the top of subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. The Contractor shall limit hauling over the finished subgrade to that which is essential for construction purposes.

C. All ruts, ponds or rough places that develop in a completed subgrade shall be repaired, smoothed and recompacted before another layer is placed on top of the subgrade.

D. No subbase, or surface course shall be placed on the subgrade until the subgrade has been approved by the Engineer. Erosion and sediment control shall be done according to the SWPPP. Work described in this subsection is subsidiary and shall be included in the contract unit prices.

3.08 TOLERANCES

A. In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 12-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch, or shall not be more than 0.05 foot from true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting by watering and rolling.

END OF SECTION

SECTION 02370 – EROSION AND SEDIMENTATION CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. The CONTRACTOR shall provide for erosion control during construction in accordance with the requirements of the Alaska Department of Environmental Conservations (ADEC) and the Environmental Protection Agency (EPA). 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 temporary erosion control works; including but not limited to, silt fences, settling ponds, check dams, ditches, etc.

C. This work consists of planning, providing, inspecting and maintaining control of erosion, sedimentation, water pollution and hazardous materials contamination.

1.02 DEFINITIONS

A. BMP (Best Management Practices). A wide range of project management practices, schedules, activities, or prohibition of practices, that when used alone or in combination, prevent or reduce erosion, sedimentation, and/or pollution of adjacent water bodies and wetlands. BMPs include temporary or permanent structural and non-structural devices and practices. Common BMPs are available from the EPA website at www.epa.gov/npdes/stormwater/menuofbmps See National Menu of Storm Water Best Management Practices.

B. ESCP (Erosion and Sediment Control Plan). A project-specific document that illustrates measures to control erosion and sedimentation problems on a project. The ESCP normally consists of a general narrative and a map or site plan. It is developed by the CBJ and included in the project plans and specifications. It serves as a resource for bid estimation and a framework from which the Contractor develops the project SWPPP.

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

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

E. eNOI. Notice of Intent to commence ground-disturbing activities under the NPDES General Permit filed electronically. Use EPA Form 3510-9 available from the EPA website at www.epa.gov/npdes/stormwater/cgp

F. eNOT. Notice of Termination of coverage under the NPDES General Permit filed electronically. Use EPA Form 3510-13 available from the EPA website at www.epa.gov/npdes/stormwater/cgp

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

H. SPCC Plan (Spill Prevention, Control and Countermeasure). The Contractor's detailed plan for oil spill prevention and control measures, that meets the requirements of 40 CFR 112.

I. SWPPP (Storm Water Pollution Prevention Plan). The Contractor's plan for erosion and sediment control and storm water management under the NPDES General Permit. The SWPPP is developed by the Contractor to identify specific areas where erosion may occur, to describe site-specific controls to prevent erosion and manage sediment, and to establish a record of the installation and removal of these controls. The approved SWPPP replaces the ESCP.

1.03 REFERENCES.

A. The following ESCP information may be found at the websites provided.

1. Developing your SWPPP. EPA. Includes a SWPPP template in MS Word. www.epa.gov/npdes/swpppguide
2. National Menu of Storm Water Best Management Practices. EPA. www.epa.gov/npdes/stormwater/menuofbmps
3. International Erosion Control Association.

www.ieca.org/resources/resources.asp

4. Construction Industry Compliance Assistance Center.

www.CICAcenter.org/bmps.html

1.04 SUBMITTALS

A. For all projects, submit two copies each of your SWPPP and HMCP to the Engineer for approval. Submit one copy of your SPCC Plan (if required under Subsection 157-2.3) to the Engineer. Sign all submittals. Deliver these documents to the Engineer no less than five calendar days prior to the preconstruction conference.

B. The CBJ will review the SWPPP and HMCP submittals within 14 calendar days. Submittals will be returned to you as either requiring modification, or as approved by the CBJ. The approved SWPPP must contain all certifications, and be signed in accordance with the Standard Permit Conditions of the NPDES General Permit. You must receive an approved SWPPP before you submit your eNOI to the EPA.

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

D. For projects that disturb 1 acre or more, submit your signed eNOI to EPA. Submit copies of your signed eNOI receipt to the Engineer and to ADEC. Transmit proof of your ADEC submission to the Engineer. The CBJ will transmit the CBJ's eNOI to the EPA. Allow adequate time for state and federal processing, prior to commencing ground-disturbing activities.

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

F. When the Project is stabilized, as determined by the Engineer, submit your signed eNOT to EPA with a copy to the Engineer. The CBJ will transmit the CBJ's eNOT to the EPA.

PART 2 PRODUCTS

2.01 MATERIALS

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

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall install temporary erosion control structures and devices as necessary and/or as directed by the ENGINEER. They shall be maintained in effective operating condition at all times. Catch basin silt screens, silt fences and any other silt collection devices shall be cleaned whenever they have become half-filled with silt or debris, and other items shall be cleaned, repaired, or replaced as necessary. Prior to completion of work, the CONTRACTOR shall clean and remove all silt and debris from the settling pond and check dams.

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

C. The CONTRACTOR shall be responsible for meeting the requirements of all permits(including permits naming the OWNER, or other parties); therefore, shall eb 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 is responsible to prepare, submit and maintain a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the Alaska Construction General Permit (GCP) to the EPA and ADEC that is in accordance with their construction methodologies and sequences. This includes submission of Notice of Intent (NOI) to the EPA.

E. The CONTRACTOR shall submit to the ENGINEER an Erosion and Sediment Control Plan, a copy of the NOI and documentation of their submittal of the SWPPP to ADEC, prior to beginning any WORK at the Project site, Work at the Project site will not be permitted until approval of this plan has been obtained from the governing agency or agencies.

F. The contractor shall submit NOT (Notice of Termination) at completion of the WORK and removal of all SWPPP items.

3.02 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS

A. Prepare a Storm Water Pollution Prevention Plan for all projects. Ensure that the SWPPP preparer visits the project site before they prepare the SWPPP. Use the

CBJ's ESCP to develop a SWPPP based on your scheduling, equipment, and use of alternative BMPs. Follow the format presented in Appendix A of EPA's *Developing Your Storm Water Pollution Prevention Plan* guide available from the EPA website at www.epa.gov/npdes/swpppguide. Include both erosion control and sediment control measures. First address preventing erosion, then minimizing erosion, and finally trapping sediment before it leaves the project site.

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

C. Specify the line of authority and designate your field representative for implementing SWPPP compliance.

3.03 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS

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

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

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

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

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

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

3.04 SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN REQUIREMENTS

A. Prepare and implement a SPCC Plan when required by 40 CFR 112, including:
1. When oil spills may reach navigable waters; and
2. Total above ground oil storage capacity is greater than 1,320 gallons.

B. Comply with 40 CFR 112 and address the following issues in your SPCC Plan:
1. Operating procedures that prevent oil spills;
2. Control measures installed to prevent a spill from reaching navigable waters; and
3. Countermeasures to contain, clean up, and mitigate the effects of an oil spill.

C. You may self-certify the SPCC Plan if the total above ground oil storage capacity is 10,000 gallons or less, and the requirements for self-certification in 40 CFR

112 are met. Otherwise, the SPCC Plan must be certified, stamped with the seal of, dated by, and signed by a Professional Engineer registered in the State of Alaska.

3.05 CONSTRUCTION REQUIREMENTS

A. On projects with 1 acre or more of ground disturbing activity, do not begin ground-disturbing work until after the EPA has acknowledged receipt of your eNOI and the CBJ's eNOI, and has listed them as active status. The EPA will post the status of the eNOIs on the EPA website. On projects with less than 1 acre of ground disturbing activity, where submittal of an eNOI to EPA is not required, do not begin ground disturbing work until authorized by the Engineer.

B. Post at the construction site:
   1. NPDES Permit number, if available, and a copy of the eNOI,
   2. Name and phone number of your local contact person, and
   3. Location of a SWPPP available for viewing by the public.

C. Post the above notices at publicly accessible locations. At a minimum, post notices at the intersection of main roads with roads providing access to the project site, and the project office.

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

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

F. Maintain all temporary and permanent erosion and sediment control measures in effective operating condition.

G. Coordinate your BMPs with all utility companies working in the project area.

H. Perform inspections and prepare inspection reports in compliance with the project SWPPP and the NPDES General Permit.
   1. Joint Inspections. Prior to start of construction, conduct a joint on-site inspection with the Engineer, the SWPPP preparer, and the Contractor's field representative to discuss the implementation of the SWPPP.
   2. Conduct the following additional joint on-site inspections with the Engineer:
      a. During construction, inspect the following at least once every seven calendar days and within 24 hours of the end of a storm exceeding 0.5 inch in 24 hrs. (as measured on the project site):
         1) Disturbed areas that have not been finally stabilized.
         2) Areas used for storage of erodible materials that are exposed to precipitation.
         3) Sediment and erosion control measures.

4) Locations where vehicles enter or exit the site.
5) Offsite material sources and waste sites.

b. At least once per month during construction and after every change in earth disturbing activities, ensure that the SWPPP preparer reviews the project site, materials sites, waste sites, and the SWPPP for conformance with the NPDES General Permit.
c. Prior to winter shutdown, to ensure that the site has been adequately stabilized and devices are functional.
d. At project completion, to ensure final stabilization of the project.

3. Winter Inspections. During winter shutdown, conduct inspections at least once every month and within 24 hours of a storm resulting in rainfall of 0.5 inch or greater. Monthly inspection requirements may be waived by the Engineer until one month before thawing conditions are expected to result in a discharge, if all of the following requirements are met:
   a. Below-freezing conditions are anticipated to continue for more than one month.
   b. Land disturbance activities have been suspended.
   c. The beginning and ending dates of the waiver period are documented in the SWPPP.

I. Inspection Reports. Prepare and submit, within three calendar days of each inspection, a report on state Form 25D-100. At a minimum, provide the following information:
1. A summary of the scope of the inspection.
2. Name(s) of personnel making the inspection.
3. The date of the inspection.
4. Observations relating to the implementation of the SWPPP.
5. Any actions taken as the result of the inspection.
6. Incidents of non-compliance.

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

J. Keep the SWPPP up to date at all times. Ensure that the SWPPP denotes the location, date of installation, date maintenance was performed, and the date of removal of each BMP. Include copies of inspection reports and amendments.

K. Maintain the following records as part of the SWPPP:
1. Dates when major grading activities occur.
2. Dates when construction activities temporarily or permanently cease on a portion of the site.
3. Dates when stabilization measures are initiated.
4. Daily precipitation as measured from an on-site rain gauge.

L. Provide the Engineer with copies of all SWPPP revisions, updates, records, and inspection reports at least weekly.

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

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

O. Submit amendments to the SWPPP to correct problems identified as a result of any:
   1. Storm or other circumstance that threatens water quality, and
   2. Inspection that identifies existing or potential problems.

P. Submit SWPPP amendments to the Engineer within seven calendar days following the storm event or inspection. Detail additional emergency measures required and taken to include additional or modified measures. If modifications to existing measures are necessary, complete implementation within seven days.

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

R. For projects that disturb 1 acre or more of land, submit your signed eNOT to EPA and a copy to the Engineer when the Engineer notifies you that:
   1. The project site (including all material sources and disposal sites.) has been finally stabilized and all storm water discharges from construction activities authorized by this permit have ceased, or
   2. When the construction activity operator (as defined in the NPDES General Permit) has changed.
   3. If you fail to coordinate temporary or permanent stabilization measures with the earthwork operations in a manner to effectively control erosion and prevent water pollution, the Engineer may suspend your earthwork operations and withhold monies due on current estimates for such earthwork items until all aspects of the work are coordinated in a satisfactory manner.

END OF SECTION

SECTION 02501 – STORM SEWER PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

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

B. WORK includes furnishing and installing connecting bands, branch connections, elbows and end sections required to complete the culvert or drain structure.

C. Special sections, such as elbows and branch connections shall be of the same material and coating as the culvert pipe to which they are attached, or be designed to be connected to the culvert pipe.

1.02 SUBMITTALS

A. Storm Sewer Pipe: Material certifications.

PART 2 - PRODUCTS

2.01 METALLIC-COATED STEEL CORRUGATED PIPE AND PIPE ARCHES

A. Metallic-coated steel corrugated pipe and pipe arches and specials sections (such as elbows, branch connections, and prefabricated flared end sections) shall conform to the applicable requirements of AASHTO M 36 and either AASHTO M 218 or AASHTO M 274 for the specified sectional dimensions and thickness.

B. Coupling bands shall conform to AASHTO M 36 except that the use of bands with projections (dimples) will be limited to attaching prefabricated flared end sections. Flat bands and smooth sleeve-type couplers will not be permitted.

C. Steel sheets of the required composition may be furnished with commercially produced corrugation dimensions other than those specified in ASSHTO M 36 if shown on the Drawings or approved by the ENGINEER.

2.02 ALUMINUM ALLOY CORRUGATED PIPE AND PIPE ARCHES

A. Aluminum alloy corrugated pipe and pipe arches and special sections (such as elbows, branch connections, and prefabricated flared end sections) shall conform to the

applicable requirements of AASHTO M 196 for the specified sectional dimensions and thickness.

B. Coupling bands shall conform to AASHTO M 196 except that the use of bands with projections (dimples) will be limited to attaching prefabricated flared end sections.

C. Aluminum alloy sheets of the required composition may be furnished with commercially produced corrugation dimensions other than those specified in AASHTO M 196 if shown on the Drawings or approved by the ENGINEER.

2.03 POLYMER-COATED STEEL CULVERTS

A. Polymer-coated steel culverts and special sections (such as elbows and branch connections) shall conform to the applicable requirements of AASHTO M 245 and AASHTO M 246. Unless otherwise specified, the polymer coating shall be type B. The 0.010 inch thickness shall be on the inside surface of the pipe.

B. Coupling bands shall conform to AASHTO M 245 except the use of bands with projections (dimples) is not acceptable.

C. Steel sheets of the required composition may be furnished with commercially produced corrugation dimensions other than those specified in AASHTO M 245 if shown on the Drawings or approved by the ENGINEER.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. Excavation, Bedding, and Backfill shall conform to the requirements of Section 02315 – excavation and Embankment. All pipe shall have a minimum cover of 12 inches, unless otherwise shown on the Drawings or directed by the ENGINEER.

A. The pipe laying shall begin at the downstream end of the pipe. The lower segment of the pipe shall be in contact with the shaped bedding throughout its full length. Bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe shall be placed facing upstream.

B. Paved or partially lined pipe shall be laid so that the longitudinal centerline of the paved segment coincides with the flow line. Elliptical and elliptically reinforced pipes shall be placed with the minor axis within five degrees of a vertical plane through the longitudinal axis of the pipe.

C. If the spelter coat or galvanized metal pipe is damaged during installation, the CONTRACTOR shall make necessary repairs to the spelter in accordance with AASHTO M 36, or replace the damaged section of pipe, at no additional cost to the OWNER.

D. Rigid conduits may be of bell and spigot or tongue and groove design unless one type is specified. Conduit sections shall be joined such that the inner surfaces are reasonably flush and even.

E. Joints shall be made with portland cement mortar, portland cement grout, rubber gaskets, plastic sealing compound, or by any combination of these types, or any other approved type, as may be specified.

F. Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the conduit and finished smooth on the inside. For grouted joints, molds or runners shall be used to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible, watertight seal. Joints in concrete pipe shall be thoroughly wetted before mortar or grout is applied.

G. Where portland cement mixtures are used, the completed joints shall be protected against rapid drying by a suitable curing method

H. Flexible conduits shall be firmly joined by approved coupling bands.

I. Conduit shall be inspected before any backfill is placed. Any pipe found to be substantially out of alignment, unduly settled, or damaged shall be taken up and relaid or replaced.

J. Installation of all pipes shall conform to the manufacturer's recommended procedures. These Specifications and the Drawings shall take precedence over the manufacturer’s recommendations in the event of conflict, if more restrictive.

K. Four and six inch pipe culvert shall be installed as shown on the Drawings, unless otherwise directed by the ENGINEER. Other service pipe connections may be necessary, depending on whether unknown existing drainage pipes or drainages are encountered. Additional saddle tees shall be provided, as necessary, for storm service piping required in addition to those services shown on the Drawings. All bends, couplings and other fittings as necessary to connect to existing pipes or flows and to maintain a minimum cover of 12 inches shall be proved.

L. All storm service pipes to be stubbed out shall be capped and marked with a pressure treated two inch or four inch post extending from the cap to one inch above ground surface with the top six inches painted green.

M. All cut corrugations on CPP pipe shall be cleared of all water and completely grouted to prevent the accumulation of water.

END OF SECTION

SECTION 02502 – STORM SEWER MANHOLES, INLETS AND CATCH BASINS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing culvert headwalls as shown on the Drawings and the Standard Details.

1.02 SUBMITTALS

A. Storm Sewer Culvert Headwall

PART 2 - PRODUCTS

2.01 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.

2.02 CULVERT HEADWALLS

A. Culvert Headwalls installed on both ends of culverts shall conform to the plan dimensions and to the following Specification requirements for the designated materials:
   1. Concrete shall conform to the requirements of section 03301 Structural Concrete.

2.03 REINFORCING STEEL

A. Reinforcing steel shall conform to the following applicable requirements:
   Welded Steel Wire Fabric AASHTO M 55 (ASTM A 185)

2.04 CORRUGATED METAL UNITS

A. Corrugated metal units shall conform to plan dimensions. Steel units shall conform to AASHTO M 36 and aluminum units shall conform to AASHTO M 196. Polymer precoating shall conform to AASHTO M 245 for the type specified.

B. Branch stubs shall be corrugated pipe sections extending 12 inches from the inlet unit to match the connecting pipe size shown on the Drawings..

2.05 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

3.01 CONSTRUCTION

A. Concrete construction shall conform to the requirements of Section 03302 – Concrete Structures.

B. Existing storm flow shall not be impeded during construction.

C. Excavation, bedding and backfilling shall conform to the requirements of Section 02315 – Excavation and Embankment.

END OF SECTION

SECTION 02510 - WATER SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION.

A. The work under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and installing buried water pipe and fittings, thrust blocks, tie rods, electrical continuity, fire hydrants, gate valves, valve risers, water services, disinfection and testing. The Contractor shall install the water pipe and fittings to the horizontal and vertical alignment shown on the Drawings and shall complete all associated work described in this Section. Comply with the latest City & Borough of Juneau (CBJ) Standard Specification requirements.

1.2 SUBMITTALS.

A. The required submittals for this work will be: water pipe: material specifications, gate valves, fire hydrants, service saddles, corporation stops, curb stops, service boxes, blow off hydrant and fittings: material specifications and catalog cut sheet(s).

PART 2 - PRODUCTS

2.1 BEDDING MATERIAL

A. Bedding and Backfill. Use approved materials as shown on the Drawings and in accordance with Section 02315.

2.2 PIPE

Use materials that conform to the following:

A. Water Pipe. Where shown on the drawings, use high density polyethylene (HDPE) pipe and fittings that meet the following:

High Density Polyethylene (HDPE) pipe shall be produced with approved bimodal PE 3408 / PE 100 / PE 4710 listed resins. The resin shall be DOW Continuum DGDC 2480K, High Density Polyethylene – PE 100 / PE 4710, or approved equal. The pipe shall have a minimum pressure rating of 160 pounds per square inch, and a Standard Dimension Ratio (SDR) of 11. All HDPE water pipe shall have a standard iron pipe size (IPS) outside diameter.

1. The pipe and fitting material shall have a cell classification of 445574 in accordance with ASTM D3350.
2. Compounds shall have a PPI recommended Design Basis (HDB of 1,600 psi at 68ºF (20ºC). Compounds shall have a PPI recommended HDB of 1,000 psi at 176ºF (80ºC).
3. Slow Crack Growth Resistance shall be measured in accordance with ASTM F1473 (PENT). The minimum required time to failure shall be 4,000 hours.
4. Ductile Iron Pipe (DIP) shall conform to the latest CBJ Standard specifications.

B. Joints

1. HDPE pipe shall be joined in continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the manufacturer's recommendations.

2. Flange and mechanical joint adapters shall be attached to the HDPE pipe and fittings using butt fusion. Align and center the flange or mechanical joint adapter relative to the pipe. Flanges and mechanical joint adapters shall be square with the receiving valve or other flange before tightening of bolts. Bolts shall not be used to draw the flanges into alignment. Bolt threads shall be lubricated and flat washers shaII be used under flange nuts. Bolts shall be tightened in accordance with the manufacturer's recommendations. All bolts and associated hardware shall be stainless steel. The tightening torque shall be as indicated by the manufacturer. Gasket material shall conform to NSF 61.

3. DIP placed within pipe casings shall have restrained joint connections. Refer to CBJ Standard Detail 413 – Bored Encasement.

4. Restrained joint DIP 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.

C. Fittings

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

2. For connecting to existing water mains, the Contractor shall use a mechanical joint tee and a mechanical joint cutting-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.

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

2.3 LUBRICANT

A. The lubricant shall be suitable, and acceptable by the 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.

2.4 TRACER WIRE

A. Install tracer wire on all HDPE water pipe per manufacturer's recommendations. Tracer wire shall be installed in continuous lengths with no splices. Terminate each end of tracer wire at a valve box, or furnish and install a valve box top section and cap for termination. Terminate tracer wire at ground surface and provide a minimum of five (5) feet of additional wire neatly coiled within valve box. The trace wire shall be tested for continuity following all backfilling operations.

2.5 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.

2.6 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.

2.7 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 Drawings, the number and size of the rods shall be as shown on the table below:

PIPE SIZE	TIE ROD SIZE	NUMBER OF RODS
4” – 10”	¾”	2
12” – 16”	¾”	4
18” - 20”	¾”	6
22”	1”	4
24”	1”	6

2.7 GATE VALVES.

1. Gate valves for water pipes 12 inches and smaller shall be of the iron body, non-rising bronze stem, resilient-seated wedge-type. Valve shall be American AVK Company, Kennedy, M & H, or Mueller and shall meet or exceed the requirements of AWWA C509 and the specific requirements outlined in these Specifications.

2. Gate valves shall open counter-clockwise and be provided with two inch square wrench nuts, except that when installed within vault structures a hand wheel shall be provided for each valve.

3. End connections shall be mechanical joint, unless otherwise indicated on the Drawings.

4. All internal ferrous metal surfaces shall be fully coated, holiday free, to a minimum thickness of four mils with a two part thermosetting epoxy coating. Said coating shall be non-toxic, impart no taste to water, protect all seating and adjacent surfaces from corrosion and prevent buildup of scale or tuberculation.

5. Gate valves, when attached to a restrained joint, shall have tie rods and one retainer gland for each joint. The size and number of tie rods shall conform to the requirements of this Section and CBJ Standard Drawings 414A through 414C.

6. The Contractor shall provide four detailed repair manuals for the gate valves supplied; and a letter of certification from the supplier verifying that all requirements of AWWA C509 and these Specifications have been met.

7. The Contractor shall provide one standard packing kit for every group of ten (and fraction thereof) of each size of gate valve.

8. 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 current standard details

2.8 VALVE BOXES.

1. The Contractor shall furnish the specific style box, stem, and cover. Adjust existing valve boxes to profile grade. Inscribe cover with “water” or “W”. Furnish service box of sufficient length to be adjusted an equal amount above and below the final ground surface. Valve boxes for valves four inches or larger shall be of cast iron and be not less than 5¼-inch diameter, with an extension piece adjustable for elevation and with a cover marked “Water” or “W.” The valve box shall be sufficient length to be adjusted and equal amount above and below the finished grade as shown on the Standard Details. Boxes shall be dipped in coal tar pitch. The valve box shall be Kejriwal Pacific 940 B 18” (top section) and Kejriwal Pacific D-24 (bottom section), or approved equal whose parts are demonstrated to be interchangeable with Kejriwal Series.

2. Utility Markers Utility markers for water valves shall be “Utility Marker CUM-375” as manufactured by Carsonite Division of AMETEK, blue in color, six feet in length including anchor kits and decals with each marker. Decals shall denote “WATER VALVE.”

3. Valve Access Pads A. Valve access pads shall consist of materials corresponding to those shown on the Drawings and as specified for Hydrant Access Pads.

2.9 WATER SERVICES

1. Service Saddles shall be designed for a minimum 250 psi working pressure and shall conform to the following requirements:

PIPE SIZE	SERVICE SIZE	SERVICE SADDLE
6” and 8”	1”	Single Strap, Iron, I.P. Thread

		Romac 101N or approved equal
6” and 8”	1 ½” and 2”	Double Strap, Iron, I.P. Thread Romac 202N or approved equal
10” thru 18”	¾” thru 2”	Double Strap, Iron, I.P. Thread Romac 202N or approved equal

2. Corporation stops shall be Mueller No. B-25025, McDonald Brass 4704B, or approved equal. Corporation stops shall be attached to the water pipe with cast iron service saddles.

3. Service pipe and fittings shall be cold drawn, seamless annealed Type K Copper. Fittings shall be flared bronze fittings.

4. Curb stops shall be Mueller No. H-15201, McDonald Brass 6100, or approved equal.

5. Service boxes for curb stops shall be of cast iron and be not less than four (4) inch diameter with the extension piece adjustable for elevation and with cover marked “Water” or “W.” The service box shall be of sufficient length to be adjusted an equal amount above and below the finished grade as shown on the Standard Details. Boxes shall be dipped in coal tar pitch. Service boxes shall be Tyler Pipe 6870 Series, 4¼-inch ID, Kejriwal Pacific 145R 49-62, or approved equal. Wood foundation components shall be treated in accordance with AWPA Standards.

6. Thaw wires shall be No. 2 copper wire, stranded, with THW insulation, or approved equal. Thaw wires shall be connected to the service saddle take-up with a solderless lug, Stak-On, or approved equal.

7. 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 the water service pipe and blow-off lines.

2.10 Concrete

Provide commercial grade concrete for thrust and restraint blocking with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

2.11 Temporary Water System

All piping, including hoses used for water service, shall be NSF rated.

PART 3 - CONSTRUCTION REQUIREMENTS

3.1 GENERAL.

Complete the water system and make sure it operates properly at the time of acceptance of the work. Furnish and install all incidental parts not shown on the Drawings or specified in this section that are necessary to complete the water system.

Meet the applicable provisions of sections 2230, 2315, and 2721 for all clearing and grubbing, excavation, bedding, and backfill.

Consult the Drawings for estimated locations of existing sewers, water mains, and other utilities near the construction. Use this data for general information only. The Department does not guarantee their accuracy. Confirm and mark the exact locations of all existing utilities before starting work. 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.

Excavate, bore, or probe by hand ahead of your work where necessary to determine the exact location of underground pipe or other features that might interfere with construction. Support and protect pipe or other services that cross the trench. Immediately replace any existing valves, valve boxes, or water lines that you break or damage.

The Contractor shall give at least 24 hours notice to the CBJ Water and Wastewater Utility Divisions and the CBJ Engineering 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.

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.

Notify the local Fire Department at least 24 hours before removing or interrupting service to fire hydrants.

Give at least 24 hours’ notice before interrupting water service to any area. Restore disrupted water service as soon as possible, or make temporary service connections. Use hoses or other suitable methods. Obtain ADEC approval prior to installation of any temporary water service.

If your operations cause service interruptions, you are responsible for all damages.

Connect to existing water lines and structures, avoiding contamination of water in lines that are in use.

Where water mains under this contract approach within 10 feet horizontal clearance and are below or less than 3 feet above existing sanitary sewers, encase the sanitary sewer with a jacket of concrete 3 inches thick for 10 feet on each side of the crossings.

Concrete encasement is not required if the existing sewer is constructed of ductile iron pipe with joints at least 8 feet from the water main, or if you replace the existing sewer with ductile iron pipe, or high pressure PVC pipe.

Support and protect existing pipes or utilities, which are not scheduled for removal or abandonment, when encountered in the excavation.

Remove and dispose of unsuitable foundation material below the designed elevation as directed. Replace with approved material. Remove rock or other unyielding material, when encountered, to the depth indicated or as directed and replace with approved material.

Place bedding and backfill in uniform layers not more than 6 inches deep and compact to meet the requirements specified in Section 2315. Ponding or jetting is not permitted.

Use bedding material for backfill to a level 12 inches above the pipe. Use excavated native material for the remainder of the backfill if it meets the requirements for backfill specified in subsection 2.1(c). Within the pavement structure, use bedding material and backfill meeting the requirements for the applicable lift of material.

Remove all sheeting and bracing used in structure excavation upon completion of the work.

3.2 WATER PIPE.

Install pipe and fittings according to these Specifications or the manufacturer's recommendations. Lay pipe to the grades and lines specified or as directed by the Engineer.

Water pipe shall be installed in accordance with the manufacturer’s printed specifications and instructions, and in conformance with AWWA C151. The 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.

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.

Remove all foreign matter from pipe interiors before lowering pipe into the trench. When work is not in progress, securely close all open ends of pipe and fittings to keep out trench water, earth, rodents or other substances.

Keep trenches dry to avoid laying pipe in water. Do not lay pipe when weather or trench conditions are unsuitable. Keep water away from new joints, until the joint materials have hardened.

Whenever it becomes necessary to cut a length of water pipe, the cut shall be made by abrasive saw or by special pipe cutter.

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.

The water pipe shall be laid to the horizontal and vertical alignment shown on the Drawings. A minimum five foot cover shall be maintained from finish grade to top of water pipe, unless otherwise shown on the Drawings. Fittings shall be installed at the location shown on the Drawings.

To prevent dirt and 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.

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.

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 Drawings will be required to accomplish these vertical deflections.

Concrete thrust blocks shall be furnished and installed in accordance with the Drawings and Standard Details.

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 4°.

Existing water pipes and appurtenances to be removed or abandoned shall be as designated on the Drawings 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 Drawings, or mechanically plugged if not required to be removed.

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

All joints within 50 feet of tees or bends equal to or greater than 22.5° shall be restrained joints.

Continuous water services shall be provided for all structures, except for interruptions necessary for connection of temporary or new piping to the existing service or mainline piping.

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

Place pipe bedding to conform to plan details. Place bedding, if required, to give pipe a uniform bearing for its full length. Do not permit couplings to rest on solid or original trench bottoms.

Pipe bends must not exceed the manufacturer's recommended limits. If the specified or required alignment requires deflections beyond the limits, furnish special bends or enough shorter lengths of pipe to provide angular deflection within the limits.

Use standard lengths of pipe except where fittings require short lengths, or where pipe passes through a rigid structure.

Make service and other connections as required. Valve, plug or cap pipe ends for future connections.

HDPE pipe shall be joined in continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the manufacturer's recommendations.

1. Flange and mechanical joint adapters shall be attached to the HDPE pipe and fittings using butt fusion. Align and center the flange or mechanical joint adapters relative to the pipe. Flanges and mechanical joint adapters shall be square with the receiving valve or other flange before tightening of bolts. Bolts shall not be used to draw the flanges into alignment. Bolt threads shall be lubricated and flat washers shall be used under flange nuts. Bolts shall be tightened in accordance with the manufacturer's recommendations. All bolts and associated hardware shall be stainless steel. The tightening torque shall be as indicated by the manufacturer. Gasket material shall conform to NSF 61.
2. Only HDPE piping will be allowed for use.
3. Install tracer wire per manufacturer's recommendations. Tracer wire shall be installed in continuous lengths with no splices. Terminate each end of tracer wire at a valve box, or furnish and install a valve box top section and cap for termination. Terminate tracer wire at ground surface and provide a minimum of five (5) feet of additional wire neatly coiled within the valve box. The trace wire shall be tested for continuity following all backfilling operations.

3.3 GATE VALVES

Valves shall be inspected upon delivery in the field in both open and closed positions prior to installation. Careful inspection shall be made for injury to the outer protective coatings. At all places where the coating has been ruptured or scraped off, the damaged area shall be cleaned to expose the iron base, and then re-coated with two or more field coats of approved protective coating.

Valves shall be set on a firm base.

Valves shall be installed, in an open position, in the vertical plane passing through the pipe axis, in conformance with the manufacturer's recommendations and the AWWA Standards. Valve interiors shall be cleaned of all foreign matter.

After installation, all valves shall be subjected to field-testing and disinfected as outlined in this section 3.14 through 3.18. Should defects in design, materials, or quality of work appear during these tests, the Contractor shall remove and replace the valve, or correct such defects, with the least possible delay, to the satisfaction of the Engineer.

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” fittings, or approved equal. Each connecting pipe to the valve cluster or tee will be restrained to the cluster or tee.

3.4 VALVE BOXES

A valve box shall be installed over each valve, with the base section centered over the valve and resting on well-compacted backfill. The top section shall be set to allow equal movement of the telescoping section above and below finished grade, as shown on the Standard Details, unless otherwise directed by the Engineer. The top of the base section shall be on line with the nut at the top of the valve stem and the entire assembly shall be perpendicular to the water pipe.

3.5 REPLACE VALVE BOXES

Replace Valve Boxes will include removal of the existing valve box down to the valve and replacing with a new valve box assembly conforming to 2.1(d) of this Section.
The new valve box shall be installed in accordance with 3.4 of this Section.

3.6 ADJUST EXISTING VALVE BOXES

Adjust by raising or lowering to conform to the final grade, in accordance with the locations and details shown on the Drawings. The existing case iron valve box and cover shall be salvaged and reused. Where the valve box is of the adjustable-type construction, it shall be adjusted with adaptable extension pieces. Where the valve box is constructed with steel pipe, additional steel pipe shall be welded to the valve box to raise the cover; lowering shall be accomplished by cutting the existing steel pipe.

Where the existing valve box is tilted and/or far enough off center on the valve nut to make valve operation difficult, the Contractor shall plumb and center the valve box over the valve nut prior to strengthening or placement of base course material.

3.7 UTILITY MARKERS

Utility markers for water valves shall be installed at main line valve boxes at locations indicated on the Drawings and as directed by the Engineer. The position of the marker shall be as shown on the detail drawing, or as directed by the Engineer.

3.8 WATER SERVICES

The corporation stop shall be installed directly to the service saddle. Water services shall be installed in conformance with the Standard Details. All water services shall be completely exposed and inspected for leakage by the Engineer prior to covering, and shall be pressure tested as approved in this section.

Service pipe shall be cut using a tool specifically designed to leave a smooth, even and square end on the pipe material. Cut ends shall be reamed to the full inside diameter of the pipe.

All service pipe and appurtenances shall be disinfected and flushed at the time of installation. The service line shall be activated at the corporation stop prior to backfilling and flushed through the curb stop. Electrical continuity tests shall be performed in

accordance with this section after backfilling, compaction, and final grading are completed. If electrical continuity is not obtained, the Contractor shall excavate the service and re-establish continuity. Retesting will continue until continuity is established. All work associated with electrical conductivity testing, retesting and performance is incidental to other items in this Section.

Relocate Existing Water Service is a contingency item. If relocation of the service pipe is required, as determined by the Engineer, the existing pipe shall be cut or disconnected at one point only, so the coupling is not located within two feet of the crossing or other conflicting structures.

3.9 FLUSHING,TESTING AND DISINFECTION

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.

3.10 OPEN BORE FLUSHING

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, in writing, 48 hours in advance of any flushing operation. All flushing shall be done between the hours of 1:00 a.m., and 5:00 a.m., unless otherwise authorized by the Engineer. 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. The Contractor shall be responsible for obtaining any permits necessary for flushing operations.

3.11 HYDROSTATIC TESTING

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 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.

The hydrostatic 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.

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:

$$L = \frac{ND(P)0.5}{7400}$$

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

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.

All tests shall be made 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.

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

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.

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.

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.

For HDPE pipe, the initial pressure test shall be at 150 psi. The initial pressure shall be applied and allowed to stand without makeup water for 3 hours to allow the HDPE pipe to stretch. Return test pressure to 150 psi with markup water after initial 3 hour period. Allow pipe to stand for two additional hours during the test period, and then measure the amount of water required to return pressure to 150 psi. Allowable makeup water for pipe expansion for 8" diameter pipe is 1.0 gallons per 100-feet of pipe. Check for leaks or

significant pressure drops. Correct all leaks and significant pressure drops that require more makeup water than allowable, and retest pipe.

3.12 ELECTRICAL CONTINUITY

Electrical continuity is required for six inch or smaller 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. 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 CBJ standard details.

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 Drawings, 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

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.

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, ensuring 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.

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.

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”	0.60 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.

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.

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.

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.

END OF SECTION

SECTION 02530 – SANITARY SEWER SYSTEM

Part 1 - GENERAL.

1.01 Summary

This work consists of providing all labor, materials, tools, and equipment necessary for furnishing and installing sanitary sewer pipe, sanitary sewer manholes, and cleanouts complete, and in place in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the Drawings or established by the Engineer. It shall also include raising or lowering existing sanitary sewer manholes and cleanouts in accordance with these Specifications and in reasonably close conformity with the lines and grades shown on the Drawings and Standard Details. Comply with City & Borough of Juneau (CBJ) requirements.

1.02 SUBMITTALS. The required submittals for this work will be:

A. Sanitary Sewer Pipe: material certifications stating conformance with the requirements of this section.

B. Manholes: Shop Drawings showing method of construction and reinforcement, invert elevations, and overall dimensions.

C. Frames and Grates: Catalogue cuts and materials certification.

Part 2 MATERIALS

2.01 Use materials that conform to the following requirements:

A. Bedding and Backfill. Use approved materials as shown on the Drawings and in accordance with item 02315.

B. Sanitary Sewer Gravity Pipe. Use PVC Pressure Pipe.

PVC Sewer Pipe, four inch through 15 inch in diameter, inclusive, shall have a standard dimension ratio (SDR) of 21, and conform to ASTM D3034. Before any PVC pipe is used on this Project, the CONTRACTOR shall supply all certifications, signed by an authorized agent of the seller or manufacturer, stating that the material has been sampled, tested and inspected in accordance with ASTM D3034.

PVC Sewer Pipe greater than 15 inch in diameter shall conform to ASTM F 679. Before any PVC pipe is used on this Project, the CONTRACTOR shall supply all certifications, signed by an authorized agent of the seller or manufacturer, stating that the material has been sampled, tested and inspected in accordance with ASTM F 679.

The pipe shall have integral wall bell and spigot joints conforming to ASTM D 3212. The bell shall consist of an integral wall section with a solid cross-section elastomeric ring, factory assembled, securely locked in place to prevent displacement.

Flexible water-tight connections, approved by the ENGINEER, shall be used at PVC pipe connections to manholes and other rigid structures.

C. Sanitary Sewer Pressure Pipe. Use High-Density Polyethylene (HDPE) pressure pipe.

HDPE pipe shall conform to ASTM D 3550 designation PE 3407 or PE 3408. The pipe shall have a minimum pressure rating of 100 pounds per square inch and a maximum Standard Dimension Ration (SDR) of 17.0. All HDPE shall have a standard iron pipe size (IPS) outside diameter.

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 shall have an ASTM D-3350 material Cell Classification of no less than 335434C.

The pipe shall be marked at five foot intervals with a coded number which identifies the manufacturer, SDR size, PPI rating, manufacturing standard reference and production code from which data and place of manufacturer can be determined.

Connection of the pipe and fittings shall be performed by the thermal butt fusion system. HDPE pipe lengths, fittings, and flange adapter connections to be fused shall be of the same type, grade, and class of polyethylene compound and supplied by the same raw material supplier.

D. Manholes

a. All manholes shall consist of precast concrete sections, including integral base section, riser sections, cones, and flat slab tops and shall conform to ASTM C 478 and the dimensions shown on the Drawings. All precast sections shall have joints sealed with “RAM-NEK” or “RUB-R-NEK” gasketing material, or approved equal, installed as specified by the manufacturer. Cones shall be eccentric. Manhole steps shall be cast in all precast manhole sections. Pipe Penetration gaskets shall be cast into all precast manholes. Grade rings shall be standard product, manufactured particularly for use in manhole construction, sized to fit the cones on which they are placed, and the wall thickness shall be not less tin that of the cones. Grade rings shall be not less than two inches high, nor more than four inches high. Grade rings shall be Infra-Riser® or approved equal.

b. Portland cement concrete cast in place shall conform to Section 03302 – Concrete Structures.

E. Frames, Covers and Steps

a. Manhole frames and covers shall be watertight, of ductile iron, and conform to the design and dimensions shown on the Drawings and Standard Details. Ductile iron castings shall conform to the requirements of AASHTO M 103. Grade shall be optional unless otherwise designated. Contact surfaces between frames and covers shall be machined to provide a uniform contact surface. When watertight locking devices are specified, the CONTRACTOR shall submit Shop Drawings for approval by the ENGINEER.

b. All manhole covers shall have the word “SEWER” cast into the top in letters approximately three inches high.

c. Manhole steps shall be constructed of polypropylene conforming to ASTM D4101, and shall meet current state and federal safety standards.

d. Frames and covers shall be ductile iron, conforming to ASTM A 48, Class 30. The cover shall be designed for the appropriate classification of traffic and shall have the work “SEWER” cast into the top with prominent letters. Bearing surfaces between the frame and cover shall be machined to smooth, plane surfaces. Frames and covers shall be Inland Foundry No. 743, or approved equal.

F. Underground Marking Tape.

Underground marking tape shall be green, at least four (4) inches wide, four mil thick, polyethylene tape, with a metallic backing capable of being traced with locators. The tape shall have black letters with the following wording: "Caution: Sewer Line Buried Below." The marking tape shall be installed 12 inches above the top of all sewer mains and services.

G. Air Relief Valve

The air relief valve shall be a 2” Crispin Sewage Air Relief Valve Models 20 or approved equal. The air/vacuum relief valve shall be a 2” Crispin Air and Vacuum Relief Valve Model S20A or approved equal

H. Pipe Connectors.

“Mission Flex Seal” connectors will not be acceptable for this project.

PART 3 CONSTRUCTION REQUIREMENTS

3.01 GENERAL. Complete the sanitary sewer system and make sure it operates properly at the time of acceptance of the work. Furnish and install all incidental parts not shown on the Drawings or specified in this section that are necessary to complete the sanitary sewer system.

Meet the applicable provisions of Sections 02230, 02315, and 02721 for all clearing and grubbing, excavation, bedding, backfill, conduit, and appurtenances.

Consult the Drawings for estimated locations of existing sewers, water mains, and other utilities near the construction. Use this data for general information only. CBJ does not guarantee their accuracy. Confirm and mark the exact locations of all existing utilities before starting work. 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.

Portland cement concrete cast in place shall conform to the requirements of Section 03301 – Structural Concrete. Concrete shall not be placed under water. Running water shall not be permitted over newly poured concrete.

Manholes shall be constructed in a dry excavation on a six inch compacted (95%) base of D-1. The excavation shall be kept dry until the concrete or mortar has developed sufficient strength to prevent rupture by groundwater pressure.

Manhole inverts shall be formed as shown on the Drawings, either by laying pipe through and cutting out the top portion before completion of the base of the manholes, or by forming U-shaped channels in the concrete base section. Cut edges of pipe laid through the manhole shall be fully covered by concrete when the manhole invert is complete. The finished invert shall be smooth and true to grade. No mortar or broken pieces of pipe shall be allowed to enter the sewers.
Precast bases sections shall be set on a level base of six inches of compacted D-1, as shown in the Standard Details. Provisions shall be made to prevent flotation of the manhole.

All lifting holes shall be plugged with Bentonite-Cement sealing plaster and sealed with a Miradri System patch, or approved equal, to a minimum of six inches from the edges of the opening, as required to prevent leakage.

After completion of the manhole, all plugs shall be completely removed from the sewers and all loose material shall be removed from the manhole.
Service connections shall not be installed into manholes unless otherwise shown on the Drawings or directed by the ENGINEER. Where service connections into manholes are allowed, the top of the service sewer pipe shall be 0.2 feet higher than the top of the downstream main sewer pipe. The manhole invert shall be channeled for the service connection sewers in the same manner as for main sewers.

Stubs for future construction shall consist of a section of pipe extending two feet outside the manhole wall, connected as shown on the Drawings and Standard Details. The manhole fillet shall be formed for future connection. The stubs shall be located as shown on the Drawings.

Connection to existing manholes shall be made in such a manner that the modified manhole is equal to a new manhole in appearance and performance. A channel, approximately two inches larger all around than the connecting pipe, shall be cut into the existing manhole base. The new pipe shall be connected as shown on the Drawings and Standard Details. The rough-cut channel shall be finished to its final smooth and uniform shape with mortar. The existing sewer(s) shall be maintained in service and the fresh concrete and mortar surface shall be protected from the flowing sewage for a minimum of 24 hours.

Drop construction at manholes shall be as shown on the Drawings and Standard Details.
The joint exterior waterproofing system shall be installed as recommended by the system manufacturer and as shown on the Drawings and Standard Details.

All manholes will be visually inspected by the ENGINEER; there shall be no evidence of leakage of water into any manhole from outside sources or any imperfections which may allow such leakage.

The CONTRACTOR shall repair all imperfections and leaks disclosed by either visual inspection or testing. The method of repair shall be subject to the ENGINEER’s approval.

ADJUST EXISTING FRAME AND COVER TO GRADE shall include adjusting the existing frame and cover to grade, and construction of a concrete collar in accordance with CBJ Standard Detail 126 – Concrete Collar, when the frame and cover is located within the paved street surface.

Construct a concrete collar around each manhole frame and cover within the roadway pavement limits. Sawcut through the total pavement depth following final paving and construct the concrete collar in accordance with CBJ Standard Detail 126 – Concrete Collar. No backfilling, except with concrete, will be permitted. Seal all sawcut grooves beyond the edge of concrete.

Excavate, bore, or probe by hand ahead of your work where necessary to determine the exact location of underground conduit or other features that might interfere with construction. Support and protect conduits or other services that cross the trench. Immediately replace any existing valves, valve boxes, or water lines that you break or damage.

The Contractor shall give at least 24 hours notice to the CBJ Water and Wastewater Utility Divisions and the CBJ Engineering Department prior to:

1. needing water or sewer main line locates;

2. interruption of sewer service in any area

Any sewer 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.

If construction operations cause service interruptions, the Contractor is responsible for all damages.

Where water mains under this contract approach within 10 feet horizontal clearance and are below or less than 3 feet above existing sanitary sewers, encase the sanitary sewer with a jacket of concrete 3 inches thick for 10 feet on each side of the crossings.

Concrete encasement is not required if the existing sewer is constructed of ductile iron pipe with joints at least 8 feet from the water main, or if you replace the existing sewer with ductile iron pipe or PVC pressure pipe.

Support and protect existing conduits or utilities, which are not scheduled for removal or abandonment, when encountered in the excavation.

Remove and dispose of unsuitable foundation material below the designed elevation as directed. Replace with approved material. Remove rock or other unyielding material, when encountered, to the depth indicated or as directed and replace with approved material.

Place bedding and backfill in uniform layers not more than 6 inches deep and compact to meet the requirements specified in Section 02315. Ponding or jetting is not permitted.

Use bedding material for backfill to a level 12 inches above the pipe. Use excavated native material for the remainder of the backfill if it meets the requirements for backfill specified in

Section 02315. Within the pavement structure, use bedding material and backfill meeting the requirements for the applicable lift of material.

Remove all sheeting and bracing used in structure excavation upon completion of the work.

3.02 SANITARY SEWER PIPE. Install pipe and fittings according to these Specifications or the manufacturer's recommendations. Lay pipe to the grades and lines specified or as directed by the Engineer.

Excavation, bedding, and backfill shall conform to the requirements of Section 02315. Underground marking tape shall be installed as shown on CBJ Standard Detail 125 - Pavement Resurfacing and Trench Detail.

Sheeting and bracing required for trenches shall be removed to the elevation of the conduit, but no sheeting will be allowed to be pulled, removed, or disturbed below the conduit. Sheeting and bracing shall meet OSHA requirements.

Before lowering into the trench, the pipe shall be inspected for defects. All cracked, chipped, or broken pipe shall be discarded. The ends and interior of the pipe shall be clean. Belled ends shall be laid upgrade. Handling of the pipe shall be accomplished in a manner that will not damage the pipe. The joint shall be made in the manner recommended by the manufacturer. Care shall be taken not to buckle or disturb previously laid pipe.

Pipe shall be laid accurately to the staked line and grade. All service connections shall be installed as indicated on the Drawings. Where existing service sewers are to be connected, suitable fittings and adapters shall be provided by the Contractor.

Pipe shall be cleaned of all foreign matter, and water shall be kept out of trenches until joints have been completed. When work is not in progress, open ends of pipe and fittings shall be securely closed to keep foreign matter and animals from entering.

Each joint shall be inspected to ensure that it is properly made before backfilling is done. Care shall be taken to prevent any dirt or foreign matter from entering the open end of the pipe. Where it is necessary to cut pipe, such cuts shall be neatly made in an approved manner. The laid pipe shall be true to line and grade and, when completed, the sewer shall have a smooth and uniform invert. No section of gravity sewer, including service connections shall have an adverse grade which would pond water in the invert of the sewer.

Connections to pipe stubs of a different pipe material shall be made with DFW/HPI nonshear-type connector, as shown in CBJ Standard Detail 218 - Coupling for Dissimilar Sanitary Sewer Pipes. Connectors must be approved by the Engineer prior to installation.

Connections to pipe stubs of a different pipe material, if made beyond the back of sidewalk or other concrete or paved surface, shall be made with a suitable connector. Connectors must be approved by the Engineer prior to installation. Connection of all piping, other than bell and spigot connections, within the roadway, street and sidewalk areas, shall be made per CBJ Standard Detail 218 - Coupling for Dissimilar Sanitary Sewer Pipes.

Connections to existing sewer mains, service connections, and manholes shall be made in such a manner so as to not damage the existing facility. Such connections shall be made so that no projections or rough surfaces occur within the pipe.

Locations of the sewer laterals are approximate and may be changed by the Engineer. Relocating of the sewer lateral will not add extra cost to the OWNER, unless either of the following conditions result:

1. The relocation results in a significant increase in the length of the lateral; or,

2. There are significant differences in the surface characteristics at the new lateral location which would result in substantial and foreseeable changes in construction methods and materials.

If the Contractor believes that the work at the new location(s) will result in a substantive change, the Contractor shall notify the Engineer prior to beginning the changed work. The Engineer will evaluate the request and if the relocation is warranted, the change in work shall be authorized.

Lateral connections to existing sewer mains shall not obstruct flow and shall be one of the following:

1. Approved remote tapping system

2. Polyethylene saddle strapped to line with two stainless steel bands and neoprene gaskets.

3. Sidewall fused to line as recommended by pipe manufacturer.

4. Manufactured saddle per CBJ Standard Detail 210 - Sanitary Sewer Saddle Tee.

Cleanouts shall be provided with a cast iron ring and cover which shall be locking-type Olympic Foundry No. M-1025, or approved equal. The cover shall be clearly marked with the word "SEWER" cast into it.

Lateral connections to new sewer mains shall be made with a manufactured sanitary wye of the same material as the mainline pipe.

The Contractor shall determine the location of the existing sewer services prior to installation of the mainline pipe in such a way that the service wyes can be installed in the proper location as the mainline pipe is being installed. No service saddles will be permitted, unless approved by the Engineer.

All HDPE Pressure Pipe and fittings shall be butt-fused in accordance with ASTM D2657. The individual who performed the butt-fusion shall have written certification from an HDPE pipe manufacturer stating he/she has successfully completed an 8-hour (minimum) certification class on butt-fusion techniques and procedure. In addition, this individual shall have fused a combined total of more than 5,000 feet of HDPE pipe in diameters 4-inches and larger. Prior to commencement of Work, submit a copy of the certification and written documentation of his/her experience detailing project location, diameter or fused piping, and length of fused piping for each applicable project.

The Contractor shall ensure that each joint is fused at the temperature and pressure recommended by the pipe manufacturer in order to achieve the maximum pressure rating for that joint. All butt-fused joint for HDPE piping and fabricated fittings shall be documented by a computer datalogger that record pressure and temperature applied at each fused joint, along

with the data and time the joint was fused. Computer printouts and electronic data for each fitting shall be submitted to the Engineer prior to installation of the fitting. All fittings for the Project shall be labeled with a unique identifier that corresponds with the fusion computer printouts for each fitting. Computer printouts, electronic data, and the Project station for each field fused joint shall be submitted to the Engineer at the end of each work shift.

The use of electro-fusion couplings to join HDPE piping may be allowed upon written approval of the Engineer. Electro-fusion couplings shall comply with ASTM F1055. Contractor shall as-built the exact location of any installed electro-fusion coupling.

Prior to back fill and commissioning of pipe the Contractor shall operate the butterfly valve to insure that the valve disk can operate without interference from the flange connection. The Contractor shall realign as necessary at no additional cost to the Owner

Contractor shall inspect the HDPE piping for damage immediately prior to joining. Damage is defined as gouges exceeding 10 percent of the pipe wall thickness, kinked pipe sections, pipe sections flattened to more than 5 percent of the original diameter, or any abrasion of cutting of the inside surface of the piping. Damaged portions of piping shall be cut out and discarded.

The handling of the joined pipeline shall be in such a manner that the pipe is not damaged. Ropes, fabric or rubber-protected slings, or straps shall be used when handling pipes. Chains, Cables, or hooks inserted into the pipe ends shall not be allowed. Two slings spread apart shall be used for lifting each length of pipe slings for handling the pipeline shall not be positioned at butt-fused joints. Sections of the pipeline with cuts or gouges exceeding 10 percent of the pipe wall thickness, kinked sections, or sections flattened to more than 5 percent of the original diameter shall be cut out and discarded, and the end of the pipeline rejoined.

The horizontal bending radius for HDPE piping shall not be less than the minimum radius recommended by the piping manufacturer.

3.03 TESTING. Prior to testing all manholes, all sections of pipe shall be cleaned using an inflatable rubber ball of a size that will inflate to fit snugly into the pipe. The ball may, at the option of the Contractor, be used without a tag line; or a rope or cord may be fastened to the ball to enable the Contractor to know and control its position at all times. The ball shall be placed in the last clean out or manhole on the pipe to be cleaned, and water shall be introduced behind it. The ball shall pass through the pipe with only the force of the water impelling it. All debris flushed out ahead of the ball shall be removed at the first manhole where its presence is noted. In the event cemented or wedged debris, or a damaged pipe, stops the ball, the Contractor shall remove the obstruction and make any necessary repairs in a manner that is acceptable to the Engineer. Any alternate methods of cleaning sewers shall be submitted to the Engineer for approval, and shall not be used unless approved.

Prior to testing, the sewer shall be complete with laterals, and trenches shall be fully backfilled and compacted to finish grade, or, if the sewer is under pavement, finish pavement subgrade.

For work involving placement of new gravity flow sanitary sewer collection systems, all sections of gravity flow pipe shall be tested for leakage using the Exfiltration Test for either air or water as specified hereafter; or, at the sole direction of the Engineer, when the normal water table is above the sewer throughout the section under test, the Engineer may permit use of the Infiltration Test procedure specified hereafter. Where leakage is in excess of the specified rate, the sewer shall be repaired by the Contractor as required to comply with the leakage test

requirements. The Engineer may require the Contractor to repair obvious leaks even though the total length of the test section falls within the maximum allowable leakage for the test used.

The Engineer will make one complete TV inspection after all sewers have passed the specified water tightness test. All defects regarding sewer alignment and grade, damaged pipe, and visible leaks observed during this inspection, shall be corrected by the Contractor. The Contractor shall de-water the sewers as required for the performance of the TV inspection work by the Engineer. The Contractor shall be responsible for all costs associated with any TV inspection required following the initial TV inspection, if any defects were observed during this or any subsequent TV inspections.

a. Hydrostatic Testing. The newly installed HDPE Pressure Pipe main shall be hydrostatically tested to the rated operating pressure of the pipe. The rated operating pressure of HDPE SDR17 piping is 100 psi. Hydrostatic test pressure shall be 100 psi. Gradually pressurize the test section to test pressure and maintain test pressure. It is not necessary to monitor amount of water added during the initial expansion phase. Immediately following the initial expansion phase, reduce test pressure by 10 psi and stop adding test liquid. If these are no visible leaks and the test pressure remains steady (within 5 percent of the target value) for one (1) hour, the main shall be deemed as having passed the test.

If the test is not successful within this total time, the test section should be depressurized and testing shall not recommence on the test section for at least eight hours.

b. Hydrostatic Test Procedure for Sewer Force Mains

1. The hydrostatic test procedure for HDPE Sanitary Sewer Pipe shall consist of two (2) steps: the initial expansion phase and the test period. In order to accommodate the initial expansion of the pipe under test, sufficient make-up water shall be added to the system at hourly intervals for three hours to return to the test pressure. The test period begins after the final addition of make-up water in the expansion phase of the test procedure. The test period is three (3) hours. After this test period, a measured amount of make-up water shall be added to return to test pressure. The amount of make-up water shall not exceed the allowable expansion in U.S. gallons shown in the following table:

THREE HOUR TEST

Nominal Pipe Size (inches)	Allowance For Expansion (U.S. Gal. Per 100 feet of Pipe)
2	0.19

2. Under no circumstances shall the total test procedure exceed eight hours at 1.5 times the pipe pressure rating. If the test is not completed within eight hours, the test section shall not be re-tested for eight more hours. Repair and re-testing shall continue until a passing test is obtained.

c. Filtration Test Procedure (Using Air)

1. The Contractor shall furnish all facilities and personnel for conducting the test under the observation of the Engineer. The equipment and personnel shall be

subject to the approval of the Engineer. Joints only may be tested in pipe 36 inches in diameter or larger, at the option of the Contractor.

2. Immediately following the pipe cleaning, the pipe installation shall be tested with low pressure air. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches five pounds per square inch greater than the average back pressure of any ground water that may submerge the pipe. At least two minutes shall be allowed for temperature stabilization before proceeding further.

3. The pipeline shall be considered acceptable when tested at an average pressure of four psi greater than the average pressure of any ground water that may submerge the pipe if the section under test does not lose air at a rate greater than 0.0030 cubic feet per minute per square foot of internal surface.

4. The requirements of this Specification shall be considered satisfied if the time required for the pressure to decrease from 4.5 psi to 3.5 psi above average ground water pressure is greater than that shown on the following table:

TIME FOR PRESSURE TO DROP FROM
4.5 TO 3.5 PSI ABOVE AVERAGE GROUND WATER PRESSURE

PIPE DIAMETER	MINUTES	SECONDS
4”	1	54
6”	2	50

5. For other sizes, determine test time using the following formula:

T= 28.33 D
Where T = time in seconds
D = pipe diameter in inches

6. Pressure gauges should be incremented in not more than one-half pound increments for accurate tests.

7. Braces shall be required to hold plugs in place and to prevent the sudden release of the compressed air. Due to the large forces that could be exerted by an escaping plug during the testing of the pipe, no one shall be allowed in the manholes in which plugs have been placed while tests are being conducted. The Contractor's testing equipment shall have a pressure relief device that will prohibit the pressure in the pipeline from exceeding ten pounds per square inch.

d. Infiltration Test Procedure

1. Infiltration testing may be allowed at the Engineer's option when the natural ground water table is above the crown of the higher end of the test section and the external water pressure exerted on the pipe is equivalent to the exfiltration test. The maximum allowable limit for infiltration shall be as determined by the formulas defined in the above section Exfiltration Test (Using Water).

e. Pressure Sewer Test Procedure

1. The Contractor shall, in the presence of the Engineer, test all pressure sewer pipe to a test pressure of 100 pounds per square inch and maintain the pressure a minimum of one hour. The Contractor shall make all necessary arrangements to provide water for testing pipelines.

2. Leakage shall not be in excess of five gallons per inch of pipe diameter per one thousand (1,000) feet of pipe per day. Where leakage is in excess of the specified rate, the Contractor shall make all repairs necessary to reduce the amount of leakage to a quantity within the specified rate. The testing and repair process shall be repeated until the installation is accepted. In addition, the Contractor shall repair all visible leaks.

END OF SECTION

SECTION 02607 – PIPE INSULATION

PART 1 GENERAL

1.01 DESCRIPTION

The Work under this section includes providing all labor, materials, tools and equipment necessary for furnishing and installing pipe insulation for water pipe and service pipe at locations shown on the Drawings and as directed by the ENGINEER.

PART 2 PRODUCTS

2.01 RIGID INSULATION

A. Rigid insulation shall be rigid board closed cell polystyrofoam material containing a flame retardant additive specifically designed for underground pipe or pavement installations, equivalent to Dow Chemical Company Styrofoam HI, and approved by the ENGINEER.

2.02 SPRAYED-ON INSULATION.

Sprayed-on urethane foam insulation applied directly to the pipe exterior with an elastomeric coating, may be approved by the ENGINEER, provided the material has demonstrated a satisfactory performance history in underground installation and has the following physical properties:

Density	2 pcf, Minimum
Compressive Strength (ASTM D 1621)	35 psi, Minimum at 5% Deflective or Yield
Water Absorption (ASTM C 177)	0.25% by Vol. Maximum
Thermal Conductivity (ASTM C 177)	Max. 0.23 BTU Hr. Ft^2 EF. In. Thickness

PART 3 EXECUTION

3.01 CONSTRUCTION

A. When water pipes or service pipes have less than 5-feet of cover to finished grade or vertical clearance at a culvert crossing, either above or below, they shall be insulated as directed by the ENGINEER.

B. Rigid insulation shall be a minimum of 2-feet wide and 2-inches thick. The length of insulation required shall be as shown on the Drawings or as directed by the ENGINEER. Insulation shall be placed between 1 and 12 inches from the water pipe or service pipe with the width centered on the longitudinal axis of the water pipe or service pipe as directed by the ENGINEER.

C. Sprayed-on urethane foam insulation shall be a minimum of 4-inches thick and be installed in strict conformance with the manufacturer's recommendations. Precautions to protect CONTRACTOR personnel, Project inspectors, and the public in general shall be taken by the CONTRACTOR in compliance with OSHA Standards and the manufacturer's recommendations.

END OF SECTION

SECTION 02702 – CONSTRUCTION SURVEYING

PART 1 GENERAL

1.01 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 Drawings and Specifications and standard engineering and surveying practices, 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 and restore land monuments and property corners which are situated within the Project area, and to establish monuments as shown on the Drawings.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 CONSTRUCTION

A. All surveying involving property lines or monuments shall be done by, or under the direction of, a Registered Land Surveyor 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. 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 payment for which payment for Pay Item No 2702.1, Construction Surveying, is increased from the previous Pay Request payment.

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 its own personnel, including Subcontractors, and submit this information to the ENGINEER.

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

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

including the necessary staking 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. Field notes shall be kept in standard bound notebooks in a clear, orderly and neat manner, consistent with standard engineering and surveying practices. The CONTRACTOR's field books shall be available for inspection by the ENGINEER at any time.

J. All field survey notes, including those which become source documentations from which quantities for payment are computed, shall be recorded by a notekeeper furnished by the CONTRACTOR. The notekeeper shall be thoroughly familiar with generally accepted standards of good survey notekeeping practice.

K. 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; however, the Owner assumes no responsibility for the accuracy of the WORK.

L. Within ten days of Notice to Proceed, unless otherwise approved by the ENGINEER, the CONTRACTOR shall stake the location of the new water, sewer, and/or storm drain service connections to each hoe. The stake shall be a surveyors' lath marked as to the type of service, and placed at the right-of-way line, at the locations shown on the Drawings.

END OF SECTION

SECTION 02709 – TOPSOIL

PART 1 GENERAL

1.01 GENERAL

A. The Work under this Section includes providing all labor, materials, tools and equipment necessary for furnishing and placing topsoil at the locations shown on the Drawings.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil furnished by the CONTRACTOR shall consist of a natural friable surface soil without admixtures of undesirable subsoil, refuse, or foreign materials. It shall be reasonably free from roots, hard clay, coarse gravel, stones larger than one inch in any dimension, noxious weeds, tall grass, brush, sticks, stubble or other materials which would be detrimental to the proper development of vegetative growth.

Topsoil shall be obtained from naturally well drained sites where topsoil occurs at least 4 inches deep. Topsoil shall not be obtained from bogs or marshes

B. Topsoil shall conform to the following grading:

Sieve Designation	Percent Passing By Weight
1 in	100 %
1/2 in.	95 % - 100 %
No. 4	75 % - 100 %
No. 10	60 % - 100 %
No. 200	10 % - 60 %

C. Topsoil shall contain not less than 8%, or more than 20% organic matter, by weight as determined by loss-on-ignition or oven-dried samples in accordance with ATM-T-6. Organic material shall be decomposed and free of wood.

D. The ENGINEER shall be notified of the location from which the CONTRACTOR proposes to furnish topsoil at least 30 calendar days prior to delivery of topsoil to the Project from that location. The topsoil and its source will be inspected and tested by the ENGINEER before approval will be granted for its use.

E. Topsoil sources lacking organic matter may be used if, prior to delivery to the Project, sufficient organic matter in the form of pulverized peat moss or rich organic soil from other sources is thoroughly mixed with the topsoil to produce a product meeting the above requirements.

F. Organic material for incorporation into topsoil, if required, shall be partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses, or

rotted manure. Organic material may require chopping to shredding to insure thorough mixing with the topsoil.

G. All topsoil shall be fertilized as follows: the application rates of the fertilizer and limestone per 1,000 square feet of topsoil furnished by the CONTRACTOR shall be determined by the ENGINEER, based on soil analysis tests so that the total natural and applied chemical constituents are as follows:

Nitrogen	1.0 lb. minimum – 1.5 lb. maximum per 1,000 square feet
Phosphoric Acid	1.0 lb. minimum – 2.0 lb. maximum per 1,000 square feet
Potassium	1.0 lb. minimum - 2.0 lb. maximum per 1,000 square feet
Limestone	Limestone requirements shall conform to the following table:

LIMESTONE REQUIREMENTS

Soil pH	Limestone Tons per Acre
Above 6.0	0
5.0 – 6.0	1.5
Below 5.0	3.0

PART 3 EXECUTION

3.01 CONSTRUCTION

A. All areas beyond the sidewalk or roadway shoulder that are disturbed during construction which are not covered with pavement, concrete, or base course, shall be graded to a neat, uniform gradeline and appearance, as determined by the ENGINEER, and covered with a neat uniform, three inch minimum thickness of topsoil and hydroseeded, unless otherwise shown on the Drawings, or directed by the ENGINEER.

B. The topsoil shall be evenly spread on the designated areas to a depth, which, after settlement and compaction, shall be three inches, unless otherwise directed by the ENGINEEER. Spreading shall not be done with the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the WORK, as determined by the ENGINEER. Roadway surfaces shall be kept clean during hauling and spreading operations.

C. After spreading has been completed, large clods, stones larger than one-inch in any dimension, root stumps, and other litter shall be raked up and removed.

D. The final grading of the topsoil prior to hydro seeding shall be to a tolerance that will not permit ponding of water in excess of one inch in depth.

E. Topsoil Finish Grading, if a pay item will not be approved for start-up until the topsoil has been graded to within the tolerances given above.

1. The CONTRACTOR shall provide labor personnel experienced with landscaping work that involves fine grading of topsoil for residential or commercial lawns.

2. The ENGINEER will determine the location of those areas requiring finish grading and the time required to bring the graded topsoil to the desirable finish appearance.

3. The CONTRACTOR shall remove and dispose of all excess materials resulting from the finish grading of the topsoil. The WORK required to remove and dispose of this excess material from piles placed along the roadway will be considered incidental to other WORK under the contract.

END OF SECTION

SECTION 02710 – SEEDING

PART 1 GENERAL

1.01 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary for preparing the ground and furnishing and applying seed, fertilizer, lime and mulch as called for in the Contract Documents, all in reasonably close conformity with these Specifications and at locations shown on the Drawings or established by the ENGINEER.

B. It is the intent of these Specifications that a living vegetative cover will be provided in the areas indicated on the Drawings.

C. Seed Mix to be used will be as specified in the Bid Schedule.

PART 2 PRODUCTS

2.01 SEED

A. Seed shall be furnished separately or in mixture in standard sealed containers clearly labeled with: Seed name; lot number; net weight; percentages of purity and of germination and hard seed; and, percentage of maximum weed seed content. The CONTRACTOR shall furnish the ENGINEER duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six months of date of deliver. This statement shall include: Name and address of laboratory; date of test; lot number for each kind of seed; and results of test as to name, percentages of purity and germination, and percentage of weed content, for each kind of seed furnished, and, in the case of a mixture, the proportions of each kind of seed.

B. Seed mixtures shall conform to the following:

MIX PROPORTION		
TYPE	**VARIETY**	**TYPE I**
Festuca rubra	Red Fescue	50 %
Deschampsia cespitosa	Tufted Hairgrass, Nortran, Norcoast	40 %
Annual Rye	See Note **	10 %

* Maximum weed seed content shall be one (1) %.

** Provide additional Annual Rye seed, as required to provide rapid grass cover for protection of lawn areas during inclement fall weather.

2.02 FERTILIZER

A. Fertilizer shall be a standard commercial grade fertilizer, supplied separately or in mixtures. Fertilizer shall conform to all State and Federal regulations and shall be 10-20-

20. The Fertilizer shall contain slow release nitrogen in the form of inorganic chemicals amounting to at least 75% of the available nitrogen specified.

B. Fertilizer shall be furnished in new, clean, sealed, moisture-proof, and properly labeled containers, clearly labeled with the name, weight, and guaranteed analysis of the contents.

C. Fertilizer for use in a hydraulic sprayer shall be soluble or ground to a fineness that will permit complete suspension of all insoluble particles in the water or slurry.

2.03 LIME

A. Lime shall be agricultural ground limestone containing not less than 85% dolomite, with 95% passing through a 100-mesh screen, delivered to the site in the original unopened containers labeled to show analysis.

B. Limestone for use in a hydraulic sprayer shall be soluble or ground to a fineness that will permit complete suspension of all insoluble particles in the water or slurry.

2.04 MULCH

A. Mulch shall be natural or cooked wood cellulose fiber which shall have the property of dispersing readily in water and shall have no toxic effect when combined with seed or other materials. The homogenous slurry or mixture shall be capable of application with power spray equipment. A colored dye with is noninjurious to plant growth may be used when specified. Wood cellulose fiber shall be packed in new, labeled containers, shall have an equilibrium air-dried moisture content of 12% plus or minus 3 percent at the time of manufacture, and shall have a pH range of 3.5 to 5.0.

PART 3 EXECUTION

3.01 SOIL PREPARATION

A. After grading, and topsoiling if required, has been completed in conformity with the lines and grades shown on the Drawings or staked by the ENGINEER, and before start of seeding operations, the areas to be seeded shall be cultivated to provide a reasonably firm, but friable seedbed. Cultivation shall be carried to a depth of two-inches, except on slopes steeper than 3:1. Depth of cultivation may be reduced as directed by the ENGINEER. All cultivated areas shall be raked or cleared of stones one inch in diameter and larger. All weeds, plant growth, sticks, stumps, and other debris or irregularities which might interfere with seeding operation, growth of grass, or subsequent maintenance or the grass covered areas, shall be removed.

3.02 SEEDING SEASONS

A. All seeding shall be completed after May 1st and prior to August 15th, or the contract deadline, whichever is sooner. Seeding other than the specified dates will be allowed only with prior written permission of the ENGINEER and will be at the CONTRACTOR's own risk. If the seeding fails to produce a uniform and fecund growth, the seeding will be repeated until the required growth is achieved.

B. Seeding shall not be done during windy conditions, or when climatic conditions or ground conditions would hinder placement or proper growth.

3.03 APPLICATION METHODS

A. Seed, fertilizer, ground limestone and mulch material shall be placed by one of the following methods.

1. Hydraulic Method

a. Seeding by hydraulic methods shall consist of furnishing a slurry made of seed, fertilizer, ground limestone, wood cellulose fiber mulch, and water, and applying the slurry under pressure to the designated area.

b. A slurry unit shall consist of a mixture of the following proportionate quantities of water, mulch fiber, seed, fertilizer and ground limestone:

Water	1,000	gallons
Mulch Fiber	200	pounds
Seed	35	pounds
Fertilizer	120	pounds
Ground Limestone	500	pounds

c. An adequate scale shall be provided by the CONTRACTOR to weight the mix proportions.

d. The mixing and application shall be as follows:

a) Fill the tank with water to one-third full and agitate at half speed. Add fertilizer, ground limestone and one-half the required mulch fiber.

b) Fill the tank to two thirds full and agitate at full speed. Add the remaining mulch fiber.

c) Agitate at full speed and add water until the tank is full, then add the seed. Begin slurry distribution after five minutes of agitation.

e. After fertilizer and seed are placed in the hydraulic seeder, the mixture shall be completely applied within one hour. Seed remaining in contact with fertilizer for more than one hour shall be rejected and additional seed at the specified rate shall be added at no additional cost.

f. The slurry mixture shall be spread uniformly at the application rate, as directed by the Engineer, upon the areas designated. Application rates shall be one slurry unit per 5,000 to 10,000 square feet, as directed by the ENGINEER

g. Hydraulic seeding equipment shall be capable of maintaining a continuous agitation so that a homogenous mixture can be applied through a spray nozzle. The pump shall be capable of producing sufficient pressure to maintain a continuous, non-fluctuating spray capable of reaching the extremities of the seeding area with the pump unit located on the roadbed. Sufficient hose shall be provided to reach areas not practical to seed from the nozzle unit situated on the roadbed.

2. Dry Method

a. Mechanical spreaders, seed drills, landscape seeders, culitipacker seeders, fertilizer spreaders, or other mechanical spreading equipment approved by the ENGINEER may be used when seed and fertilizer are to be applied in dry form.

b. Fertilizer, and ground limestone if required, shall be spread separately at the specified rates and then incorporated in one operation to a minimum depth of

two (2) inches. Weather and soil conditions permitting, seeded areas shall be compacted, within 24 hours from the time of seeding is completed, by culitipacker, roller, or other equipment approved by the ENGINEER.

c. Compacting equipment shall be operated at right angles to the slope. Compaction shall not he performed when the soil is in such condition that it will be picked up by the compacting equipment, nor shall heavy soils be compacted at all is so directed by the ENGINEER.
d. Hand operated seeding devices may be substituted provided that the rate of application for both seed and nutrient is twice that of dry mechanical methods, and that the end result required is attained. Hand-operated seeding devices may be used only upon prior written approval of the ENGINEER.

3.04 MAINTENANCE OF SEEDED AREAS

A. The contractor shall protect seeded area against traffic by warning signs or barricades, as approved by the ENGINEER. Surfaces gullied or otherwise damaged following seeding shall be repaired by re-grading, re-seeding, and re-mulching, as directed by the ENGINEER, and the CONTRACTOR shall otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the WORK.

B. The seeded areas shall be watered by the CONTRACTOR as required for proper germination and growth. Equipment used in watering shall be capable of reaching all seeded areas from the traveled way.

3.05 INSPECTION AND ACCEPTANCE

A. Acceptance of seeded areas shall be based on a uniform stand of vegetation at the time of final inspection. Areas failing to show a uniform stand after germination shall be scarified and reseeded as herein specified.

END OF SECTION

SECTION 02721 – SUBBASE COURSE

PART 1 GENERAL

1.01 SUMMARY

A. This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course according to these Specifications, and in conformity with the dimensions and typical cross section shown on the Plans.

PART 2 PRODUCTS

2.01 MATERIALS

A. The subbase material shall consist of hard durable particles or fragments of granular aggregates. This material will be mixed or blended with fine sand, clay, stone dust, or other similar binding or filler materials produced from approved sources. This mixture must be uniform and shall comply with the requirements of these Specifications as to gradation, soil constants, and shall be capable of being compacted into a dense and stable subbase. The material shall be free from vegetable matter, lumps or excessive amounts of clay, and other objectionable or foreign substances. The coarse aggregate shall have a minimum degradation value of 40 when tested according to ATM 313 and a percent of wear not more than 50 at 500 revolutions as determined by AASHTO T 96. Pit-run material may be used, provided the material meets the requirements specified.

B. Aggregate gradation shall meet the requirements of Table 1, determined according to WAQTC FOP for AASHTO T 27/T11.

TABLE 1. AGGREGATE GRADATION REQUIREMENTS – STRUCTURAL FILL

Sieve designation (Square opening)	Percentage by weight passing sieves
2 inch	100
1-1/2 inch	70-100
¾ inch	30-100
½ inch	25-100
No. 4	20-49
No. 40	0-25
No. 200	0-6

C. The percent passing the No. 200 sieve will be determined on minus 2-inch material.

D. The portion of the material passing the No. 40 sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 6 when tested according to WAQTC FOP for AASHTO T 89 and T 90.

E. The gradations shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves, or vice versa.

PART 3 EXECUTION

3.01 GENERAL

A. The subbase course shall be placed where designated on the Plans or as directed by the Engineer. The material shall be shaped and thoroughly compacted within the tolerances specified.

B. Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the movement of construction equipment, shall be mechanically stabilized to the depth necessary to provide such stability as directed by the Engineer. The mechanical stabilization shall principally include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so that the course will not deform under the traffic of the construction equipment. The addition of the binding medium to the subbase material shall not increase the soil constants of that material above the limits specified.

3.02 PREPARING UNDERLYING COURSE

A. Before any subbase material is placed, the underlying course shall be prepared and conditioned as specified. The course shall be checked and accepted by the Engineer before placing and spreading operations are started.

B. To protect the subgrade and to ensure proper drainage, the spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

3.03 MATERIALS ACCEPTANCE IN EXISTING CONDITION

A. When the entire subbase material is secured in a uniform and satisfactory condition, such approved material may be moved directly to the spreading equipment for placing. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with the proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The moisture content of the material shall be approximately that required to obtain maximum density. The final operation shall be blading or dragging, if necessary, to obtain a smooth uniform surface true to line and grade.

3.04 GENERAL METHODS FOR PLACING

A. When materials from several sources are to be blended and mixed, the subbase material, together with any blended material, shall be thoroughly mixed prior to placing on grade.

B. The subbase course shall be constructed in layers. Structural fill must be places and compacted in lifts not exceeding 12 inches in loose thickness if a large vibratory compactor is used, or not exceeding 6 inches in loose thickness if a hand-operated compactor is used. The material, as spread, shall be of uniform gradation with no pockets of fine or coarse materials. No material shall be placed in snow or on a soft, muddy, or frozen course.

C. When more than one layer is required, the construction procedure described herein shall apply similarly to each layer.

D. During the placing and spreading, sufficient caution shall be exercised to prevent the incorporation of subgrade, shoulder, or foreign material in the subbase course mixture.

3.05 FINISHING AND COMPACTING

A. After spreading or mixing, the subbase material shall be thoroughly compacted. Sufficient compactors shall be furnished to adequately handle the rate of placing and spreading of the subbase course. The moisture content of the material shall be approximately that required to obtain maximum density.

B. The field density of the compacted material shall be not less than 95% of the maximum unit weight determined in accordance with ASTM D4253 or ASTM D1557. All excavations shall be completely dewatered before placement of structural fill. Frequent, in-place density tests shall be performed in each lift of fill to verify that the fill has been properly compacted prior to placing subsequent lifts. The number of test performed in each lift shall be commensurate with the size of the area worked by the contractor, the variability of the soil types used as fill, and the amount of time an inspector spends on site observing the work. At a minimum, the following testing program shall be used for structural fill:

1. Full time continuous inspection of backfill placement and compaction,
2. One in-place density test per 5,000 square feet, per lift,
3. One in-place density test per 100 lineal feet at the bottom of continuous spread footings,
4. One in-place density test at the bottom of every other isolated rectangular spread footing,
5. One in-place density test per 100 lineal feet of utility trench, every lift and,
6. One in-place density test per 5,000 square feet of pavement, curb, and sidewalk, per lift.

For each test the compaction records shall document areas filled; lift thickness, all tests performed and all retests of failing areas. Compaction test locations must be recorded horizontally and vertically with sufficient accuracy to document the entire fill meets the material and compaction requirements.

C. The course shall not be rolled when the underlying course is soft or yielding or when the rolling causes undulation in the subbase. When the rolling develops irregularities that exceed 1/2 inch when tested with a 12-foot straightedge, the irregular surface shall be loosened and then refilled with the same kind of material as that used in constructing the course and again rolled as required above.

D. Along places inaccessible to rollers, the subbase material shall be tamped thoroughly with mechanical or hand tampers.

E. Watering during rolling, if necessary, shall be in the amount and by equipment approved by the Engineer. Water shall not be added in such a manner or quantity that free water will reach the underlying layer and cause it to become soft.

3.06 SURFACE TEST

A. After the course is completely compacted, the surface shall be tested for smoothness and accuracy of grade and crown; any portion found to lack the required smoothness or to fail in accuracy of grade or crown shall be scarified, reshaped, recompacted, and otherwise manipulated as the Engineer may direct until the required smoothness and accuracy is obtained. The finished surface shall not vary more than 1/2 inch when tested with a 12-foot straightedge applied parallel with, and at right angles to, the centerline.

3.07 PROTECTION

A. Work on subbase course shall not be conducted during freezing temperature nor when the subgrade is wet. When the subbase material contains frozen material or when the underlying course is frozen, the construction shall be stopped.

3.08 MAINTENANCE

A. Following the final shaping of the material, the subbase shall be maintained throughout its entire length by the use of standard motor graders and rollers until, in the judgment of the Engineer, the subbase meets all requirements and is acceptable for the construction of the next course.

END OF SECTION

SECTION 02722 – CRUSHED AGGREGATE BASE COURSE

PART 1 GENERAL

1.01 SUMMARY

A. This item consists of a base course composed of crushed aggregates constructed on a prepared course according to these Specifications and to the dimensions and typical cross section shown on the Drawings.

PART 2 PRODUCTS

2.01 AGGREGATE

A. Aggregates shall consist of clean, sound, durable particles of crushed stone or crushed gravel and shall be free from vegetable matter, excess coatings of clay, silt, and other objectionable materials and shall contain no clay balls.

B. Base course for this project shall have a maximum Nordic Abrasion Value of 18, as determined by ATM 312, and shall meet the gradation requirements for grading D-1.

C. Fine aggregate passing the No. 4 sieve shall consist of fines from the operation of crushing the coarse aggregate. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone and gravel that meet the requirements for wear and soundness specified for coarse aggregate and shall meet the quality requirements of AASHTO M29.

D. The crushed aggregate portion which is retained on the No. 4 sieve shall have at least 70% by weight with 2 fractured faces as determined by WAQTC FOP for AASHTO TP 61.

E. The percentage of wear shall not be greater than 25% when tested according to AASHTO T 96. The sodium sulfate soundness loss shall not exceed 9%, after 5 cycles, when tested according to AASHTO T 104. Aggregates shall have a minimum degradation value of 45 when tested according to ATM 313.

F. Aggregate shall not exceed eight (8) percent thin-elongated pieces as determined by ATM 306.

G. The fraction passing the No. 40 sieve shall have a liquid limit no greater than 25 and a plasticity index of not more than 4 when tested according to WAQTC FOP for AASHTO T 89 and T 90. The fine aggregate shall have a minimum sand equivalent value of 35 when tested according to WAQTC FOP for AASHTO T 176.

1. Sampling and Testing. The Engineer will sample aggregates for quality testing before the start of production. The Engineer, at no expense to the Contractor, will make all tests necessary to determine whether aggregate quality is in compliance with the specifications.

   The Engineer will sample aggregates for acceptance according to WAQTC FOP for AASHTO T 2, and test aggregates for acceptance according to WAQTC FOP for AASHTO T 27/T 11.
2. Gradation Requirements. The gradation of the final mixture shall fall within the range indicated in Table 1, when tested according to WAQTC FOP for AASHTO T 27/T 11. The final gradation shall be continuously well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on an adjacent sieve or vice versa.

TABLE 1. REQUIREMENTS FOR GRADATION OF AGGREGATE

Sieve Designation (Square Openings)	Percentage by weight passing sieves	
	C-1	D-1
1-1/2 in	100	--
1.00 in	70-100	100
3/4 in	60-90	70-100
3/8 in	45-75	50-80
No.4	30-60	35-50
No. 8	22-52	20-35
No. 50	8-30	8-20
No. 200	0-6	0-6

Note: Unless otherwise specified, Gradation D-1 shall be used.

PART 3 EXECUTION

3.01 PREPARING UNDERLYING COURSE

A. Placing and spreading operations shall not commence until the underlying course has been accepted, in writing, by the Engineer. Any ruts or soft areas shall be corrected and compacted to the required density before placing the base course. Crushed aggregate base course shall not be placed on frozen material.

3.02 MIXING

A. The aggregate shall be uniformly blended during crushing operations or mixed in a plant. The plant shall blend and mix the materials to meet the Specifications.

3.03 PLACING

A. The crushed aggregate base material shall be placed on the approved subgrade in uniform, equal-depth layers, each not exceeding 6 inches of compacted depth.

B. The previously constructed layer shall be cleaned of loose and foreign material prior to placing the next layer. The surface of the compacted material shall be kept moist until covered with the next layer.

3.04 COMPACTION

A. Immediately upon completion of the spreading operations, the aggregate shall be thoroughly compacted to the required density. The moisture content of the material shall be approximately that required to obtain maximum density.

3.05 ACCEPTANCE SAMPLING AND TESTING FOR DENSITY

A. Base course will be accepted for density when the field density is not less than 95% of the maximum density, as determined in accordance with ASTM D4253 or ASTM D1557. The in-place field density and moisture content will be determined in accordance with ASTM D4253 or ASTM D1557. If the specified density is not attained, the material shall be reworked and/or recompacted until the specified density is reached. Frequent, in-place density tests shall be performed in each lift of fill to verify that the fill has been properly compacted prior to placing subsequent lifts. The number of test performed in each lift shall be commensurate with the size of the area worked by the contractor, the variability of the soil types used as fill, and the amount of time an

inspector spends on site observing the work. At a minimum, the following testing program shall be used for structural fill:

1. Full time continuous inspection of backfill placement and compaction,
2. One in-place density test per 5,000 square feet of pavement, curb, and sidewalk, per lift.

For each test the compaction records shall document areas filled; lift thickness, all tests performed and all retests of failing areas. Compaction test locations must be recorded horizontally and vertically with sufficient accuracy to document the entire fill meets the material and compaction requirements.

3.06 FINISHING

A. The surface of the aggregate base course shall be finished by blading or with automated equipment specifically designed for this purpose.

B. In no case shall thin layers of material be added to the top of base course to meet grade. If the compacted elevation of the top layer is 0.05 foot or more below grade, it shall be scarified to a depth of at least 3 inches, new material added, and the layer shall be blended and compacted to bring it to grade. If the finished surface is above plan grade, it shall be cut back to grade and recompacted.

3.07 SURFACE TEST

A. After the course has been completely compacted, the surface will be tested by the Engineer for smoothness and accuracy of grade and crown. The finished surface shall not vary more than 3/8 inch from a 10-foot straightedge when applied to the surface parallel with, and at right angles to, the centerline. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be corrected to within the specified tolerances.

3.08 THICKNESS CONTROL

A. The thickness of the finished base course will be determined by the Engineer by taking before and after elevation measurements, or by depth tests, at random locations. The completed thickness of the base course shall be within 1/2 inch of the design thickness and the finish surface shall not vary more than 1/2 inch from established grade. Where the thickness is deficient by more than 1/2 inch, it shall be corrected to within the specified tolerances.

3.09 MAINTENANCE

A. The base course shall be maintained in a condition that will meet all specification requirements until the work is accepted. Equipment used in the construction of an adjoining section may be routed over completed portions of the base course, provided no damage results and provided that the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

END OF SECTION

SECTION 02760 – PAVEMENT MARKINGS

PART 1 GENERAL

1.01 DESCRIPTION

A. This item shall consist of the painting of stripes on the surface of paved areas, according to these Specifications and at the locations shown on the Drawings, or as directed by the Engineer. This item includes removal of existing painted markings from pavement surfaces as shown on the Drawings or as designated by the Engineer. Complete this work within the limitations of the project safety and phasing Drawings.

PART 2 PRODUCTS

2.01 MATERIALS ACCEPTANCE

A. The Contractor shall furnish manufacturer's certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site.

2.02 PAINT

A. Paint shall be waterborne or solvent base according to the requirements in this paragraph. Paint shall be furnished in white (37925) and yellow (33538 or 33655) according to Federal Standard No 595. Paint shall be furnished in Type II (fast drying time for no-pick-up) when tested according to ASTM D 711.

1. Waterborne. Paint shall meet the requirements of Federal Specification TT-P1952D, Type II.

2. Solvent Base. Paint shall meet the requirements of Federal Specification A-A-2886B Type II, or State of Alaska DOT&PF maintenance specification for “Traffic Paint – No Heat Instant Dry Pavement Marking Material”.

2.03 REFLECTIVE MEDIA.

A. Glass beads shall meet the requirements of Fed. Spec. TT-B-1325, Type I, gradation A. Glass beads shall be treated with adhesion promoting and/or flotation coatings as specified by the manufacturer of the paint.

PART 3 EXECUTION

3.01 WEATHER LIMITATIONS

A. The painting shall be performed only when the surface is dry and when the surface temperature is at least 40°F and rising and the pavement surface temperature is at least 5°F above the dew point.

3.02 EQUIPMENT

A. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

B. The mechanical marker shall be an atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross sections and clear-cut edges without running or spattering and without over spray.

3.03 PREPARATION OF SURFACE

A. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials. Areas which cannot be satisfactorily cleaned by brooming and blowing shall be scrubbed as directed with a 10% solution of tri-sodium phosphate or an equally suitable solution. After scrubbing, the solution shall be rinsed off and the surface dried prior to painting.

3.04 LAYOUT OF MARKINGS

A. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the Drawings. Space control points at such intervals to ensure accurate location of all markings. Provide an experienced technician to supervise the location, alignment, layout dimensions, and application of the paint.

3.05 APPLICATION

A. Paint shall be applied at the locations and to the dimensions and spacing shown on the Drawings. Paint shall not be applied until the layout and condition of the surface have been approved by the Engineer.

B. The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and the marking dimensions and spacing shall be within the following tolerances:

Dimension and Spacing	Tolerance
Less than 36 inches	1/2 inch
36 inches to 6 feet	1 inch
6 feet to 60 feet	2 inches
Over 60 feet	3 inches

C. The paint shall be mixed and applied according to the manufacturer's instructions. The addition of thinner will not be permitted. The paint shall be applied to the pavement with a marking machine at the rate shown in Table 1.

TABLE 1. APPLICATION RATES FOR PAINT AND GLASS BEADS

Paint Type	Paint, ft^2/gal maximum	Glass Beads lb/gal of paint (±2 oz.)
Waterborne	80	7
Solvent Base	80	6

D. Pavement shall cure for 7 days or as directed by the Engineer before painting. If pavement is opened to traffic before the pavement curing period is complete, apply paint in two coats. Apply the first coat at least 12 hours after paving is completed at 25 percent of the total application rate. Apply the remaining 75 percent following pavement curing time. The direction of the second application shall be 180 degrees from the first to ensure complete coverage. Apply glass beads, if required, in the second coat only.

E. Pressure apply the glass beads on the marked areas at the locations shown on the Drawings using a mechanical dispenser mounted not more than 12 inches behind the paint dispenser. Beads shall be applied at the rate shown in Table 1 and shall adhere to the cured paint or all marking operations shall cease until corrections are made.

F. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

3.06 PROTECTION

A. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings of paint.

3.07 PAINTED MARKING REMOVAL

A. Where indicated, use mechanical methods to remove all visible indications of existing painted markings from pavement surfaces. Do not paint over existing markings. Remove pavement markings to the fullest extent possible without materially damaging the pavement surface, color, or texture. Collect and dispose of all loose or waste

material as needed to prevent interference with drainage or to prevent dusty conditions under traffic, wind, or propellers.

3.08 TESTING REQUIREMENTS

ASTM C 371	Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D 92	Flash and Fire Points by Cleveland Open Cup
ASTM D 711	No-Pick-Up Time of Traffic Paint
ASTM D 968	Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D 1652	Epoxy Content of Epoxy Resins
ASTM D 2074	Total Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D 2240	Rubber Products-Durometer Hardness
ASTM G 53	Operating Light and Water-Exposure Apparatus (Florescent UV-Condensation Type) for Exposure of Nonmetallic Materials.
Federal Test Method Standard No. 141	Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing

3.09 MATERIAL REQUIREMENTS

Alaska DOT/PF	Traffic Paint - No-Heat Instant Dry Pavement Marking Material; White and Yellow
ASTM D 476	Titanium Dioxide Pigments
Code of Federal Regulations	40 CFR Part 60, Appendix A, 29 CFR Part 1910.1200
Commercial Item Description (CID) A-A-2886B	Paint, Traffic, Solvent Based
Fed. Spec. TT-B-1325	Beads (Glass Spheres) Retro reflective
Fed. Spec. TT-P-1952D	Paint, traffic and Airfield Marking, Waterborne
Federal Standard 595	Colors used in Government Procurement

END OF SECTION

SECTION 02801 – ASPHALT CONCRETE PAVEMENT

PART 1 GENERAL

1.01 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 Drawings.

B. Asphaltic concrete mix for this Project shall be Type IIA, Class B. See Table 02801.

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	2.5 – 4.0	2.5 – 4.0
Compactions, number of blows each side of test specimen	75	50
Dust-asphalt ration (1)	0.6 – 1.0	0.6 – 1.0
Percent oil content	6.0 – 6.8	6.0 – 6.8
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

2.01 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 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 te 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 ½ pint sample of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current Materials Safety Data Sheets (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 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 to 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 resting and evaluation. Trial Job Mix Design test results will be available within 15 calendar days after 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 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.

2.02 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 [I]	16.0 max,
Percent of Wear	AASHHTO T96	25 max.
Degradation Value	ATM T-13	30 min.
Percent Sodium Sulfate Loss	AASHTO T 104	10 max.
Percent Fracture	ATM T-4	100 min. single face/ 80 min. double face

I Nordic Abrasion Test Procedures will apply to both coarse and intermediate aggregate for Asphalt aggregate. Test procedures for Nordic Abrasion are available at AKDOT&PF Region Materials Laboratory.

2. Asphalt concrete aggregate shall not exceed eight percent thin – elongated pieces as determined by ATM T-9.
3. Fine Aggregate: Fine aggregate (passing No. 4 sieve) shall meet the quality requirements of AASHTO M29. 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 combines in such proportions that he resulting composite blend conforms to the grading requirements of Table 02801-2. Aggregates gradations shall be determined by ATM T-7, 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.

Sieve Size	Tolerance % Passing
3/4"	100
1/2"	± 6
3/8"	± 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 Percent Passing by Weight				
Sieve Design	Type I	Type II	Type IIA	Type III
1-inch	100			
¾ 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

2.03 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 that the source. If the material is to be conditionally accepted at the source, the CONTRACTOR shall provide a manufacturer's certificate of compliance in accordance with this Section before the material is shipped. If there is a change in the source of the asphalt cement or if the kinetic viscosity (viscosity at 275ºF) 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 designates 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 Original Binders RFTO Aged Residue	T 202 T 202	1,100+ 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 temperature 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.

2.04 ANTI-STRIP ADDITIVES

A. Anti-strip agents shall be used in the proportions determined by ATM T-14 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 T-14.

2.05 PROCESS QUALITY CONTROL

A. Anti-strip agents shall be used in the proportions determined by ATM T-14 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 T-14. The CBJ Engineering 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

3.01 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.

3.02 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 aligns 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.

3.03 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.

3.04 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.

3.05 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 ATM T-25.

3.06 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.

3.07 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.

3.08 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 205 – Manhole Heights, prior to paving operations beginning. 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.

3.09 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 ATM T-18 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.

J All joints with existing asphalt pavement shall be resealed with asphalt cement after the new pavement has cooled to ambient temperature. All joints with concrete gutters found to have a gap shall be blown out using a weed burner torch, filled with asphalt cement and covered with a layer of dry sand. Excess sand shall be removed and asphalt cement placed on the concrete gutter more than one-inch from the edge of gutter shall be removed using solvent or other approved methods.

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 T-23. 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.

K For Each lot of asphalt pavement produced, a sample shall be taken by the CONTRACTOR for purposes of acceptance testing by the OWNER. The CONTRACTOR shall split the sample with the OWNER to retain a portion for their own use The sample shall be taken according to proper sampling methods, from the asphalt pavement on the grade,

Based on the results of the acceptance testing, a deduction from the asphalt pavement pay item may be made at the following amounts:

 # 200 Sieve: of $2,000.00 per each 0.1% outside the job mix design tolerance, not exceeding 6% maximum, of the percent passing the #200 sieve.

Asphalt Content: of $2,000.00 per each 0.1% outside the job mix design asphalt content tolerance. The allowable asphalt content tolerance for this Contract shall be +/- 0.2% of the target job mix design asphalt content and shall not exceed the asphalt oil content limits specified in this contract.

The pay deductions for exceeding the job mix design tolerances does not constitute acceptance of a mix that does not meet the specifications. Further acceptance testing will be performed to determine of the asphalt pavement specifications have been met. No payment for asphalt pavement sill be made for asphalt pavement exceeding job mix design tolerances, or not meeting asphalt pavement

specifications, until additional testing determines whether the asphalt pavement meets all other specifications.

For the purposes of this Contract, one lot of asphalt pavement is defined as 250 tons, or a single day's asphalt pavement production of at least 100 tons.

END OF SECTION

SECTION 02802 - TACK COAT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item shall consist of preparing and treating an asphalt or concrete surface with liquid asphalt material according to these Specifications and in reasonably close conformity to the lines shown on the Drawings.

1.02 SUBMITTALS

A. Samples of the tack coat material that the Contractor proposes to use, together with a statement as to its source and character, must be submitted and approved before use of such material begins. The Contractor shall require the manufacturer or producer of the tack coat to furnish material subject to this and all other pertinent requirements of the contract. Only satisfactory materials so demonstrated by certified tests, shall be acceptable.

B. The Contractor shall furnish the vendor's certified test reports for each carload, or equivalent, of tack coat shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of material received for use on the project.

C. Before the final estimate is allowed, the Contractor shall file with the Engineer receipted bills when railroad shipments are made, and certified weigh bills when materials are received in any other manner, of the tack coat actually used in the construction covered by the contract. The Contractor shall not remove tack coat from the tank car or storage tank until the initial outage and temperature measurements have been taken by the Engineer, nor shall the car or tank be released until the final outage has been taken by the Engineer. Copies of freight bills and weigh bills shall be furnished to the Engineer during the progress of the work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Tack coat material shall be emulsified asphalt and shall conform to the requirements of Table 1.

TABLE 1. MATERIAL

Type and Grade	Specification	Application Temperature °F	Application Rate gal/yd^2
Emulsified Asphalt			
STE-1	\1\	68-140	0.08 to 0.10

\1\ STE-1 shall meet the following specifications: Viscosity, Sabolt Furol at 77°F of 30 max., when tested under AASHTO T 59. Particle charge test of Positive when tested under AASHTO T 59 (If particle charge test is inconclusive, material having a max. pH value of 6.7 will be acceptable). Storage Stability, 1 day 1% max when tested under AASHTO T 59. Demulsibility, 35 mil 0.8% Dioctyl Sodium Sulfosuccinate Solution 25 minimum when tested under AASHTO T 59. Sieve test maximum of 0.10% when tested under AASHTO T 59. Oil distillate, by volume of emulsion, of 5% maximum when tested under AASHTO T 59. Residue of 45% minimum when tested under AASHTO T 59. Penetration at 77°F, 100 gm, 5 sec. of 100 minimum, 200 maximum when tested under ASTM D 5. Ductility at 77°F of 40 cm minimum when tested under ASTM D 113. Solubility in trichloroethylene of 97.5% minimum

PART 3 - EXECUTION

3.01 WEATHER LIMITATIONS

A. The tack coat shall be applied only when the existing surface is dry and the surface temperature is above 40°F. The temperature requirements may be waived, but only when so directed by the Engineer.

3.02 EQUIPMENT

A. The Contractor shall provide equipment for heating and applying the tack coat.

B. The distributor shall be designed, equipped, maintained, and operated so that tack coat at even heat may be applied uniformly on variable widths of surface at the specified rate. The allowable variation from the specified rate shall not exceed 10%. Distributor equipment shall include a tachometer, pressure gages, volume-measuring devices or a calibrated tank, and a thermometer for measuring temperatures of tank contents. The distributor shall be self-powered and shall be equipped with a power unit for the pump and full circulation spray bars adjustable laterally and vertically.

C. A power broom and/or blower shall be provided for any required cleaning of the surface to be treated.

3.03 APPLICATION OF TACK COAT

A. Immediately before applying the tack coat, the full width of surface to be treated shall be swept with a power broom and/or airblast to remove all loose dirt and other objectionable material.

B. Emulsified asphalt shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before any of the overlying mixture is placed on the tacked surface.

C. The tack coat material including vehicle or solvent shall be uniformly applied with an asphalt distributor at the rate specified in Table 1, depending on the condition of the existing surface. The type of material and application rate shall be approved by the Engineer prior to application.

D. Following the application, the surface shall be allowed to cure without being disturbed for such period of time as may be necessary to permit drying out and setting of the tack coat. This period shall be determined by the Engineer. The surface shall then be maintained by the Contractor until the next course has been placed. Suitable precautions shall be taken by the Contractor to protect the surface against damage during this interval.

3.04 TESTING REQUIREMENTS

AASHTO T 59	Testing Emulsified Asphalts
ASTM D 5	Penetration of Bituminous Materials
ASTM D 113	Ductility of Bituminous Materials

3.05 MATERIAL REQUIREMENTS

AASHTO M 52	Tar for Use in Road Construction
AASHTO M 140	Emulsified Asphalt
AASHTO M 208	Cationic Emulsified Asphalt
ASTM D 633	Volume Correction Table for Road Tar
ASTM D 2028	Liquid Asphalt (Rapid-Curing Type)

END OF SECTION

SECTION 02890 – STANDARD SIGNS

PART 1 GENERAL

1.1 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools and equipment necessary to furnish and install standard signs, of type indicated, at locations shown on the Drawings or as established by the ENGINEER.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. Publications are referenced within the text by the basic designation only.

B. ASTM International (ASTM)

1. ASTM C94 - Ready Mix Concrete
2. ASTM B209 – 10 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
3. ASTM B449 – Paint and Related Coating Standards
4. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
5. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

C. US Department of Transportation, Federal Highway Administration

1. Manual on Uniform Traffic Control Devices (MUTCD).

D. American Association of State Highway and Transportation Officials (AASTHO)

1. AASHTO M 268-10 – Standard Specification for Retroreflective Sheeting for Traffic Control.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sheet Aluminum. Use alloy 6061-T6, 5052-H36, 5052-H38, or recycled aluminum meeting alloy 3105, as specified in ASTM B 209. Meet the thickness of aluminum sheet designated on the plans. Verify alloy and temper designations by mill certification.

Treat the aluminum base metal sheets with chromate conversion coating for aluminum to meet ASTM B 449, Class 2. Handle the cleaned and coated base metal only by a mechanical device or by operators wearing clean cotton or rubber gloves. After cleaning and coating operations, protect the panels at all times from contact or exposure to greases, oils, dust or other contaminants.

Make each sign panel a continuous sheet for all lengths 72 inches or less in the horizontal direction. Use no more than one vertical splice for signs up to 144 inches in length and 48 inches or less in height.

Meet the panel dimensions specified with a tolerance of 1/16 inch. Furnish metal panels that are cut to size and shape and free of buckles, warp, dents, cockles, burrs and any other defects resulting from fabrication. Complete all possible fabrication, including shearing, cutting and punching of holes prior to the base metal preparation.

B. Reflective Sheeting. Meet AASHTO M 268, for the type specified.

C. Sign Posts. Use the type and size of posts designated on the plans.

1. Perforated Steel Posts.
   Fabricate posts from 0.105-inch thick cold-rolled carbon steel sheets, commercial quality, to meet ASTM A 653 and ASTM A 924. Zinc coat, both sides, to meet coating designation G90. Form posts into a steel tube, roll to size, and weld in the corner.

   Perforate all members for their entire length with 7/16-inch diameter holes on 1-inch centers.

   Furnish members that are straight and with a smooth, uniform finish, with no splices.

   Ensure that all perforations and cut off ends are free from burrs.

   Ensure that consecutive sizes will telescope freely with a minimum of play.

D. Sign Fabrication. Use Type IV reflective sheeting (for lettering, symbols, borders, and background) on sheet aluminum panels.

E. Sign Posts and Bases. Use sign posts and bases of the types specified. The structural aspects of design and materials for sign supports must comply with the AASHTO *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*. Do not splice sign posts.

Use commercial grade concrete for sign foundations with a minimum 28-day compressive strength of 2,500 psi or an approved, pre-mixed, sacked concrete.

2.2 SIGNS

Conform to the following and MUTCD classification is shown in parentheses:

A. "STOP" Signs: Size shown on plans, Octagon, white legend and border on red background (R1-1)

B. Miscellaneous Signs: See Construction Drawings

2.3 POSTS

A. See plans for post sizes and installation

2.4 CONCRETE

A. Mix concrete and deliver in accordance with ASTM C 94.

B. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water reducing admixture, air entraining admixture, and water to produce following:

1. Compressive Strength: 3,500 psi, minimum at 28 days, unless otherwise indicated on Construction Drawings.

2. Slump Range: 1 to 3-inches at time of placement
3. Air Entrainment: 5 to 8 percent

3 EXECUTION

3.1 PREPARATION

A. Contractor shall field verify underground utilities prior to sign installation. Primary utilities of concern of shallow depths are lawn sprinkler systems, electric, telephone, fiber optic, cable and gas.

B. Cost related to repair of damaged surface and subsurface facilities shall be paid for by the Contractor at no additional expense to the Owner.

3.2 SIGN PLACEMENT AND INSTALLATION

A. Sign locations are approximate and subject to field adjustment by the ENGINEER.

B. Do not allow the top of the embedded steel tube to extend more than 2 inches above the surrounding ground and concrete foundation.

C. Install posts in accordance with City and Borough of Juneau, standard drawing 127A Sign Assembly Single-post. Set posts vertical and plumb with bottom of sign at minimum 7'-0" above finish grade unless otherwise indicated on the Construction Drawings. Mount signs in accordance with manufacturer's instructions.

D. Attach sign panels to posts using the types and sizes of fastening hardware shown on the plans. All materials and finished signs are subject to inspection and acceptance in place.

1. Surfaces exposed to weathering must be free of defects in the coating that impair serviceability or detract from general appearance or color match.

2. Finished signs must be clean and have no chatter marks, burrs, sharp edges, loose rivets, delaminated reflective sheeting, or aluminum marks. Do not make repairs to the face sheet.

3. On all signs, install 2-inch diameter wind washers, colored to match the sign face, between the fastener head and the sign. Use rust-resistant washers fabricated from a material equal in strength to the sign blank.

Install breakaway assemblies according to the manufacturer’s written instructions.

Remove and replace all foundations requiring more than three shims to plumb a post without extra compensation.

Construct the top of any foundation located on a slope so that the finished slope passes through the top center of the foundation. Grade the area 24 inches up and down slope of the foundation edge so that no portion of the foundation projects above the surrounding slope and water will drain away from the foundation.

Attach a label to the back of all standard signs in the lower right corner. Make the label at least 15 square inches and show the year the sign was purchased from the manufacturer. Show the last two digits of the year in clear and bold numbers. Make the label from Type I or brighter reflective sheeting. Use background and legend colors meeting Table 1.

TABLE 1

DECAL COLORS

YEAR	BACKGROUND COLOR	LEGEND COLOR
XXX1	Yellow	Black
XXX2	Red	White
XXX3	Blue	White
XXX4	Green	White
XXX5	Brown	White
XXX6	Orange	Black
XXX7	Black	White
XXX8	White	Black
XXX9	Purple	White
XXX0	Strong Yellow-Green	Black

Central values and tolerance limits for each color, as referenced in the MUTCD, are available from the Federal Highway Administration, (HHS-30), 400 7th St. SW, Washington, D.C. 20590

3.3 FIELD QUALITY CONTROL

A. Inspection: During and after sign installation, visually inspect signs to assure satisfactory installation. Inspection shall include verification of the proper signs, proper locations, mounting and foundation depth, and mounting height.

END OF SECTION

SECTION 02950 – REMOVAL AND REPLACEMENT OF PAVEMENT AND INCIDENTALS

PART 1 GENERAL

1.01 DESCRIPTION

This Work shall consist of the removal and replacement of pavements made necessary by the construction of water distribution lines, sanitary sewers, and other items of construction that require temporary cuts. Such replacement shall be to a condition at least equal to the condition existing prior to removal and of in-kind material and shall be compliance with the Plans, these Specifications, or as directed by the ENGINEER. The Work which will be included in the Contract and for which the CONTRACTOR shall be compensated therefore is limited to that area of construction for the Project. The Contractor will not be compensated for the removal and replacement of facilities outside the limits of construction of the project.

PART 2 PRODUCTS

2.01 MATERIALS

A. Asphalt Concrete Pavement: Asphalt concrete pavement shall meet the requirements of Specification Section 02801, Type II Class B.

B. Crushed Aggregate Base: Crushed aggregate base meeting the requirements of Specification Section 02722 Type D1 shall be used to replace graveled areas disturbed by construction.

2.02 EQUIPMENT

A. Equipment and tools necessary for cutting, removal, and hauling of existing items; handling and placement of new material; and all equipment necessary to perform all parts of the Work shall be at the job site sufficiently ahead of the start of construction operations to be examined and approved by the Owner.

B. When saws are used to cut pavement, the Contractor shall provide sawing equipment adequate in power to complete the sawing to a minimum of 1-1/2 inches below the pavement surface in one pass. An ample supply of saw blades shall be maintained at the site of the Work at all times during sawing operations.

C. Other types of pavement cutting equipment shall be capable of cutting the pavement to a neat straight line of 1-1/2 inch minimum depth below the pavement surface in one pass.

D. The Contractor shall provide equipment capable of removal of pavements, sidewalks, driveway aprons, curbs and gutters, driveways, paved areas, and curbs without disturbance of adjacent items to remain in place.

E. Equipment necessary for the handling, placement, and compaction of asphalt shall meet the requirements of Specification Section 02801 Paragraph 3.2.

3 EXECUTION

3.01 REMOVAL OF ASPHALT PAVEMENT

Asphalt pavement shall be removed to a clean straight line as detailed on the Plans. Pavement shall be cut by saw or other equipment approved by the ENGINEER in advance. Edges of existing asphalt pavement adjacent to trenches where damaged shall be re-cut in a clean straight line within the limits of damaged pavement only. Such re-cuts shall be parallel to the original cuts and perpendicular to the pavement surface.

3.02 REPLACEMENT OF PAVEMENT

A. Asphalt or Surface Treated Pavements: Replacement of asphalt or surface treated pavement and base shall consist of 6 inches of Crushed aggregate base and 4 inches of asphalt concrete surface course Type II, Class B for the entire cross-section of pavement removal area, including all areas where pavement was re-cut subsequent to the initial pavement removal.

B. Damage Due to Settlement. The CONTRACTOR shall be responsible for any damage caused by settlement of backfill places beneath pavements. This includes any damage which may occur at any time prior to, and during a period of one year from and after the date of Final Acceptance of the Work covered by the Contract.

END OF SECTION

SECTION 03301 – STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

A. This item shall consist of plain or reinforced structural Portland cement concrete, prepared and constructed according to these Specifications, at the locations and of the form and dimensions shown on the Plans. 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 from only one mill and one brand and type of portland cement shall be used on the Project.

2.2 FINE AGGREGATE

A. 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

A. 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 five (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.

2.4 JOINT FILLERS

A. Joint filler, of the type designated in the contract, shall conform to the following:
   1. Poured filler shall conform to AASHTO M 173 or AASHTO M 282 as specified.
   2. 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 resilient bituminous types and AASHTO M 220 for pre-formed elastomeric types as specified.
   3. AASHTO M 220 for preformed elastomeric types as specified. The filler shall be punched to admit the dowels where called for on the Drawings. 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.
   4. Foam filler shall be expanded polystyrene filler having a compressive strength of not less than 10 psi.
   5. Hot -poured sealants for concrete and asphaltic pavements shall conform to ASTM D 3405.
   6. Hot-poured elastomeric type sealant for concrete pavements shall conform to ASTM D 3406.
   7. 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:

   1. Liquid membrane-forming compounds utilizing linseed oil shall not be used.

2.6 AIR ENTRAINING AGENTS

A. Air-entraining admixtures shall conform to the requirements of AASHTO M 154.

2.7 MIXING WATER

A. Unless otherwise permitted in writing by the ENGINEER, all water shall be obtained from the CBJ potable water system.

2.8 REINFORCING STEEL

A. Reinforcing shall conform to AASHTO M 31, and be of grade 60 or the grade designated on the Drawings or in the Specifications. Welded wire fabric shall conform to AASHTO M 55. Epoxy coated reinforcing bars shall conform to AASHTO M 284.

2.9 SHIPPING AND STORAGE OF CEMENT

A. Cement may be shipped from pretested approved bins. The cement shall be well protected from rain and moisture. Any cement damaged by moisture or which fails to meet any of the specified requirements shall be rejected and removed from the WORK.

B. Cement stored by the CONTRACTOR for a period longer than 60 days in other than sealed bins or silos shall be retested before being used. Cement of different brands, types, or from different mills shall be stored separately.

2.10 COMPOSITION OF CONCRETE

A. All portland cement concrete shall be ready-mix, provided by an approved plant regularly engaged in the production of concrete, unless otherwise authorized in writing by the ENGINEER. Ready-mix concrete shall conform to the requirements of AASHTO M 157.

B. The CONTRACTOR shall furnish the mix design to the ENGINEER for approval. The mix design shall be suitable for its intended use. Concrete shall be designed using an absolute volume analysis. The CONTRACTOR shall be responsible for having each mix design tested at a laboratory. 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 (fc) as indicated on Drawings.
Slump 3" ± 1"
Entrained Air 3 to 6%
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 two percent.

E. The use of superplasticizers in the concrete mix to improve the workability of mixes with low water cement ratios will require prior written approval by the ENGINEER

F. The CONTRACTOR may, subject to prior approval in writing, use alternative sizes of coarse aggregate as shown in Table 1 of AASHTO M 43. If the use of an alternative size of coarse aggregate produces concrete which exceeds the permissible water-cement ratio above, thereby requiring additional cement above that specified, no compensation will be made to the CONTRACTOR for the additional cement.

2.11 SAMPLING AND TESTING

A. Field tests of all materials will be made by the ENGINEER when deemed necessary, in accordance with the applicable Specifications. When the results of the field tests indicate the material does not conform to the requirements of the Specifications, the re-tests required by the ENGINEER shall be at the CONTRACTOR’s expense.

B. Materials which fail to meet contract requirements, as indicated by laboratory tests, shall not be used in the WORK. The CONTRACTOR shall remove all defective materials from the site.

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

D. Three copies of all test reports shall be furnished to the ENGINEER.

2.12 COLD WEATHER CONCRETE

A. Concrete shall not be placed when the descending air temperature in the shade, away from artificial heat, falls below 40°F. Placement of concrete shall not resume 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. When Type I or II cement is used, freshly placed concrete shall be maintained at a temperature of not less than 70°F for three days or not less than 50°F for five days. When Type III cement is used, freshly placed concrete shall be maintained at a temperature of not less than 70°F for two days or not less than 50°F for three days.

4. 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. De-watering shall not be carried out until the ENGINEER determines that the concrete has cured sufficiently to withstand freezing temperatures and hydrostatic pressure.

L. The CONTRACTOR shall be wholly responsible for the protection of the concrete during cold weather operations. Any concrete injured by frost action or overheating shall be removed and replaced at the CONTRACTOR's expense.

2.13 FORMS

A. Forms shall be so designed and constructed that they may be removed without injuring the concrete.

B. Unless otherwise specified, forms for exposed surfaces shall be made of plywood, hardpressed 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 less than or equal to 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:
$P=150 + \frac{43,400}{} + \frac{2800R}{}$, but not more than 2000 p.s.f. or 150 h, whichever is less.

T T

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 four 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 day-lighted 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 one 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 Drawings.

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 Drawings. 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 seven (7) days when Type III cement is used. Forms for slabs having clear spans or cantilever spans of less than ten (10) feet may be removed after seven (7) days when Type I or Type II cement is used, or after four (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. The minimum time allowed for the curing of structural concrete in the substructure before any load of the superstructure is placed thereon shall be seven days when Type I or Type II cement is used and two (2) days when Type III cement is used.

PART 3 - EXECUTION

3.1 GENERAL

A. All concrete shall be placed before it has taken its initial set and, in any case, within 30 minutes after mixing. Concrete shall be placed in such a 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.

B. 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.

C. 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.

D. 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.

E. Dropping the concrete a distance of more than five (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.

F. 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 two vibrators are in good working order and repair and ready for use.

G. 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 one inch slump for a distance of at least 18 inches from the vibrator.

H. 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.

I. Concrete shall be placed continuously throughout each section of the structure or between indicated joints. If, in any 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.

J. The presence of areas of excessive honeycomb may be considered sufficient cause for rejection of a structure. Upon written notice that a given structure has been rejected, the rejected WORK shall be removed and rebuilt, in part or wholly as specified, at the CONTRACTOR's expense.

3.2 PUMPING CONCRETE

A. Concrete may be placed by pumping if the CONTRACTOR demonstrates that the pumping equipment to be used will effectively handle the particular class of concrete with the slump and air content specified and that it is so arranged that no vibrations result that might damage freshly placed concrete. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced.

B. When pumping is completed, the concrete remaining in the pipeline, if it is to be used, shall be ejected in such a manner that there will be no contamination of the concrete or separation of the ingredients. After this operation, the entire equipment shall be thoroughly cleaned. Slump tests shall be taken at the discharge end of the pipe.

3.3 COLUMNS

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

3.4 SLAB AND GIRDER SPANS

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

B. Girders spanning more than 30 feet may be cast in two 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. 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 Drawings or as directed by the ENGINEER.

3.6 CONCRETE DEPOSITED UNDER WATER

A. Construction joints shall be located where shown on the Drawings 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 Drawings.

3.7 EXPANSION JOINTS

A. Expansion joints shall be located and formed as required on the Drawings.

B. Open Joints. Open joints shall be placed in the location shown on the Drawings 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 Drawings.

C. Filled Joints. Unless otherwise shown on the Drawings, 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 Drawings conforming to the requirements of Article 2.4 (Joint Filler) 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 Drawings. 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 Drawings, and composed of a steel extrusion and an extruded strip seal. The steel shall conform to ASTM A242 or A588. 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 Drawings.

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 Drawings at normal temperature.

3.8 ANCHOR BOLTS

A. Anchor bolt assemblies conforming to the details shown shall be accurately secured in the forms in the positions shown on the Drawings, 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.

3.9 DRAINAGE AND WEEP HOLES

A. Drainage holes and weep holes shall be constructed as indicated on the Drawings.

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 Drawings, weep holes shall be provided in retaining walls and abutment walls where the height of the wall is over five feet measured from the top of the footing. Weep holes shall be four 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.

3.10 PIPES, CONDUITS, AND DUCTS

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

3.11 FINISHING CONCRETE SURFACES

A. All concrete surfaces exposed in the completed WORK shall receive an Ordinary Finish, as described below, unless otherwise noted on the Drawings or in the special provisions.

3.12 ORDINARY FINISH

A. An Ordinary Finish is defined as the finish left on a surface after the removal of the forms, the filling of all holes left by form ties, and the repairing of all defects. The surface shall be true and even, free from stone pockets and depressions or projections. All surfaces that cannot be satisfactorily repaired shall be given a Rubbed Finish.

B. The concrete in caps and tops of walls shall be struck off with a straightedge and floated to true grade. The use of mortar topping for concrete surfaces shall in no case be permitted.

C. As soon as the forms are removed, metal devices that have been used for holding the forms in place, and which pass through the body of the concrete, shall be removed or cut back at least one 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 one part portland cement to two parts sand, which shall be thoroughly tamped into place. The mortar shall be pre-shrunk by mixing it approximately 20 minutes before using. The length of time may be varied in accordance with brand of cement used, temperature, humidity, and other local conditions. The surface of this mortar shall be floated with a wooden float before initial set takes place and shall be neat in appearance. The patch shall be kept wet for a period of five days.

E. For patching large or deep areas, coarse aggregate shall be added to the patching material. All mortar for patching on surfaces which will be exposed to view in the completed structure shall be color matched to the concrete. Test patches for color matching shall be conducted on concrete that will be hidden from view in the completed WORK and shall be subject to approval.

3.13 RUBBED FINISH

A. When forms can be removed while the concrete is still green, the surface shall be pointed and wetted and then rubbed with a wooden float until all irregularities and form marks are removed and the surface is covered with a lather composed of cement and water. 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. If permitted, a thin grout composed of one part cement and one part fine sand may be used in the rubbing.

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 four days after placing and it shall be done in the following manner:

   1. A thin grout composed of one part cement and one part fine sand shall be spread over a small area of the surface. It shall be rubbed immediately with the stone until all form marks and irregularities are removed and the surface is covered

with a lather. The surface shall then 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 requirements for a rubbed finish.

3.14 CONCRETE DECKS

A. A smooth riding surface of uniform texture, true to the required grade and cross section, shall be obtained on all 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 production and placement of 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 a sufficient distance beyond both ends of the scheduled length of concrete placement. This distance shall 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 installed so that no springing or deflection will occur under the weight of the finishing equipment. Rails or deaders shall be located so 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. However, 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 from 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 eight (8) feet nor more than twelve (12) feet.

M. Any finishing machine used for strike off which has a wheelbase of six (6) feet or less shall be followed by two (2) 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 (2) 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 one inch thick and from four inches to eight inches wide. Adjusting screws spaced at a distance not to exceed 24 inches on center hall be provided between the float and the rib. The float board shall be true and free of twists.

P. Hand-operated float boards shall be operated from transverse finishing bridges. The finishing bridges shall completely span the roadway area being floated. 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 handoperated 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.

3.15 CURB AND SIDEWALK SURFACES

A. Exposed faces of curbs and sidewalks shall be finished to true surfaces. 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 Float to a smooth but not slippery finish.

3.16 CURING CONCRETE

A. Water Curing:

1. All concrete surfaces shall be kept wet for at least seven (7) days after placement 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. The surface shall immediately be covered with sand, earth, straw, or similar materials.

2. In either case the materials shall be kept thoroughly wet for the entire curing period. All other surfaces, if not protected by forms, shall be kept thoroughly wet,

either by sprinkling or by the use of wet burlap, cotton mats, or other suitable fabric, until the end of the curing period. If wood forms are allowed to remain in place during the curing period, they shall be kept moist at all times to prevent opening at joints.

B. Membrane Curing. Liquid membrane curing compound meeting the requirements of AASHTO M 148, Type I, may be permitted, subject to approval by the ENGINEER. 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. In all cases, the membrane-curing compound must always be thoroughly mixed immediately before application. If 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, for polymer modified concrete or at construction joints.

3.17 BACKFILLING AND OPENING TO TRAFFIC

A. Unbalanced backfilling against concrete structures will not be permitted until the concrete has attained a compressive strength of not less than 80% of the ultimate strength (f 'c) shown on the Drawings.

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 Drawings. Loads of any character having a total weight in excess of 4000 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 Drawings.

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.

3.18 CLEANING UP

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

END OF SECTION

SECTION 03302 - CONCRETE STRUCTURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. The WORK under this Section includes providing all labor, materials, tools, and equipment necessary for furnishing and installing minor concrete structures, removal and disposal of the existing structure to be replaced by the proposed structure, and all backfill and grading, in accordance with these Specifications and in reasonably close conformity with the lines, grades, details, and locations shown on the Drawings or established by the ENGINEER.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement shall conform to the requirements of AASHTO M 85.

B. Aggregate shall be clean, durable, uniformly graded sand and gravel, or crushed stone, 100 percent passing a 1 1/2 inch sieve and containing not more than five percent passing a U.S. No. 200 sieve.

C. Air-entraining admixtures shall conform to the requirement of AASHTO M 154.

D. Water shall be obtained from the CBJ potable water system, unless otherwise permitted in writing by the ENGINEER.

E. Curing materials shall conform to the requirements of AASHTO M 182, AASHTO M 171, or AASHTO M 148, as appropriate, except that AASHTO M 148 is modified to prohibit the use of compounds utilizing linseed oil.

F. Reinforcing Steel shall conform to the requirements of AASHTO M 31.

G. Welded Wire Fabric shall conform to the requirements of AASHTO M 55.

H. Joint Fillers shall be of the type specified in the contract, and shall conform to the appropriate following requirements:
   1. Poured filler - AASHTO M 173 or AASHTO M 282 as specified
   2. Preformed filler - AASHTO M 213
   3. Hot-poured sealant - ASTM D 3405
   4. Hot-poured elastomeric type sealant - ASTM D 3406

2.02 COMPOSITION OF CONCRETE

A. Portland cement concrete will ordinarily be accepted on the basis of certification.

B. The concrete shall contain three to six percent of entrained air, as determined by AASHTO T 152. Concrete shall have a slump of not more than four inches as determined by AASHTO T 119.

C. Concrete shall contain not less than 611 pounds of cement and not more than 300 pounds of water per cubic yard.

D. The concrete shall develop a minimum compressive strength of 3,000 psi in 28 days.

E. The concrete shall be subject to acceptance or rejection by visual inspection at the job site. Re-tempering concrete will not be permitted.

F. The CONTRACTOR shall submit for approval the following:
1. The type and sources of aggregates and cement.
2. Scale weights of each aggregate proposed as pounds per cubic yard of concrete.
3. Quantity of water proposed as pounds per cubic yard of concrete.
4. Quantity of cement proposed as pounds per cubic yard of concrete.
5. Air content.
6. Slump.

G. When a commercial supplier is used, the CONTRACTOR shall furnish a certification with each truckload of concrete certifying that the material and mix proportions used are in conformance with the approved mixture.

H. Concrete complying with Section 03301 – Structural Concrete will be acceptable as an approved mixture with appropriate certification.

I. The ENGINEER may make and test cylinders for strength determinations.

2.03 FORMS

A. Forms shall be designed and constructed to be removed without injuring the concrete.

They shall be free of bulge and warp, and constructed so the finished concrete will be of the form and dimensions shown on the Drawings, and true to line and grade. Forms for concrete containing a retarding admixture shall be designed for a lateral pressure equal to that exerted by a fluid weighing 150 pounds per cubic foot.

PART 3 - EXECUTION

3.01 PLACING CONCRETE

A. Concrete shall be placed to avoid segregation of materials and shall be consolidated with mechanical vibrators in accordance with Section 03301 – Structural Concrete.

B. When concrete is placed by the pumping method or by tremie operations, the use of aluminum pipe or conduit for transporting the concrete will not be permitted.

C. The intervals between delivery of batches for a single pour shall not exceed 30 minutes.

D. When placing concrete at or below an atmospheric temperature of 35°F. the CONTRACTOR shall comply with the applicable requirements of Section 03301 – Structural Concrete.

3.02 FINISHING CONCRETE SURFACES

A. All concrete surfaces shall be finished in accordance with the requirements of Section 03301 – Structural Concrete, except "Concrete International Corporation" Ashford formula shall be used as a curing compound.

3.03 CURING CONCRETE

A. All concrete will be cured a minimum of seven days, or, if high early strength cement is used, a minimum of three days. The concrete shall be cured in accordance with Section 03301 – Structural Concrete.

END OF SECTION

Juneau International Airport

SHEET INDEX

JUNEAU INTERNATIONAL AIRPORT
CITY & BOROUGH OF JUNEAU
ALASKA'S CAPITAL CITY

JUNEAU CONTRACT # JNU E12-280
FAA AIP # 3-02-0133-051-2011

SNOW REMOVAL EQUIPMENT FACILITIES
SITE INFRASTRUCTURE

ECI/HYER ARCHITECTURE + INTERIORS
ARCHITECTURE

MAINTENANCE DESIGN GROUP
EQUIPMENT PLANNING

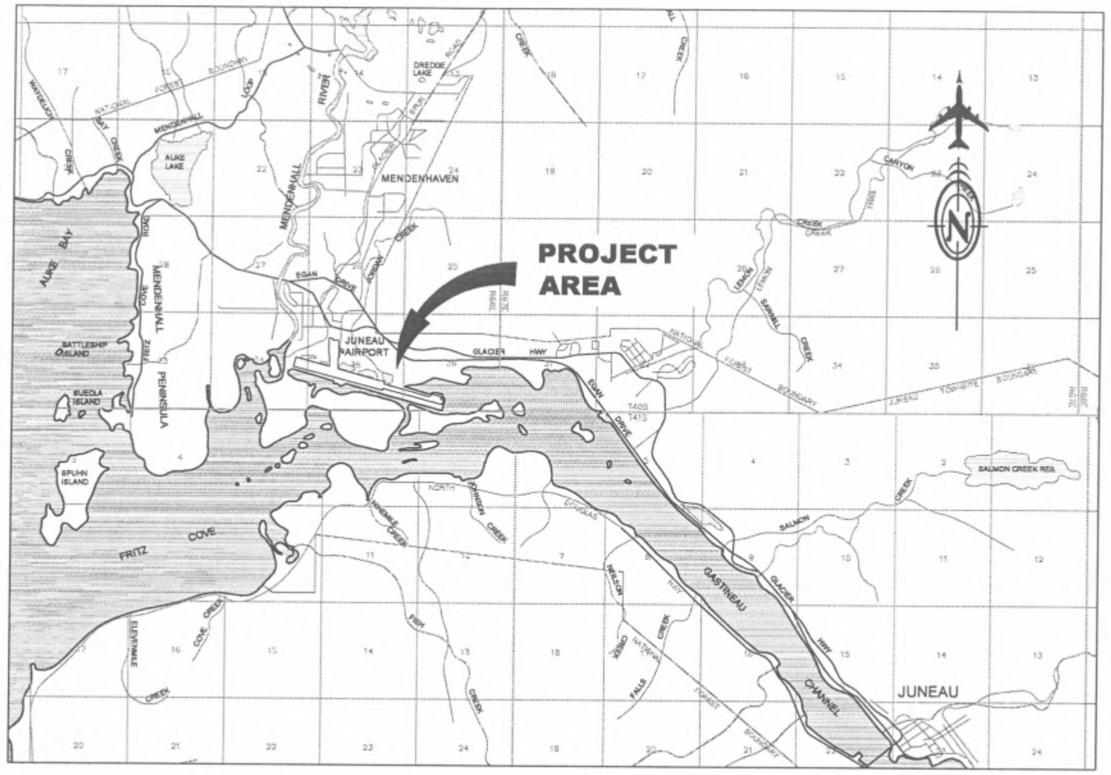
DOWL ENGINEERS
CIVIL ENGINEERING

PND ENGINEERS
STRUCTURAL

MURRAY & ASSOCIATES, P.C.
MECHANICAL ENGINEERING

HAIGHT & ASSOCIATES, INC.
ELECTRICAL ENGINEERING

HMS, INC
COST ESTIMATING



VICINITY MAP

GRAPHIC SCALE (IN MILES)

CIVIL ABBREVIATIONS

ABN	ABANDONED	INV	INVERT
ACP	ASPHALT CONCRETE PAVEMENT	LF	LINEAR FEET
AD	ALGEBRAIC DIFFERENCE	LT	LEFT
ASOS	AUTOMATED SURFACE OBSERVATION SYSTEM	ME	MATCH EXISTING
BLDG	BUILDING	MIN	MINIMUM
CABC	CRUSHED AGGREGATE BASE COURSE	N	NORTH
℄	CENTERLINE	NTS	NOT TO SCALE
CAP	CORRUGATED ALUMINUM PIPE	PCC	PORTLAND CEMENT CONCRETE
CBJ	CITY & BOROUGH OF JUNEAU	RCP	REINFORCED CONCRETE PIPE
CJ	CONTROL JOINT	RT	RIGHT
CMP	CORRUGATED METAL PIPE	S	SOUTH OR SEWER
C	COMMUNICATION	SD/FD	STORM DRAIN FIELD DRAIN
CPP	CORRUGATED PLASTIC PIPE	SDCB	STORM DRAIN CATCH BASIN
CY	CUBIC YARD	SDMH	STORM DRAIN MANHOLE
DIA	DIAMETER	SSCO	SANITARY SEWER CLEANOUT
DIP	DUCTILE IRON PIPE	SSMH	SANITARY SEWER MANHOLE
E	EAST OR ELECTRIC	STA	STATION
EA	EACH	SY	SQUARE YARD
ELEC	ELECTRIC	TELE	TELEPHONE
ELEV	ELEVATION	T/W	TAXIWAY
FT	FOOT	TYP	TYPICAL
GV&VB	GATE VALVE & VALVE BOX	UG	UNDERGROUND
HDPE	HIGH DENSITY POLYETHYLENE	W	WEST
HMA	HOT MIX ASPHALT		

CIVIL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY BOUNDARY
		CONCRETE
		EDGE OF GRAVEL
		EDGE OF PAVEMENT
X	X	FENCE
S	S	SANITARY SEWER LINE
	FM	SANITARY SEWER FORCE MAIN
W	W	WATER LINE
E		UNDERGROUND ELECTRIC LINE
C		UNDERGROUND COMMUNICATION LINE
SD	SD	STORM DRAIN LINE
		CULVERT
120	65	CONTOUR LINE
RSA		RUNWAY SAFETY AREA
		LIMIT OF CUT
		LIMIT OF FILL
		LIMIT OF GRASS SEEDING
		SILT FENCE
		DRAINAGE
		BUILDING
SD		STORM DRAIN MANHOLE
		STORM DRAIN CATCH BASIN
SS	S	SANITARY SEWER MANHOLE
	LS	SEWER LIFT STATION
SEWER		SEWER CLEANOUT
SEPTIC		SEWER SEPTIC CLEANOUT
WELL		MONITORING WELL
		WATER VALVE
		HYDRANT
		FUEL TANK
		GUARD RAIL
		ELECTRICAL PEDESTAL
		ELECTRICAL VAULT
		RADIO TOWER
		ELECTRIC METER
		GUY ANCHOR
		ELECTRIC LIGHT POLE
		ELECTRIC POWER POLE
		ELECTRIC MANHOLE
		ELECTRIC JUNCTION BOX
		RUNWAY THRESHOLD LIGHT (BLUE/RED)
		RUNWAY EDGE LIGHT (WHITE)
		RUNWAY EDGE LIGHT (BLUE)
		RUNWAY APPROACH LIGHT
		TAXIWAY EDGE LIGHT
		PAPI
		TELEPHONE PEDESTAL
		TELEPHONE MANHOLE
		RUNWAY DISTANCE REMAINING SIGN
		BOLLARD
TH-05-##		TEST HOLE
		LIGHTED WIND CONE
		SEGMENTED CIRCLE
		WIND EQUIPMENT
		TEST PIT
		TEST PIT

CIVIL NOTES

STANDARD DRAWINGS CBJ

104A	CULVERT HEADWALL WITH HINGED TRASH RACK
104B	CULVERT HEADWALL WITHOUT HINGED TRASH RACK
127A	SIGN ASSEMBLY SINGLE POST
203	SANITARY SEWER MANHOLE TYPES I & II
205	MANHOLE HEIGHTS
206A	SANITARY SEWER MANHOLE COVER & FRAME
209	MANHOLE CONNECTION DETAILS
214	SANITARY SEWER CONNECTION
311	FILTER FABRIC FENCE
407	MAINLINE VALVE
412	RIGID INSULATION
414A	DOWNWARD CONCAVE THRUST BLOCK
414B	HORIZONTAL AND CONCAVE UPWARD THRUST BLOCKS

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH Brian R. Hanson CE 11132 REGISTERED PROFESSIONAL ENGINEER

COVER SHEET INDEX
FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012
CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-001

DOWL FILE No: 234-51
SCRIPT FILE:
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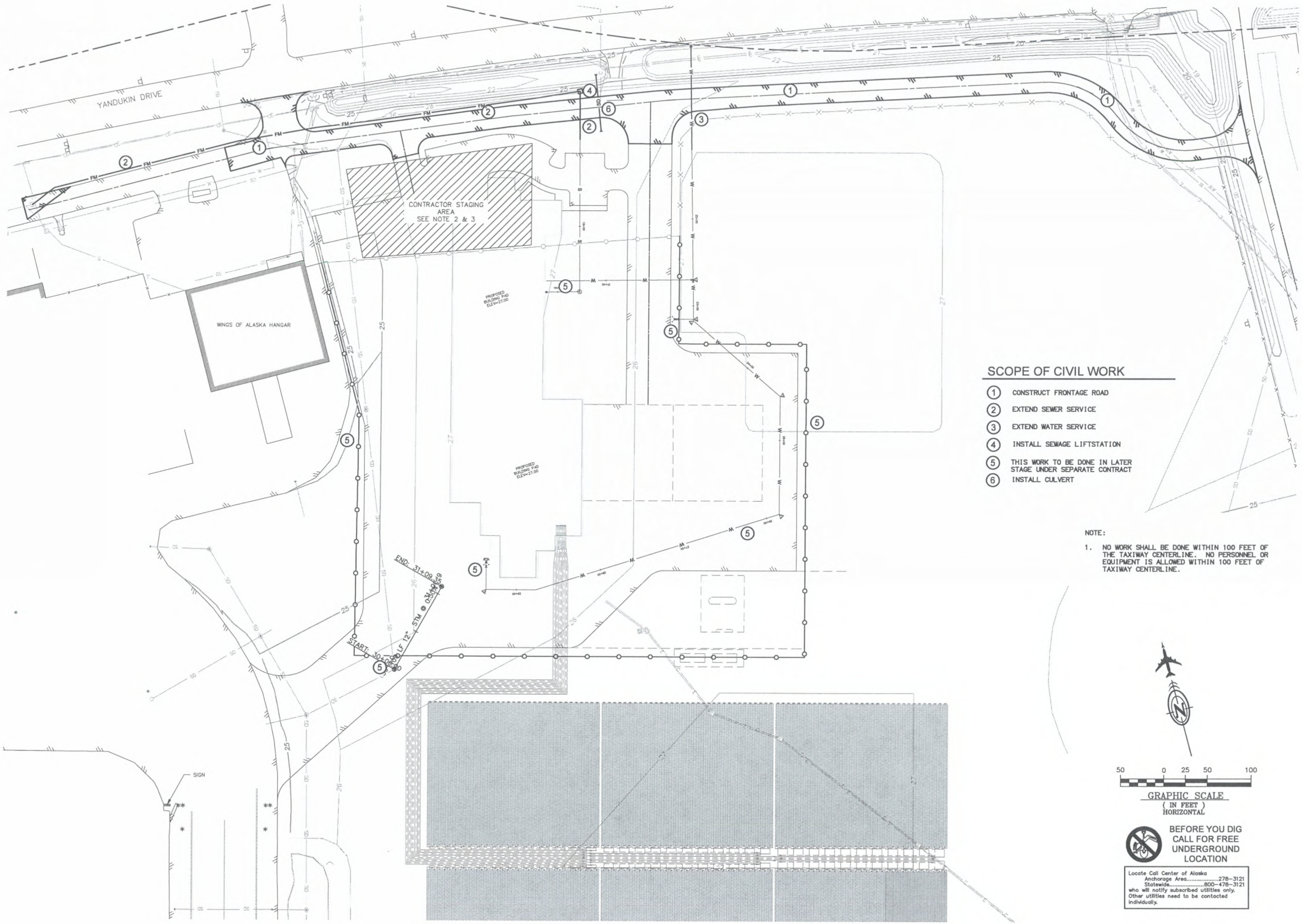

YANDUKIN DRIVE
CONTRACTOR STAGING AREA SEE NOTE 2 & 3
WINGS OF ALASKA HANGAR
PROPOSED BUILDING PAD ELEV=27.00
END: 31+09
START: 30+00
LF 12" STM
SIGN
SCOPE OF CIVIL WORK
1 CONSTRUCT FRONTAGE ROAD
2 EXTEND SEWER SERVICE
3 EXTEND WATER SERVICE
4 INSTALL SEWAGE LIFTSTATION
5 THIS WORK TO BE DONE IN LATER STAGE UNDER SEPARATE CONTRACT
6 INSTALL CULVERT
NOTE:
1. NO WORK SHALL BE DONE WITHIN 100 FEET OF THE TAXIWAY CENTERLINE. NO PERSONNEL OR EQUIPMENT IS ALLOWED WITHIN 100 FEET OF TAXIWAY CENTERLINE.
50 0 25 50 100
GRAPHIC SCALE
(IN FEET)
HORIZONTAL
BEFORE YOU DIG
CALL FOR FREE
UNDERGROUND
LOCATION
Locate Call Center of Alaska
Anchorage Area......................278-3121
Statewide......................800-478-3121
who will notify subscribed utilities only.
Other utilities need to be contacted individually.

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

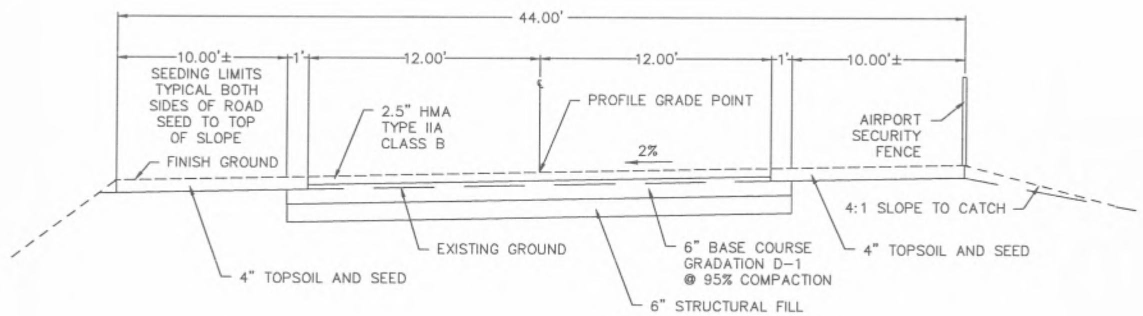
DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

STATE OF ALASKA 49TH
Brian R. Hanson
CE 11132
5/18/12
REGISTERED PROFESSIONAL ENGINEER

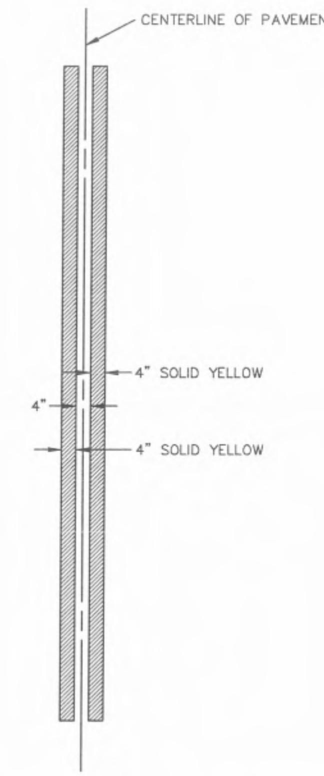
CIVIL PROJECT LAYOUT PLAN

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

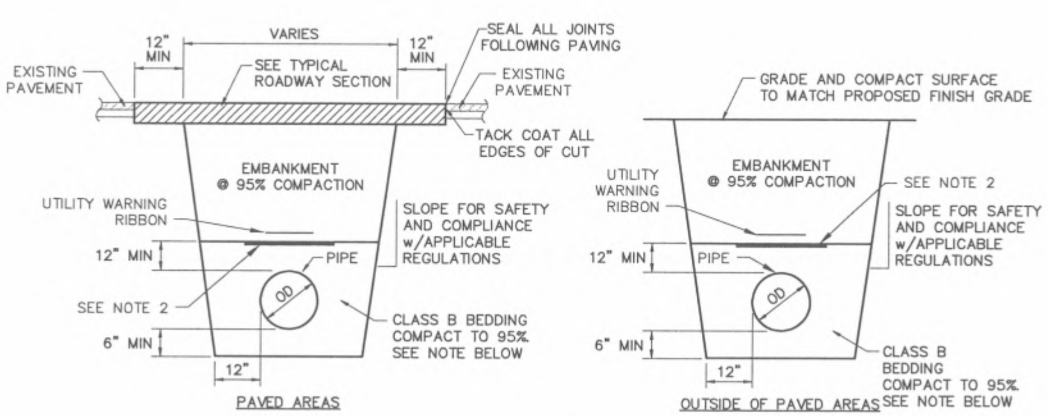
C-002



1 C-003 FRONTAGE ROAD
STA 55+00 TO STA 56+00 AND STA 58+50 TO 63+50



3 C-003 CENTERLINE STRIPING DETAIL
NTS



NOTES:

1. PIPE BEDDING TO SPRING LINE ONLY FOR ALL DUCTILE IRON PIPE.
2. 6"X4' RIGID INSULATION WHERE WATER AND PRESSURE SANITARY SEWER COVER IS LESS THAN 5'.

2 C-003 UTILITY TRENCHES

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH Brian R. Hanson CE 11132 REGISTERED PROFESSIONAL ENGINEER

TYPICAL SECTIONS & DETAILS
FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012
CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-003

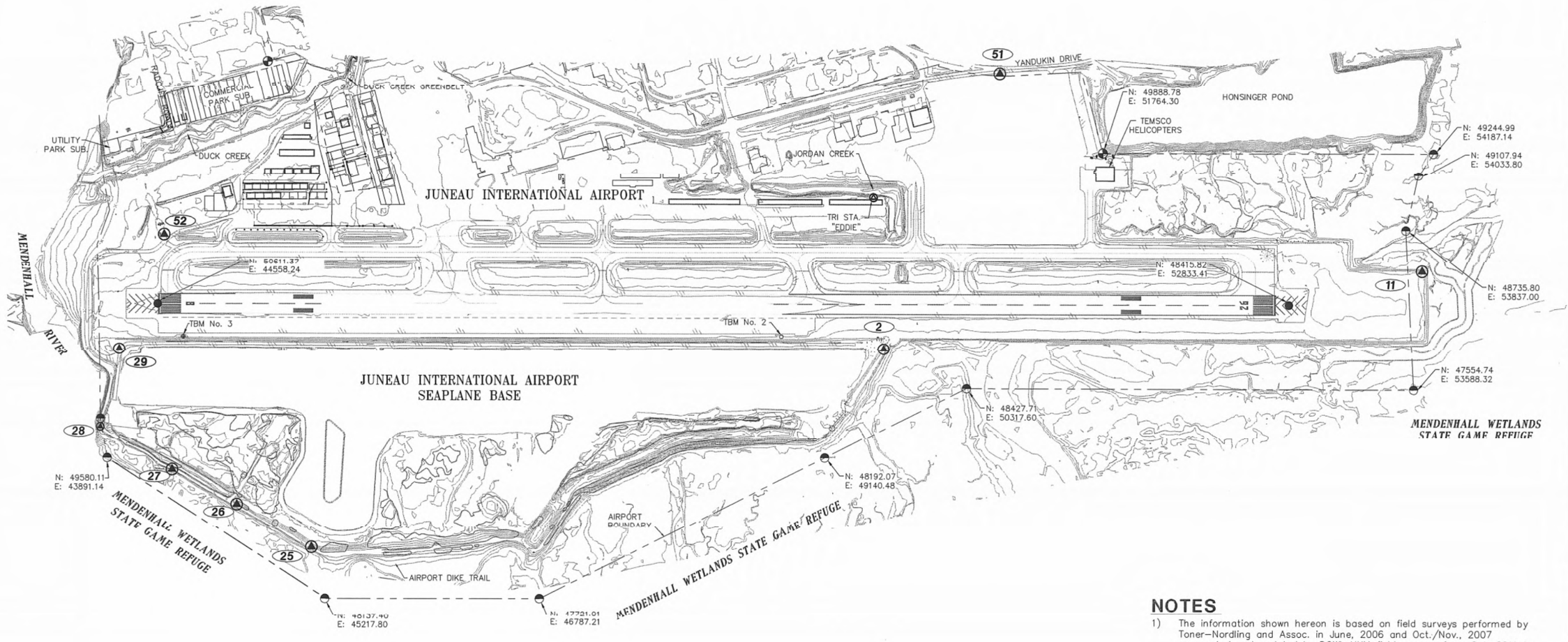
P:\Projects\D60021\DESIGN\001-JNU_SHEET.dwg 2012-5-17 13:24:10 USER: KJB
SCRIPT FILE:
DOWL FILE No: 234-51

400 200 0 400 800 1200

SCALE IN FEET

VERTICAL CONTROL		
TBM NO.	ELEVATION	DESCRIPTION
2	25.23	PRIMARY AIRPORT CONTROL STATION (NGS – JNU C) N: 49169.63, E: 49059.64
3	24.83	SECONDARY AIRPORT CONTROL STATION, (NGS – JNU D) N: 50327.61, E: 44681.68

HORIZONTAL CONTROL									
PT No.	NORTHING	EASTING	ELEVATION	DESCRIPTION	PT No.	NORTHING	EASTING	ELEVATION	DESCRIPTION
2	48875.60	49785.15	23.82	JIA–20(12)	27	49370.49	44343.40	27.45	JIA–27
10	50000.00	50000.00	26.37	EDDIE	28	49828.63	43902.88	27.23	JIA–28
11	48400.22	53876.82	23.91	JIA–11(12)	29	50358.69	44191.38	20.54	JIA–29(12)
25	48534.18	45210.40	24.10	JIA–25	50	48890.11	47859.56	17.25	JIA–20C
26	48994.73	44747.44	24.76	JIA–26	51	50669.68	51167.32	25.76	JIA–51
					52	51108.13	44739.69	26.21	JIA–52



LEGEND

- 3" U.S.C.&G.S. BRASS CAP TRIANGULATION STATION MONUMENT FOUND THIS SURVEY
- 3" ALUMINUM WETLANDS REFUGE MONUMENT FOUND THIS SURVEY
- STAINLESS STEEL ROD IN SLEEVE FOUND THIS SURVEY
- 3" NATIONAL OCEAN SERVICE BRASS CAP MONUMENT FOUND THIS SURVEY
- PRIMARY CONTROL, SET 2" ALUMINUM CAP ON 5/8" REBAR
- 3" ALUMINUM MONUMENT IN WELL CASE (RUNWAY CENTERLINE)
- PRIMARY PROPERTY CORNER MONUMENT FOUND THIS SURVEY

NOTES

1) The information shown hereon is based on field surveys performed by Toner–Nordling and Assoc. in June, 2006 and Oct./Nov., 2007 augmented and updated by DOWL HKM field surveys from Oct. 2011 to May 2012.

2) The Basis of Bearing for this project is the grid bearing of S 11°34'36"E between Triangulation Station "EDDIE" and primary project point JIA–20. Bearings were rotated to geodetic using the project mapping angle, –0°45'27".

3) All bearings are True bearings as oriented to the Basis of Bearing and distances shown are reduced to horizontal field distances in U.S. Feet.

4) Vertical Datum is Mean Lower Low Water (M.L.L.W.), based on an elevation provided by State of Alaska D.O.T./P.F. of 25.23 feet for NGS control point "JNU C." To convert to Mean Sea Level (M.S.L.), subtract 8.58 feet from the M.L.L.W. elevations.

5) To convert the local grid coordinates to NAD83, Alaska Zone 1, State Plane Coordinates: At Triangulation Station Eddie apply scale factor of 0.999928875 and apply mapping angle of –0°45'27.26" and translate using +2333469.1731 N, 2462570.0632 E,

6) According to NOAA/NOS "portions of Southeast Alaska in the Lynn Canal and Stephens Passage area have anomalous relative sea level trends compared to most other geographic regions in the United States. This is due to a general uplift of the land in this area." The uplift is occurring at a rate of 1.5 to 2 cm per year. Elevations and contour lines are accurate at the time of survey.

DOWL HKM
ECI/HYER ARCHITECTURE + NTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543

PROJECT NO. 0308 / DOWL HKM 260021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

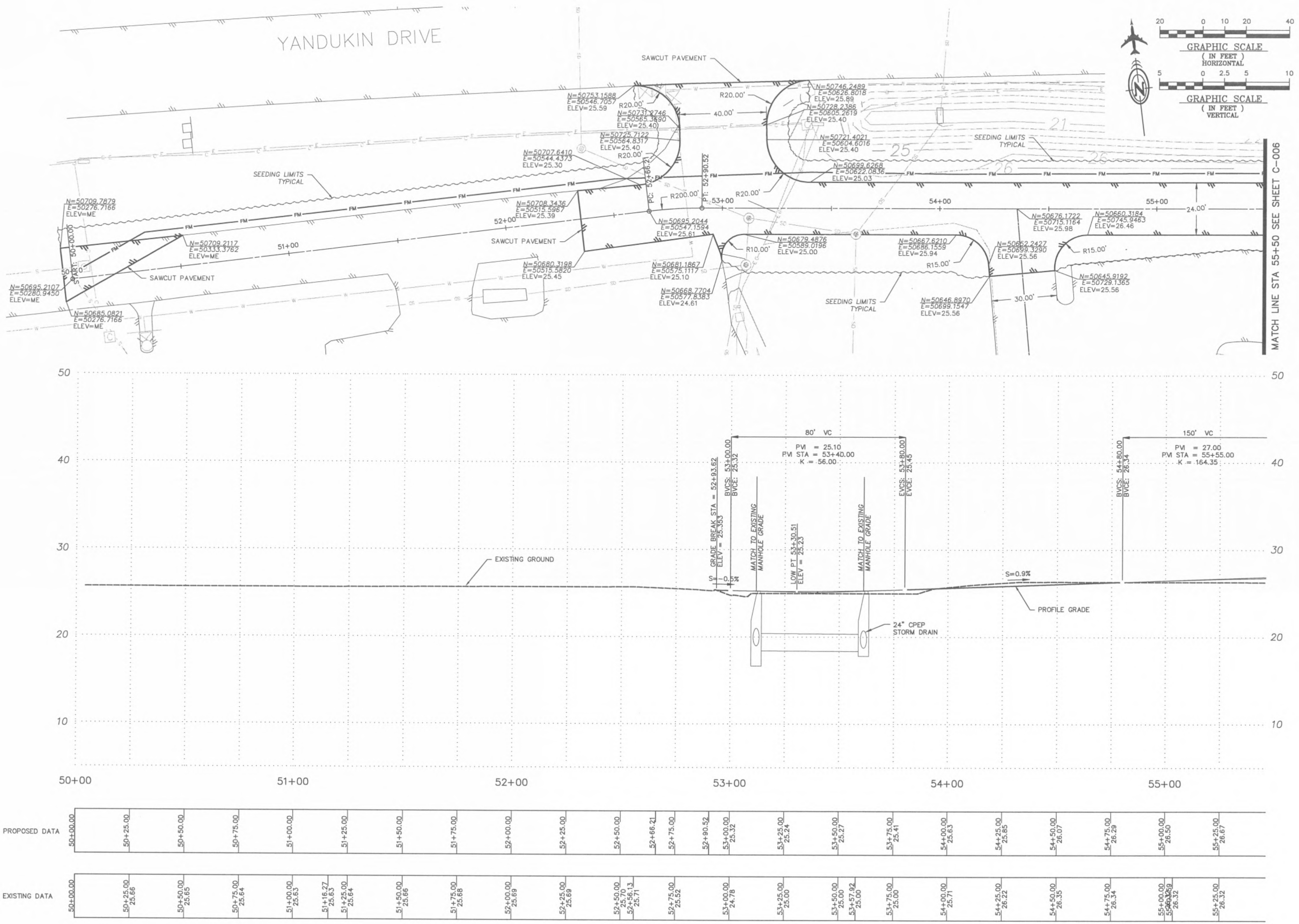
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA
49th
William T. Pence
No. 7712-S
PROFESSIONAL LAND SURVEYOR
5/23/12

CHECKED: BRH
JUNEAU CONTRACT #JNU E15-280
FAA AIP #3-02-0133-051-2011

FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012

C-004



DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

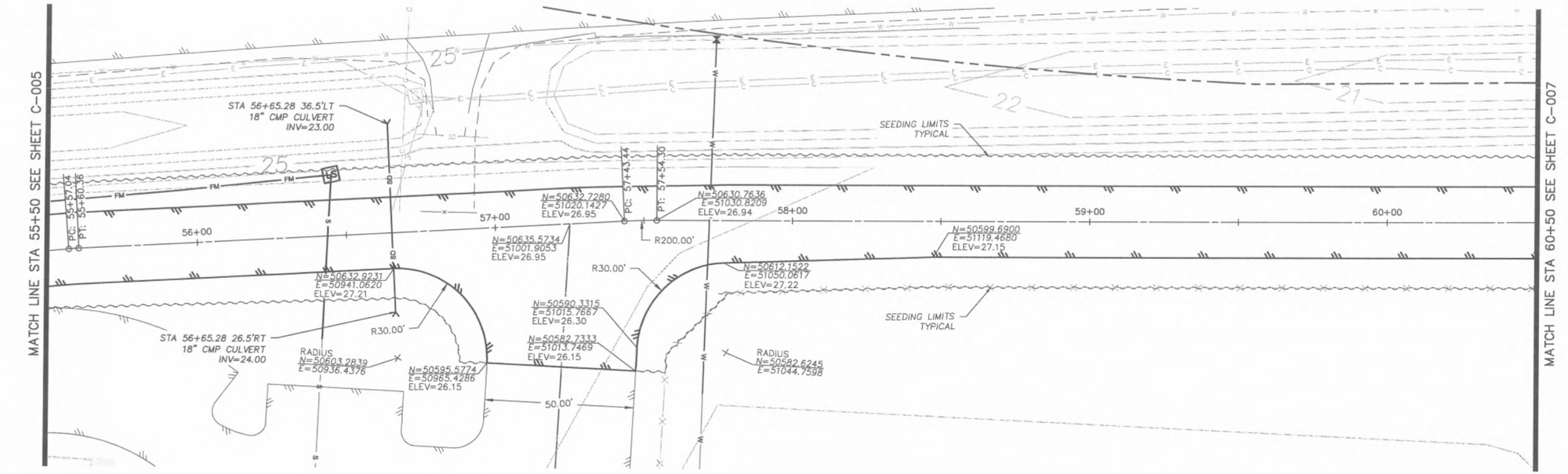
JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

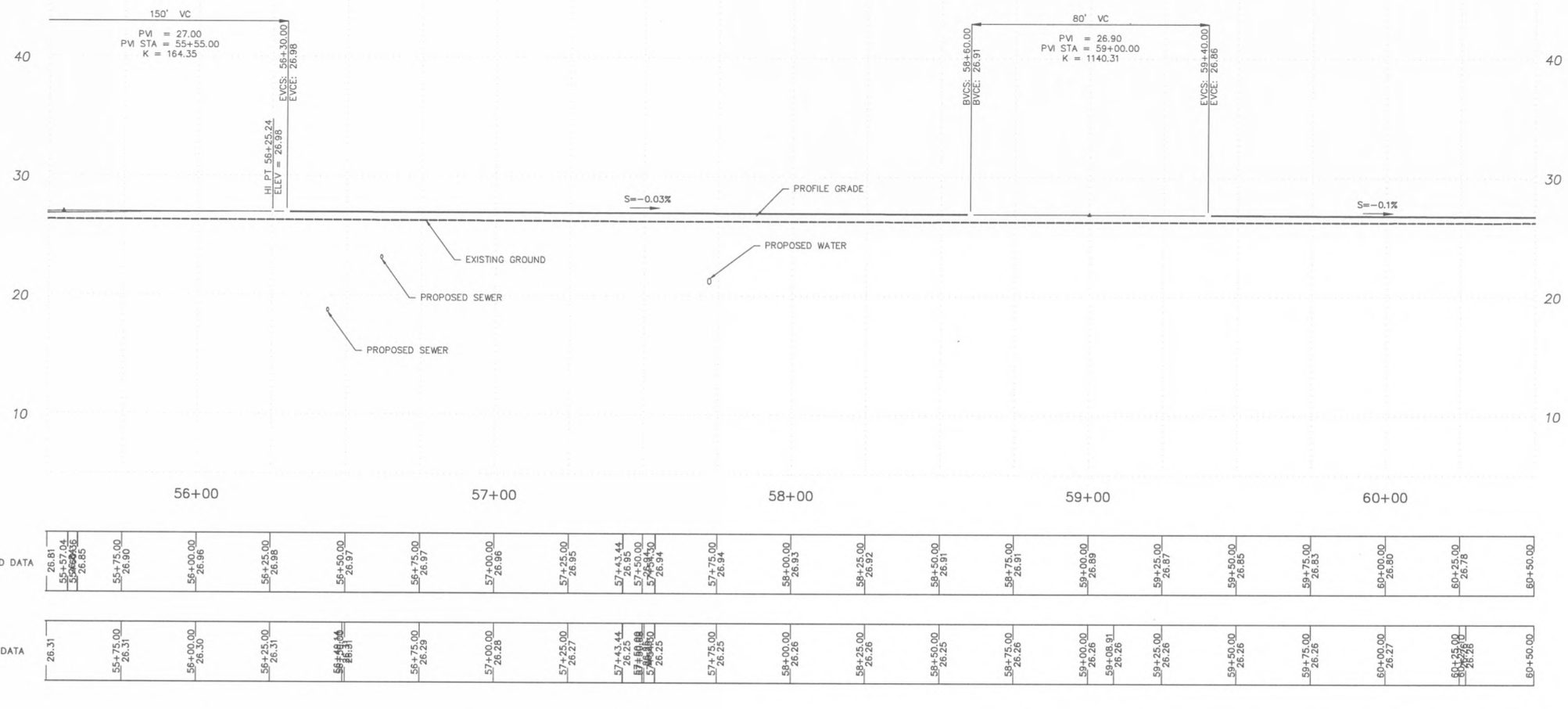
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH Brian R. Hanson CE 11132 REGISTERED PROFESSIONAL ENGINEER

FRONTAGE ROAD PLAN & PROFILE

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011





GRAPHIC SCALE (IN FEET) HORIZONTAL
20 0 10 20 40

GRAPHIC SCALE (IN FEET) VERTICAL
5 0 2.5 5 10

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
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ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

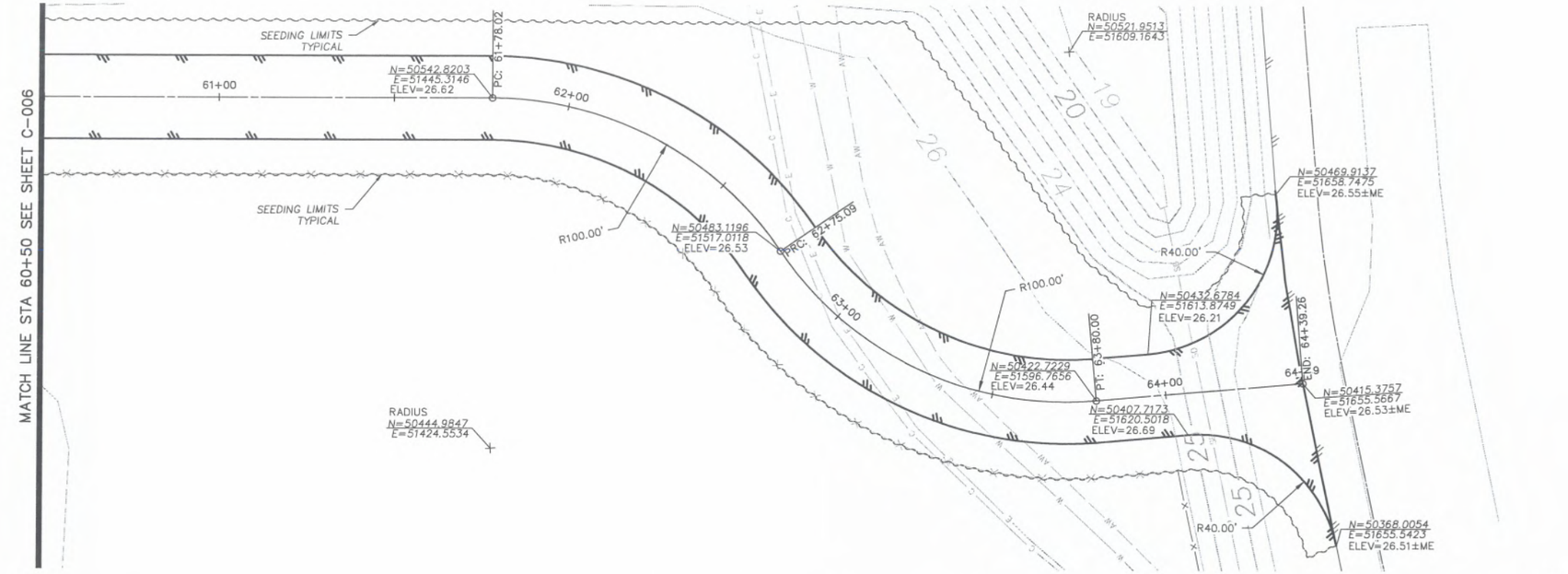
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

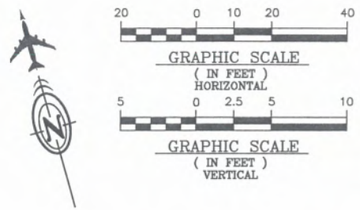
STATE OF ALASKA 49TH
Brian R. Hanson
CE 11132
5/15/12
REGISTERED PROFESSIONAL ENGINEER

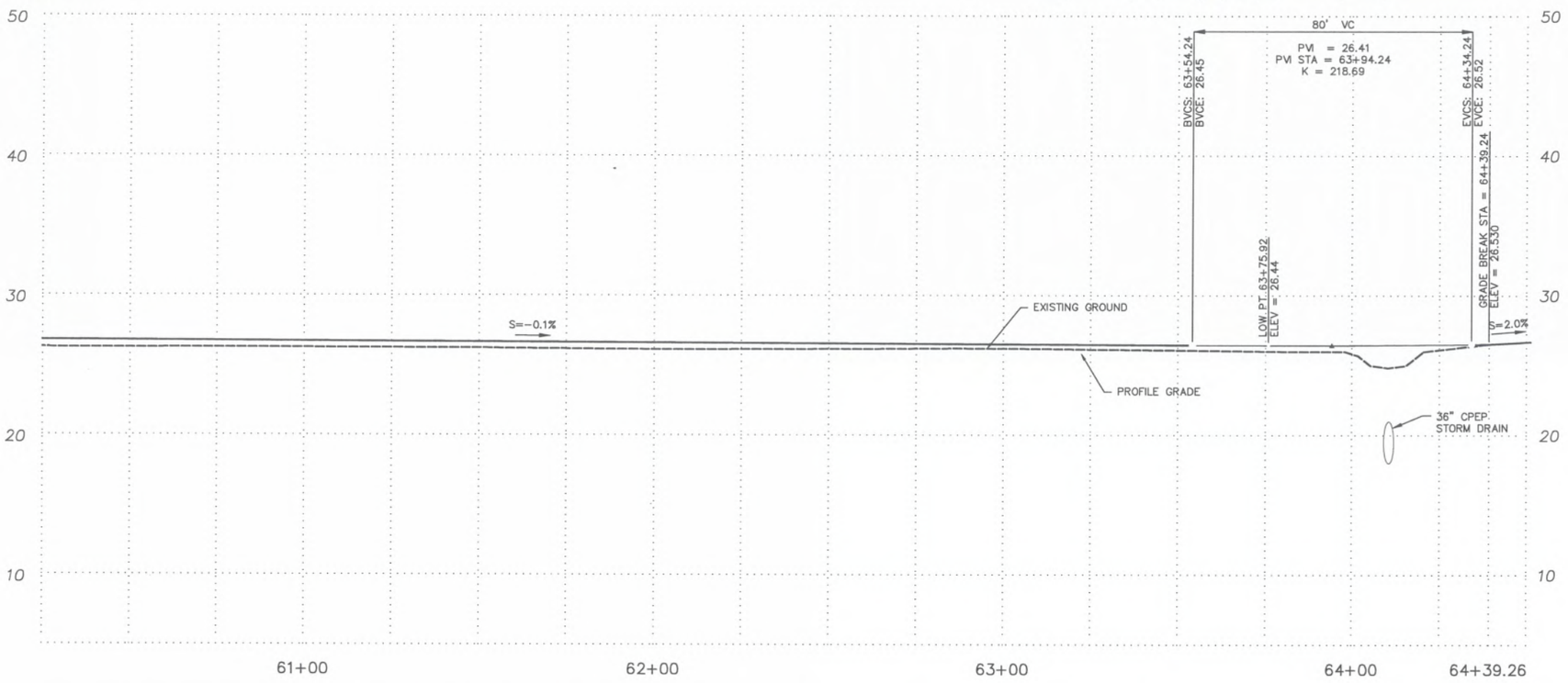
FRONTAGE ROAD PLAN & PROFILE

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-006







DOWL FILE No: 234-51

SCRIPT FILE:

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ECI/HYER ARCHITECTURE + INTERIORS
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PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

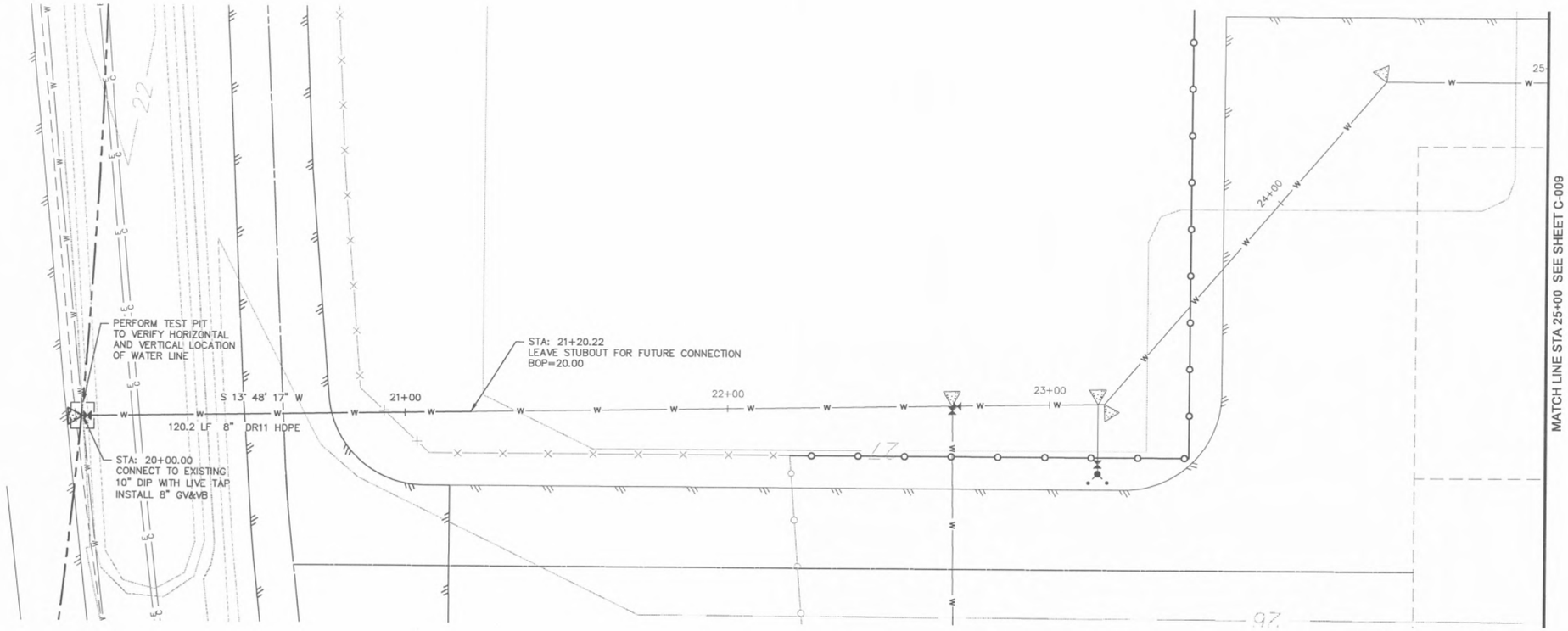
STATE OF ALASKA
49TH
Brian R. Hanson
CE 11132
5/18/12
REGISTERED PROFESSIONAL ENGINEER

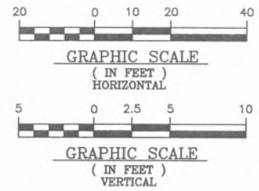
FRONTAGE ROAD PLAN & PROFILE

FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012

CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-007



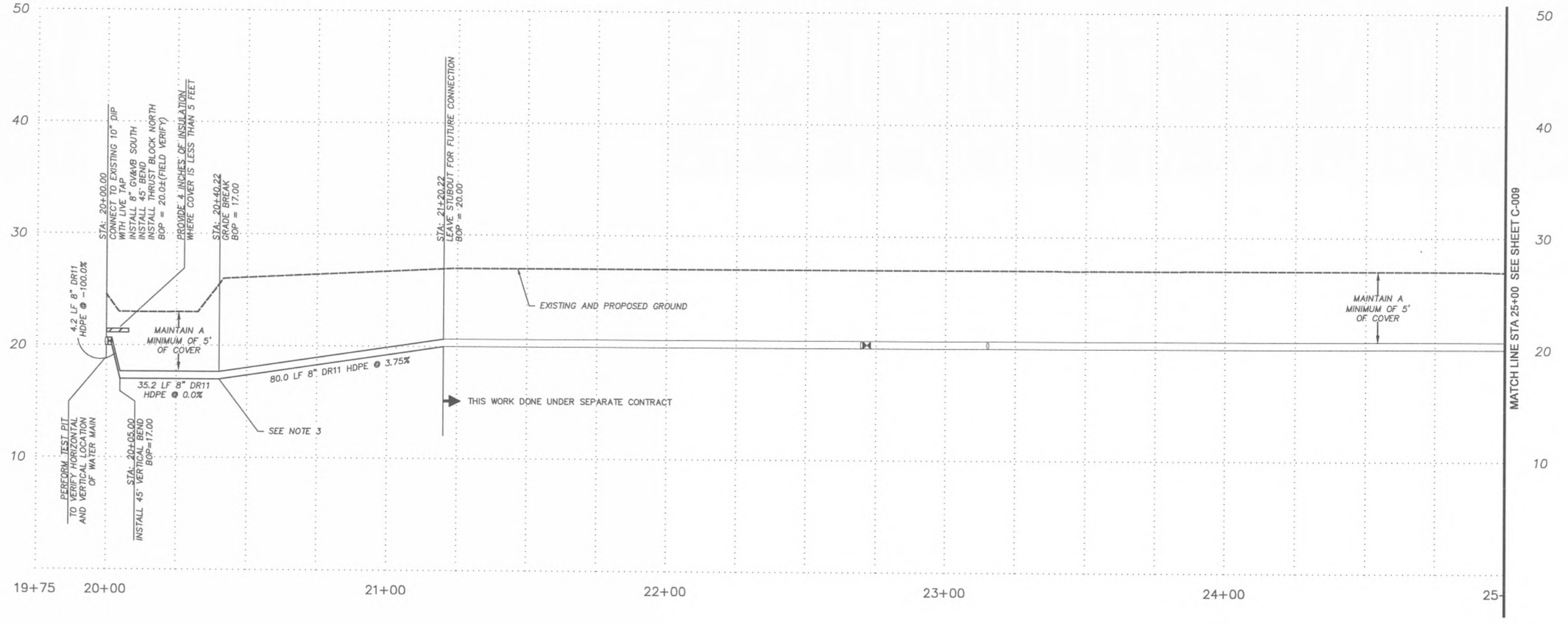


NOTES:

1. MAINLINE VALVES SHALL CONFORM TO CBJ STANDARD DRAWING 407.
2. ALL THRUST BLOCKS AND RESTRAINING BLOCKING SHALL CONFORM TO CBJ STANDARD DRAWINGS 414A AND 414B.
3. DEFLECT PIPE PER MANUFACTURERS WRITTEN RECOMMENDATIONS.

BEFORE YOU DIG
CALL FOR FREE
UNDERGROUND
LOCATION

Locate Call Center of Alaska
Anchorage Area.....278-3121
Statewide.....800-478-3121
who will notify subscribed utilities only.
Other utilities need to be contacted individually.



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ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

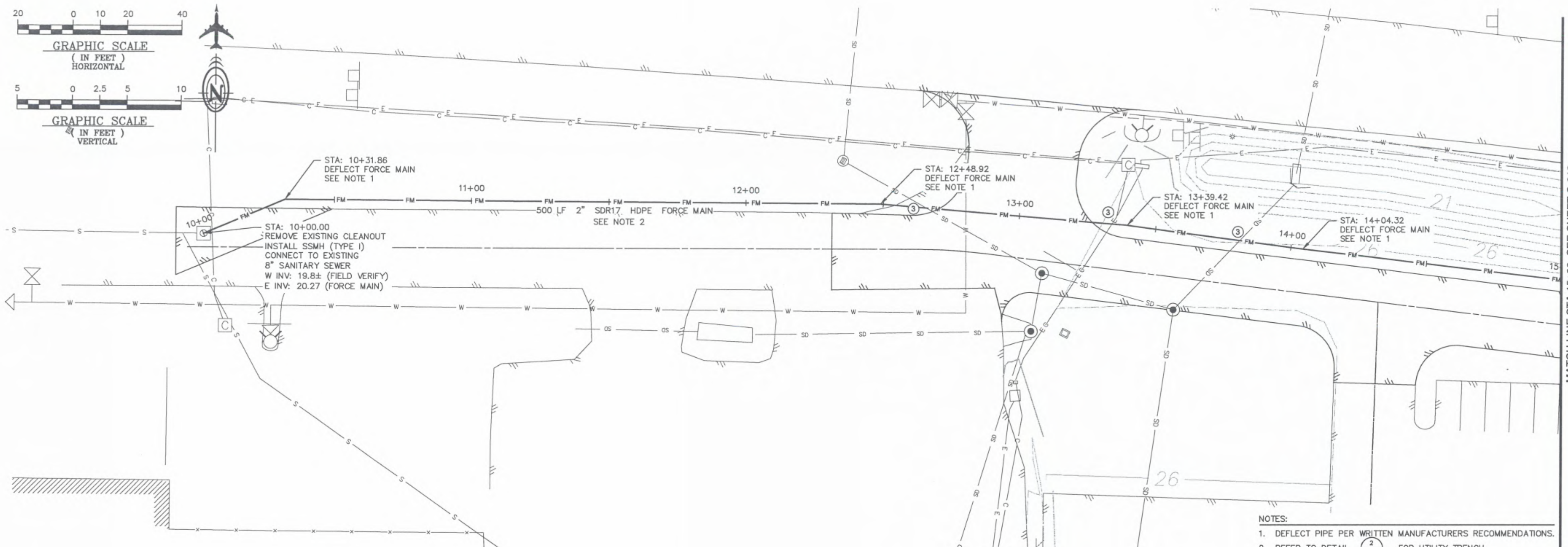
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH
Brian R. Hanson
CE 11132
REGISTERED PROFESSIONAL ENGINEER

WATER PLAN & PROFILE

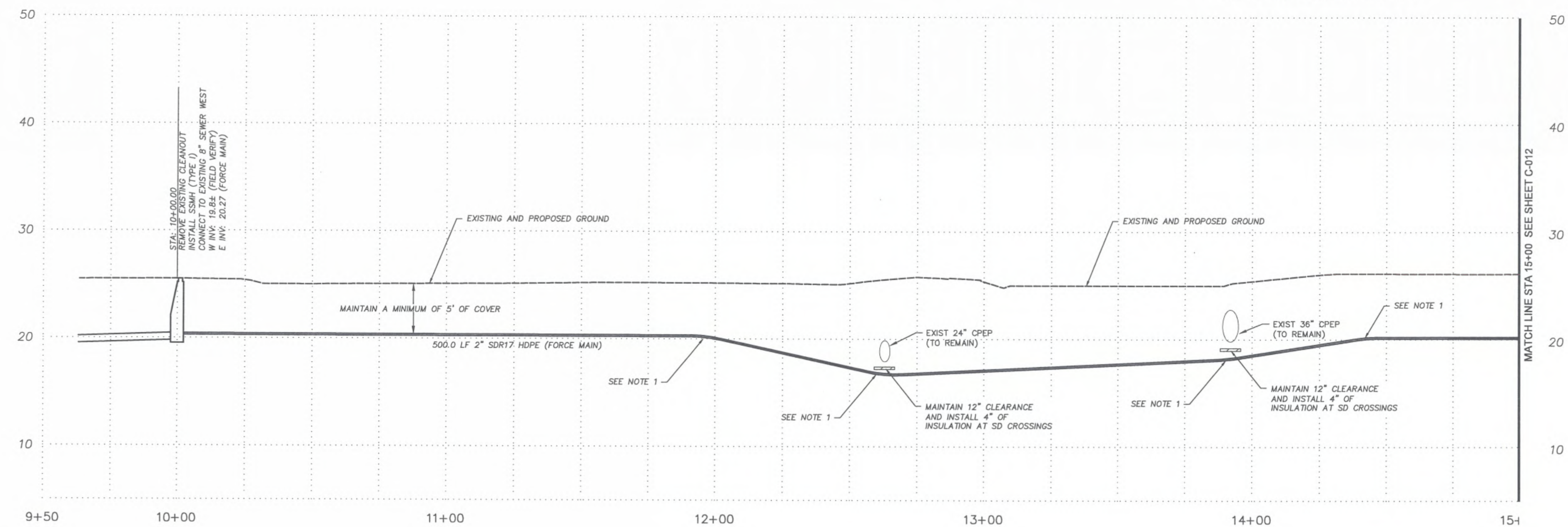
FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-008



NOTES:

1. DEFLECT PIPE PER WRITTEN MANUFACTURERS RECOMMENDATIONS.
2. REFER TO DETAIL 2/C-003 FOR UTILITY TRENCH
3. PROTECT AND SECURE EXISTING UTILITIES.



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ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

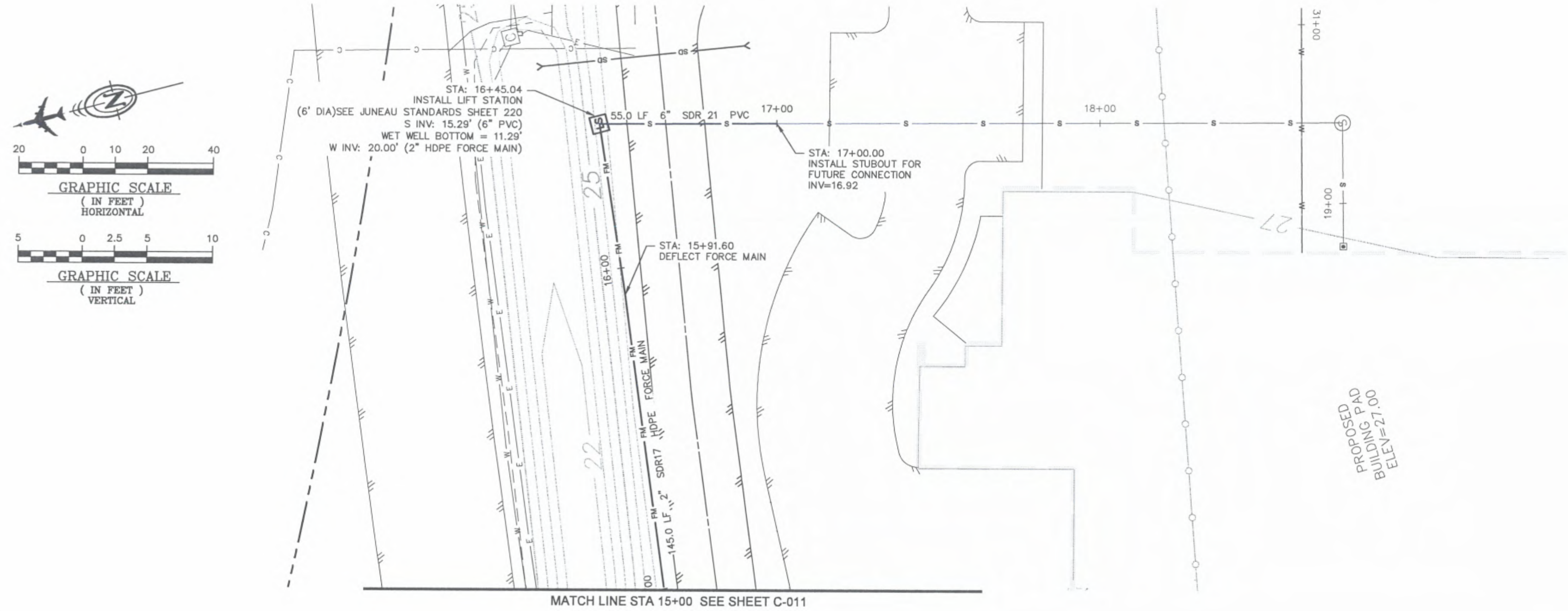
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

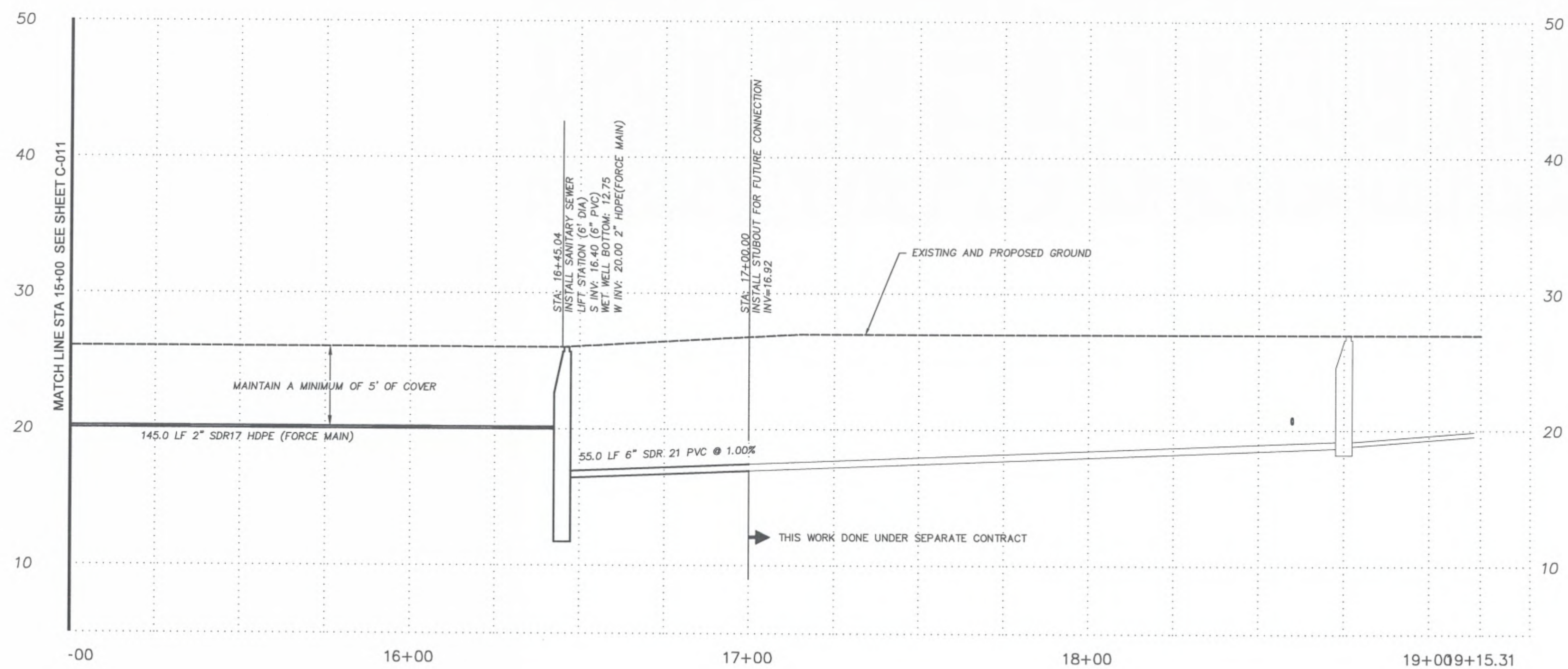
STATE OF ALASKA 49TH Brian R. Hanson CE 11132 5/18/12 REGISTERED PROFESSIONAL ENGINEER

SEWER PLAN & PROFILE

FILE NAME: CHECKED: BRH
AUTHOR: TJA
REVISIONS: JUNEAU CONTRACT #JNU E12-280
04/26/2012 FAA AIP #3-02-0133-051-2011

C-009





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ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH
Brian R. Hanson
CE-11132
5/3/12
REGISTERED PROFESSIONAL ENGINEER

SEWER PLAN & PROFILE

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-010

DOWL FILE No. 234-51

SCRIPT FILE:

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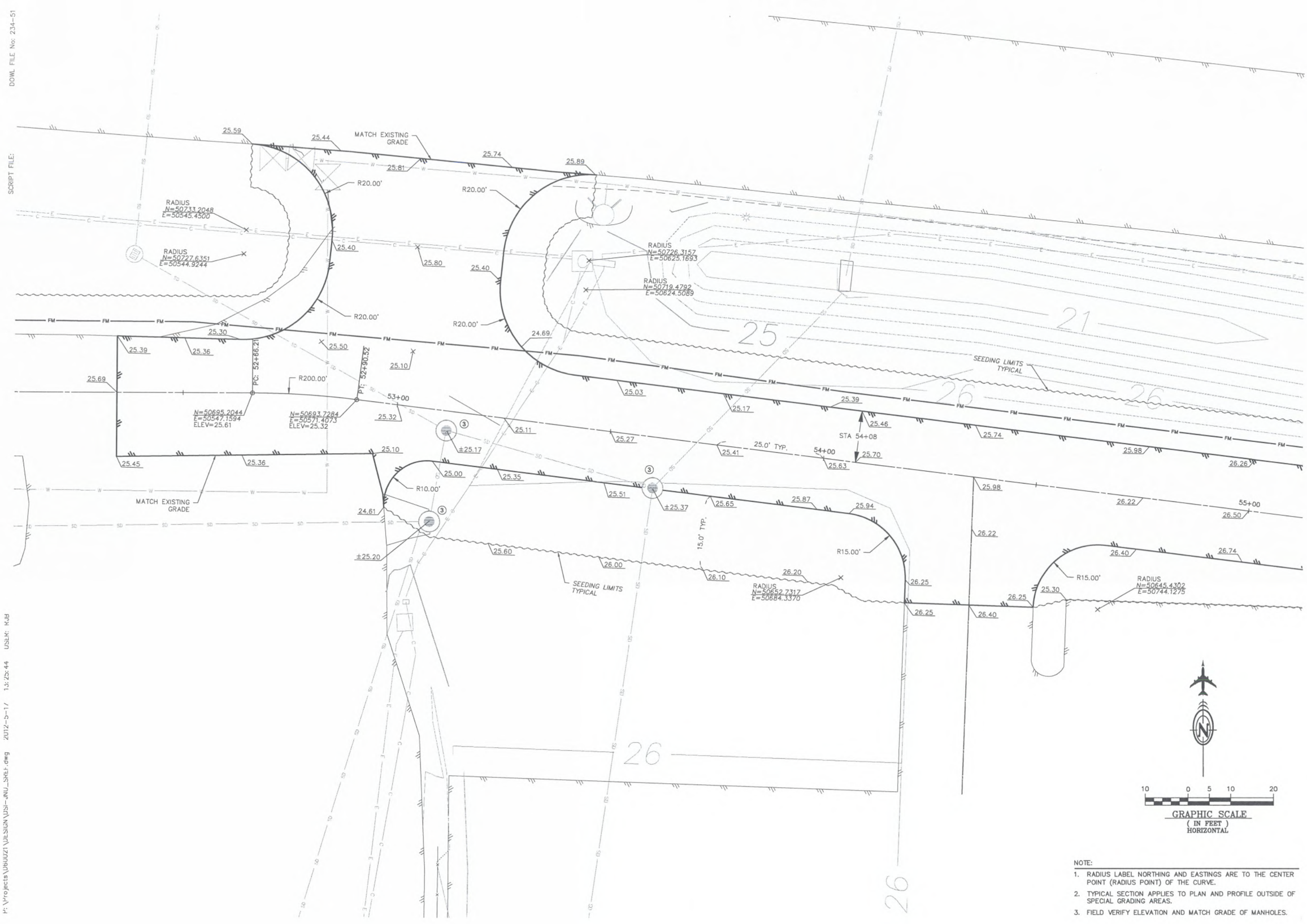

NOTE:

1. RADIUS LABEL NORTHING AND EASTINGS ARE TO THE CENTER POINT (RADIUS POINT) OF THE CURVE.
2. TYPICAL SECTION APPLIES TO PLAN AND PROFILE OUTSIDE OF SPECIAL GRADING AREAS.
3. FIELD VERIFY ELEVATION AND MATCH GRADE OF MANHOLES.

DOWL HKM
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PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH
Brian R. Hanson
CE 11132
5/16/12
REGISTERED PROFESSIONAL ENGINEER

GRADING PLAN

FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012

CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-011

DOWL FILE No: 234-51

SCRIPT FILE:

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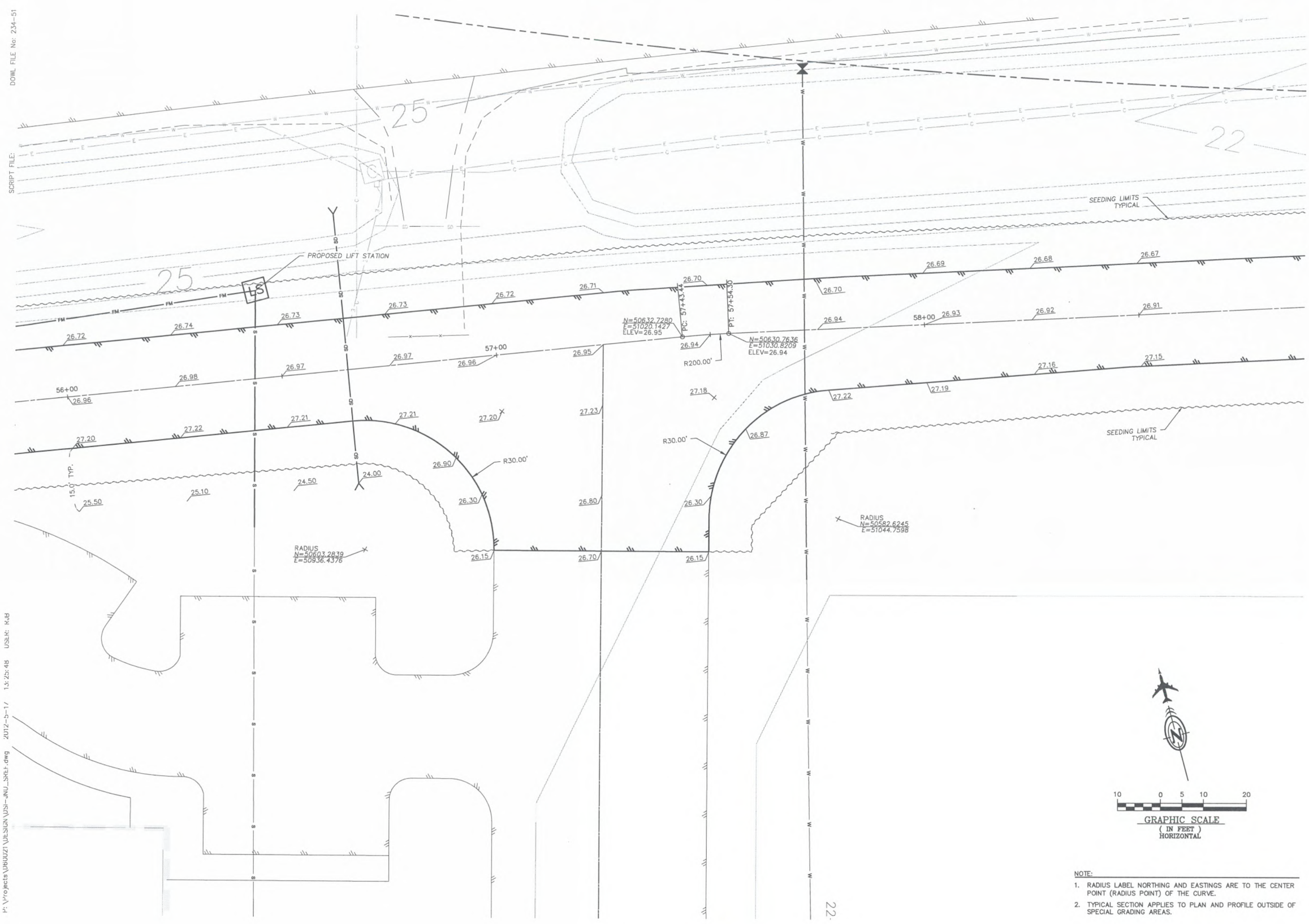

NOTE:

1. RADIUS LABEL NORTHING AND EASTINGS ARE TO THE CENTER POINT (RADIUS POINT) OF THE CURVE.
2. TYPICAL SECTION APPLIES TO PLAN AND PROFILE OUTSIDE OF SPECIAL GRADING AREAS.

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
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ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

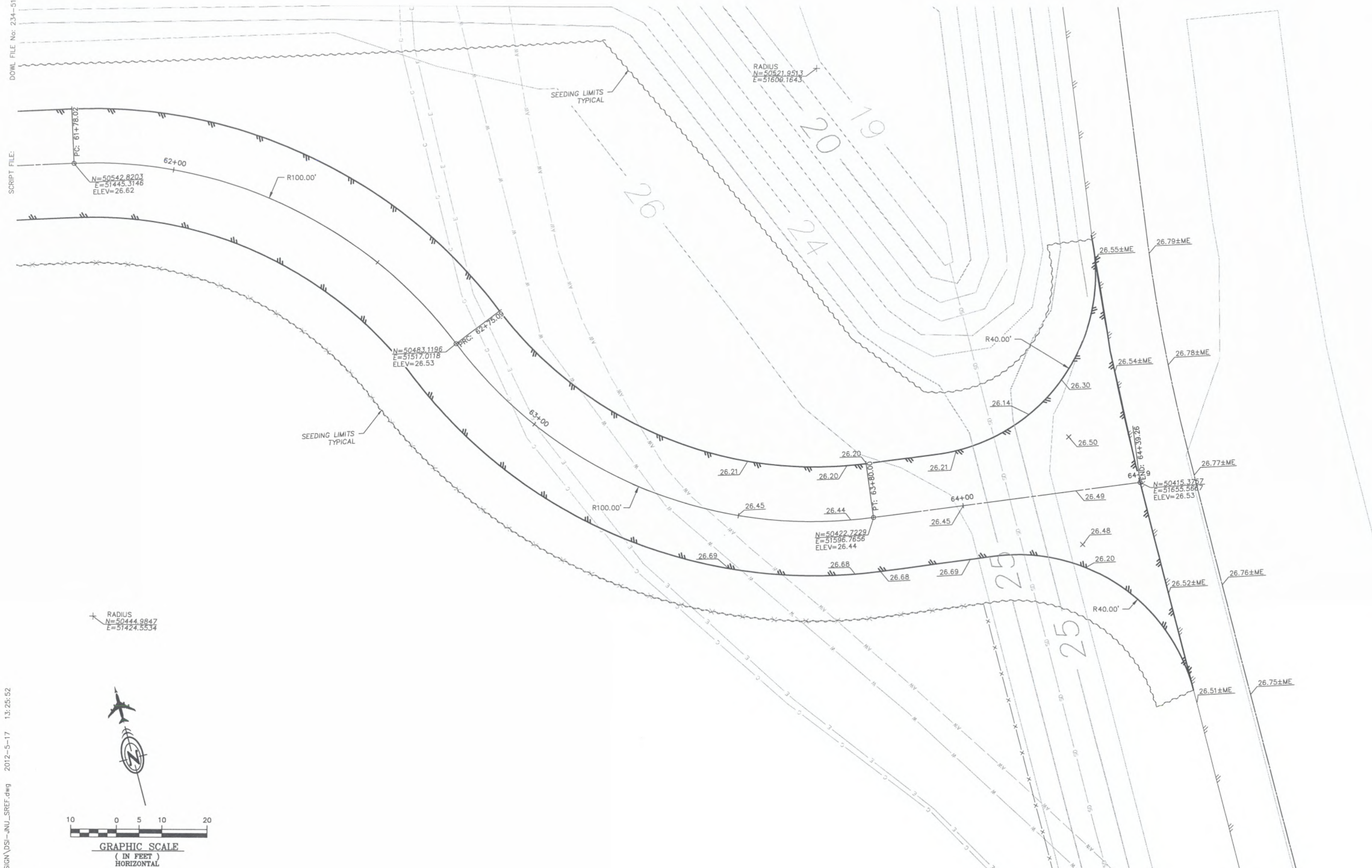
STATE OF ALASKA
49TH
Brian R. Hanson
CE 11132
5/3/12
REGISTERED PROFESSIONAL ENGINEER

GRADING PLAN

FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012

CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-012



NOTE:

1. RADIUS LABEL NORTHING AND EASTINGS ARE TO THE CENTER POINT (RADIUS POINT) OF THE CURVE.
2. TYPICAL SECTION APPLIES TO PLAN AND PROFILE OUTSIDE OF SPECIAL GRADING AREAS.

DOWL FILE No: 234-51

SCRIPT FILE:

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DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

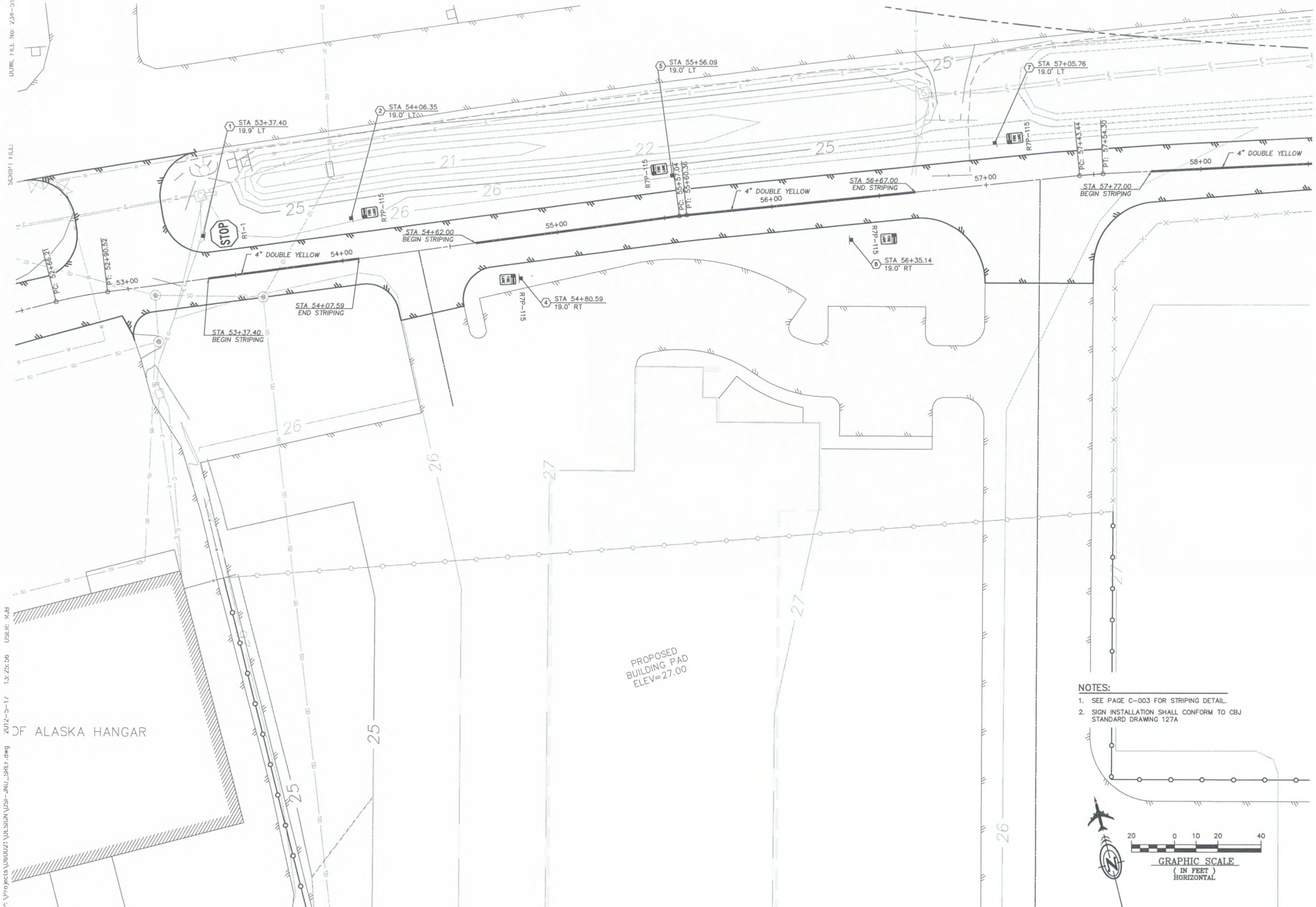
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH Brian R. Hanson CE 11132 5/18/12 REGISTERED PROFESSIONAL ENGINEER

GRADING PLAN

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-013



NOTES:

1. SEE PAGE C-003 FOR STRIPING DETAIL.
2. SIGN INSTALLATION SHALL CONFORM TO CBJ STANDARD DRAWING 127A

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH Brian R. Hanson CE 11132 5/18/12 REGISTERED PROFESSIONAL ENGINEER

SIGNING & STRIPING PLAN

FILE NAME:
AUTHOR: TJA CHECKED: BRH
REVISIONS: JUNEAU CONTRACT #JNU E12-280
04/26/2012 FAA AIP #3-02-0133-051-2011

C-014

DOWL FILE No. 234-51

SCRIPT FILE:

STA 58+59.44
19.0' LT
R7P-115

STA 60+06.45
19.0' LT
R7P-115

STA 61+61.38
19.0' LT
R7P-115

PC: 61+78.02

59+00

60+00

61+00

62+00

4" DOUBLE YELLOW

STA 58+59.44
19.0' RT
R7P-115

STA 60+06.45
19.0' RT
R7P-115

STA 61+61.38
19.0' RT
R7P-115

STA 62+71.18
19.0' LT
R7P-115

PRC: 62+75.09

63+00

PT: 63+80.00

64+00

END: 64+39.26

STA 64+09.00
END STRIPING

STA 63+25.29
19.0' RT
R7P-115

R1-1

STOP

STA 64+23.98
24.6' RT

NOTES:

1. SEE PAGE C-003 FOR STRIPING DETAIL.
2. SIGN INSTALLATION SHALL CONFORM TO CBJ STANDARD DRAWING 127A

20 0 10 20 40

GRAPHIC SCALE
(IN FEET)
HORIZONTAL

P:\Projects\DBUU21\DESIGN\DSN-JNU_SHEET.dwg 2012-5-1/ 1:51:26:00 USER: KJB

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ECI/HYER ARCHITECTURE + INTERIORS
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ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY

CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA
49TH
Brian R. Hanson
CE 11132
5/16/12
REGISTERED PROFESSIONAL ENGINEER

SIGNING & STRIPING PLAN

FILE NAME:
AUTHOR: TJA
CHECKED: BRH
REVISIONS:
04/26/2012
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-015

SHEET NO.	POST NO.	STATION	CL OFFSET	CL REF.	TYPE	LEGEND	DESCRIPTION	SIZE (ft) WIDTH	SIZE (ft) HEIGHT	AREA (ft2)	SIGN FACES	NO. POSTS, SIZE, & TYPE.	THICKNESS FRAMED YES	THICKNESS FRAMED NO	REMARKS
C-014	1	53+37.40	19.90'	LT	R1-1		STOP SIGN	2.50	2.50	5.18	SE	1 - 2.5"x2.5" PT		0.125"	
C-014	2	54+06.35	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-014	4	54+80.59	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-014	5	55+56.09	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-014	6	56+35.14	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-014	7	57+05.76	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-015	9	58+59.44	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-015	10	58+59.44	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-015	11	60+06.45	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-015	12	60+06.45	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-015	13	61+61.38	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-015	14	61+61.38	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-015	15	62+71.18	19.00'	LT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	SE				
C-015	16	63+25.29	19.00'	RT	R7P-115		NO PARKING FIRE LANE SIGN	1.00	1.50	1.50	NW				
C-015	17	64+23.98	24.60'	RT	R1-1		STOP SIGN	2.50	2.50	5.18	W	1 - 2.5"x2.5" PT		0.125"	

DOWL HKM
ECI/HYER ARCHITECTURE + INTERIORS
101 WEST BENSON BOULEVARD, SUITE 306
ANCHORAGE, ALASKA 99503 907.561.5543
PROJECT NO. 0308 / DOWL HKM D60021

JUNEAU INTERNATIONAL AIRPORT
SNOW REMOVAL EQUIPMENT FACILITY
CONSTRUCTION DOCUMENTS - SITE INFRASTRUCTURE

STATE OF ALASKA 49TH
Brian R. Hanson
CE 11132
5/15/12
REGISTERED PROFESSIONAL ENGINEER

SIGN SCHEDULE
FILE NAME:
AUTHOR: TJA
REVISIONS:
04/26/2012

CHECKED: BRH
JUNEAU CONTRACT #JNU E12-280
FAA AIP #3-02-0133-051-2011

C-016