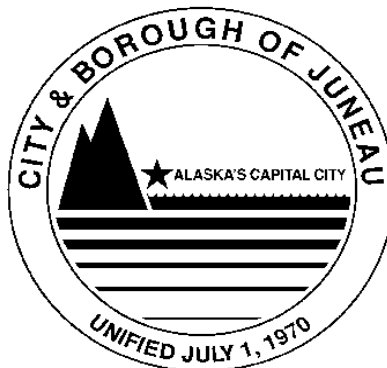


DOWNTOWN SEAWALK – BRIDGE TO GOLDCREEK

VOLUME I OF II

Contract No. E16-011

File No. 1655



ENGINEERING DEPARTMENT

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SECTION 00010 – SPECIAL NOTICE TO BIDDERS

PART 1 – GENERAL

1.1 SPECIAL NOTICE

- A. Bidders are hereby alerted that this Project, Downtown Seawalk – Bridge to Gold Creek, CBJ Contract No. E16-011, is subject to a Project Labor Agreement (PLA). It shall be understood that the PLA is an exclusive agreement between the eventual Contractor (and Subcontractors) and the organized labor unions. The City and Borough of Juneau (also known as Owner), and the Design Professionals of Record are not members of this agreement and play no role in its implementation or administration.
- B. Bidders are hereby alerted that pursuant to the PLA for Downtown Seawalk – Bridge to Gold Creek Project, CBJ Contract No. E16-011, not less than 20% of the labor hours on the Project shall be performed by apprentice labor detailed in Article 14 – APPRENTICES of the PLA.
- C. Bidders may contact the following individuals (as appropriate) with any questions pertaining to the provisions of the PLA, covered trades and crafts, or the specific manner in which their involvement in the PLA will be administered. **A copy of each current labor agreement for the organizations below is available on a CD-ROM from the CBJ Engineering Department Contracts Office upon request – 907-586-0490.** *No portion of the attached Project Labor Agreement may be changed without agreement by both the Contractor and the Juneau Building and Construction Trades Council.*

**Directory of Unions Signatory to the Downtown Seawalk -
Bridge to Gold Creek – CBJ Contract No. E16-011
Project Labor Agreement**

Union Name	Contact	Telephone	Fax	E-mail Address
Carpenters Local 1287	Kirk Perisich	907 586-3675	907 586-3675	kperisich@nwcarpenters.org
Cement Masons Local 867	Tom Frohlich	907 272-5113	907 272-4387	opcm867@alaska.com
Electrical Workers Local 1547	Rodney Hesson	907 586-3050	907 586-9614	rhesson@ibew1547.org
Ironworkers Local 751	Paul Carr	907 563-4766	907 563-2855	iw751@alaska.net
Laborers Local 942	Tom Brice	907 586-2860	907 586-5757	tom@local71.com
Operators Local 302	Cory Baxter	907 586-3050	907 463-5464	cbaxter@iuoe302.org
Painters Local 1959	Bronson Frye	907 562-8843	907 563-8843	bfrye@local1959.org
Plumbers Local 262	Max Mielke	907 586-2874	907 463-5116	lu262bm@uanet.org
Teamsters Local 959	Joe Rintala	907 586-3225	907 586-1227	jrintala@akteamsters.com
Juneau Bldg. Trades Council	Rodney Hesson	907 586-3050	907 586-9614	rhesson@ibew1547.org

- D. A full copy of the proposed PLA is provided on the following pages.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

PREAMBLE

This Agreement is entered into this _____ day of _____, 2015, by and between _____ Construction Co. (hereinafter referred to as the "Employer") and the Juneau Building and Construction Trades Council and those of its affiliated Local Unions which have signed this agreement through their duly authorized officers (hereinafter referred collectively to as the "Union" or "Unions").

The Project is defined as follows:

Downtown Seawalk – Bridge to Gold Creek, CBJ Contract No. E16-011

The Union wishes to preserve work traditionally performed by employees represented by the Unions. The Employer recognizes the need for gaining ready access to and retaining a competent work force within the local community and Alaska. The Employer also wishes to provide training and employment opportunities for local and Alaskan workers and veterans through registered, apprenticeship programs with proven track records in graduating skilled apprentices. One important objective in doing so is to ensure a ready supply of labor is also available for future City & Borough of Juneau projects and other projects. The Employer also wishes to secure a cost savings by employing skilled apprentices enrolled in bona fide apprenticeship & training programs at a reduced rate.

The Unions recognize and respect the Employer's need to ensure that construction work for large scale or serial projects dependent upon each other for completion, in both the private and public sectors, proceed continuously and without interruption, as efficiently and economically as possible.

In consideration of the above, the parties agree that the construction work associated with the Downtown Seawalk – Bridge to Gold Creek, CBJ Contract No. E16-011, (the "Project") shall be performed by workers secured through referral halls pursuant to this Agreement. The Unions agree to such modifications to their respective construction agreements, work rules, customs and practices as are incorporated into, inherent in, or implied by this Agreement.

ARTICLE 1 PURPOSE

1.01 The purpose of this Agreement is to establish and maintain harmonious relations between all parties to this Agreement, to secure optimum productivity, to ensure an adequate supply of competent, skilled, and qualified local and Alaskan crafts people today and on future Projects, and to ensure labor stability by eliminating strikes, work stoppages, lockouts, slowdowns, or delays in the prosecution of the work undertaken by the Employer. The Parties recognize the need for the timely, cooperative completion of the Project without interruption or delay. This Agreement is intended to enhance this cooperative effort through the establishment of a framework for labor-management cooperation and stability.

1.02 The parties agree to, establish and put into practice effective and binding methods for the settlement of all misunderstandings, disputes, or grievances that may arise between the Union or its members and the Employer so that the Project is assured of complete efficiency and continuity of operation, without slowdown or interruption of any kinds, and labor-management peace is maintained.

ARTICLE 2 EFFECTS OF OTHER AGREEMENTS

2.01 The provisions of this Agreement shall apply to the work described in Article 3, regardless of provisions of local or national union agreements and local work rules, customs and practices except where provision of other such agreements, rules, customs and practices are specifically noted or adopted elsewhere in this Agreement. Otherwise, the full and complete agreement between the signatory parties is embodied in this Agreement.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

ARTICLE 3 SCOPE OF THE AGREEMENT

3.01 This Agreement shall be applicable to the recognized and accepted work falling within the historical definition of new construction under the direction of and performed by the Employer, and all contractor(s), of whatever tier who are awarded contracts for such work on the Project. Such work shall include site preparation work and dedicated off-site work specifically including supply of concrete and excavation work.

This Agreement shall not apply to field personnel or non-manual employees of the Employer including but not limited to executives, engineers, surveyors, surveyor assistants, draftsmen, supervisors, assistant supervisors, timekeepers, messengers, office workers and guards.

It is understood that this is a self-contained, stand-alone Agreement and that by virtue of having become bound to this Project Agreement, neither the Employer, nor any contractors at any tier will be obligated to sign any other local, area, or national agreement.

This Agreement expressly does not apply to:

- A. All employees of the public or private owner of the Project and of the Employer who do not perform manual labor.
- B. Any equipment and machinery owned or controlled and operated by the public owner.
- C. Any work performed on or near, or leading to or into, the Project site by governmental bodies, or their contractors, or by public utilities or their contractors (for work which is not part of the Project).
- D. Off-site maintenance of leased equipment under warranty and on-site supervision of such work.
- E. Delivery of items or materials is not subject to this Agreement if such materials are delivered by persons who does not perform any work on the Project site or common carriers.

3.02 Nothing in this Agreement shall limit the right of the Employer to subcontract work or to select its subcontractors. The Employer shall notify each subcontractor at whatever tier of the provisions of this Agreement, and shall require each such subcontractor performing work within the scope of this Agreement to sign and comply with the provisions of this Agreement before commencing work.

3.03 Repairs of any defects in manufactured equipment that must be completed prior to acceptance or is covered by the warranty of the supplier or manufacturer may be supervised by the supplier's or manufacturer's personnel at the Employer's construction site.

When the warranty requirements are such as to require the repair to be completed with the supplier's or manufacturer's personnel, warranty mechanics shall supervise and perform actual work on equipment, machinery, or materials. (It is generally understood that work of the type described above is proprietary in nature. This Section shall not be utilized to circumvent the intent of this Agreement.)

ARTICLE 4 NON-DISCRIMINATION

4.01 The Employer and the Union agree that they will not unlawfully discriminate against any employee or applicant for employment because of race, creed, sex, color, age, national origin, physical, mental or sensory handicap, status as a veteran of the United States Armed Forces or membership or non-membership in the Union. This non-discrimination policy will include, but is not limited to, the following: employment, upgrading, demotions or transfer, layoff or termination, rates of pay or forms of compensation, recruitment or recruitment advertising, and selection for training, including apprenticeship.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

4.02 Where the masculine or feminine gender has been used in any job classification or in any provision in this Agreement, it is used solely for the purpose of illustration and shall not in any way be used to designate the sex of the employee eligible for the position or the benefits of any other provisions.

ARTICLE 5 MANAGEMENT RIGHTS

5.01 The Employer retains full and exclusive authority for the management of its operations, except as expressly limited by other provisions of this Agreement.

The Employer shall direct its working forces at its sole prerogative, including, but not limited to hiring, promotion, transfer, lay-off or discharge for just cause. No rules, customs, or practices shall be permitted or observed which limit or restrict production, or limit or restrict the working efforts of employees. The Employer shall utilize the most efficient method or techniques of construction, tools, or other labor-saving devices. There shall be no limitations upon the choice of materials or design. The Employer shall schedule work in accordance with applicable local collective bargaining agreements except as otherwise expressly limited in this Agreement.

5.02 Except as otherwise expressly stated in this Agreement, there shall be no limitation or restriction upon the Employer's choice of materials or design, nor, regardless of source or location, upon the full use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials, tools, or other labor-saving devices. The Employer may without restriction install or otherwise use materials, supplies or equipment regardless of their source. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that other personnel having special talents or qualifications may participate in the installation, check-off or testing of specialized or unusual equipment.

5.03 The foregoing enumeration of management rights shall not be deemed to exclude other functions not specifically set forth. The Employer, therefore, retains all legal rights not specifically limited by this Agreement.

5.04 The Employer has the absolute right to select any qualified bidder for the award of contracts on this Project without reference to previous union affiliation or the existence or non-existence of any agreements between such bidder and any party to this Agreement provided, however, only that such bidder is willing, ready and able to execute and comply with this Agreement, should it be designated the successful bidder. It is agreed that all subcontractors who have been awarded contracts for work covered by this Agreement on or after the effective date of this Agreement shall be required to accept, sign, and be bound by the terms and conditions of this Agreement.

ARTICLE 6 UNION REPRESENTATION

6.01 The Employer recognizes the Unions signatory to this Agreement as the sole and exclusive bargaining representatives with respect to rates of pay, hours, and other conditions of employment for the job classifications contained in the appropriate Local Union agreements and Schedule A's for this Project.

6.02 Authorized representatives of the Union shall have access to the Project provided they do not interfere with the work of employees, and further provided, that they comply with posted security and safety rules of the Project.

6.03 The selection of stewards shall be in accordance with the terms contained in the appropriate Local Union agreement, except that the Employer agrees to notify the appropriate Union twenty-four hours prior to termination of a steward, except in the case of discipline or discharge for cause. In any case in which a steward is discharged or disciplined for cause, the appropriate Union shall be notified immediately by the Employer.

For the purpose of this provision, "cause for discharge" shall mean: incompetence; unexcused absenteeism; disobedience of orders; unsatisfactory performance of duties; and violation of posted Project rules of conduct.

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Stewards shall be qualified workmen assigned to a crew and shall perform the work of their craft. Activities on behalf of a Union shall not unreasonably interfere with their work for the Employer.

6.04 All employees covered by this Agreement shall be required as a condition of employment for this Project only to apply for and become members of and to maintain memberships in the respective Unions, or they may pay and remain current in the payment of such reasonable fees as are established for non-members by each Union within eight days following the beginning of their employment or the effective date of this Agreement, whichever is later. All requests to discharge an employee for failure to obtain and maintain membership or pay non-membership fees shall be in writing and the Employer agrees that it will, upon receipt of such notice, dismiss such employee or employees from their services. The Unions agree to defend any charge or suit made or brought against the Employer as the result of a request for an employee's termination or dismissal, pursuant to the provisions of this Article and to indemnify and hold the Employer harmless.

6.05 The Employer and subcontractors will deduct working membership dues, assessments and non-membership fees in the amount designated by a particular Union, provided that the employee has executed a written assignment calling for such deduction and provided it to the Employer. It is understood and agreed that the Employer assumes no liability in connection with dues or fee collection, except for ordinary diligence and care in transmittal of the monies to the appropriate Local Union. Once a month the Employer will remit to the Union the dues deducted on or before the fifteenth day of each month following the month of accrual.

ARTICLE 7 HIRING PROCEDURES

7.01 For Unions having a hiring hall or job referral system in their local agreements, the Employer agrees to be bound by such system and it shall be used exclusively by the employer. Such system must be operated in accordance with federal and Alaska law applicable at the time of hire, and the conditions set forth in this Article.

7.02 The Employer retains the right to reject any applicant for employment. The Union shall have the right to refer applicants to the Employer on a preferential basis for a limited period determined by each union's local agreement, which generally is no more than forty-eight (48) hours. The Unions have no right to compel the Employer to hire any such applicants.

7.03 The selection of applicants by a Union for referral to jobs shall be on a non-discriminatory basis and in accordance with the President's Executive Order 11246 and Title VII of the Civil Rights Act of 1964, as amended, and shall not be based on, or in any way affected by, current or previous union membership, or the lack thereof.

7.04 All of the foregoing hiring procedures, including affected apprenticeship and training, will be operated so as to permit the Employer to meet its statutory Equal Employment Opportunity obligations.

7.05 The foregoing hiring procedures shall be operated in compliance with any obligation imposed by statute requiring preference in employment for residents of Alaska.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

ARTICLE 8 WORK STOPPAGES AND LOCKOUTS

8.01 During the term of this Agreement, there shall be no strikes, picketing, work stoppages, slowdowns, or other disruptive activity for any reason by the Union or by any employee and there shall be no corresponding lockout by the Employer.

8.02 The Union shall not be liable for acts of employees for which it has no responsibility. The Union will immediately instruct, order, and use the best efforts of its office to cause any member or group of members to cease any violations of this Article. When the Union complies with its obligation concerning the above described activity, it shall not be liable for unauthorized acts of its members. The failure of the Employer to exercise its rights in any instance shall not be deemed a waiver of its rights in any other instance.

ARTICLE 9 STANDARDIZED GRIEVANCE PROCEDURES

Section 1. This Agreement is intended to provide close cooperation between management and labor. Each of the Unions will assign a representative to this Project for the purpose of completing the construction of the Project economically, efficiently, continuously, and without interruptions, delays, or work stoppages.

Section 2. The Contractors, Unions, and the employees, collectively and individually, realize the importance to all parties to maintain continuous and uninterrupted performance of the work of the Project, and agree to resolve disputes in accordance with the grievance-arbitration provisions set forth in this Article.

Section 3. Any question or dispute arising out of and during the term of this Project Agreement (other than trade jurisdictional disputes) shall be considered a grievance and subject to resolution under the following standardized procedures:

Step 1. (a) When any employee subject to the provisions of this Agreement feels he or she is aggrieved by a violation of this Agreement, he or she, through his or her local union business representative or job steward, shall, within five (5) working days after the occurrence of the violation, give notice to the work-site representative of the involved Contractor stating the provision(s) alleged to have been violated. The business representative of the local union or the job steward and the work-site representative of the involved Contractor and the Project Contractor shall meet and endeavor to adjust the matter within three (3) working days after timely notice has been given. The representative of the Contractor shall keep the meeting minutes and shall respond to the Union representative in writing (copying the Project Contractor) at the conclusion of the meeting but not later than twenty-four (24) hours thereafter. If they fail to resolve the matter within the prescribed period, the grieving party may, within forty-eight (48) hours thereafter, pursue Step 2 of the Grievance Procedure, provided the grievance is reduced to writing, setting forth the relevant information concerning the alleged grievance, including a short description thereof, the date on which the grievance occurred, and the provision(s) of the Agreement alleged to have been violated.

(b) Should the Local Union(s) or the Project Contractor or any Contractor have a dispute with the other party and, if after conferring, a settlement is not reached within three (3) working days, the dispute may be reduced to writing and proceed to Step 2 in the same manner as outlined herein for the adjustment of an employee complaint.

Step 2. The Local Union Representative and the involved Contractor shall meet within seven (7) working days of the referral of a dispute to this second step to arrive at a satisfactory settlement thereof. Meeting minutes shall be kept by the Contractor. If the parties fail to reach an agreement, the dispute may be appealed in writing in accordance with the provisions of Step 3 within seven (7) calendar days thereafter.

Step 3. (a) If the grievance has been submitted but not adjusted under Step 2, either party may request in writing, within seven (7) calendar days thereafter, that the grievance be submitted to an Arbitrator

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mutually agreed upon by them. The Contractor and the involved Union shall attempt mutually to select an arbitrator, but if they are unable to do so, they shall request the American Arbitration Association to provide them with a list of arbitrators from which the Arbitrator shall be selected. The rules of the AAA shall govern the conduct of the arbitration hearing. The decision of the Arbitrator shall be final and binding on all parties. The fee and expenses of such Arbitration shall be borne equally by the Contractor and the involved Local Union(s).

(b) Failure of the grieving party to adhere to the time limits established herein shall render the grievance null and void. The time limits established herein may be extended only by written consent of the parties involved at the particular step where the extension is agreed upon. The Arbitrator shall have the authority to make decisions only on issues to him or her, and he or she shall not have authority to change, amend, add to or detract from any of the provisions of this Agreement.

Section 4. The Project Contractor and Owner shall be notified of all actions at Steps 2 and 3 and shall, upon their request, be permitted to participate in all proceedings at these steps.

ARTICLE 10 JURISDICTIONAL DISPUTES

10.01 There will be no strikes, no work stoppages or slowdowns, or other interference with the work because of jurisdictional disputes.

10.02 Work shall be assigned by the Employer in accordance with the procedural rules of the Impartial Jurisdictional Disputes Board or its successor agency and jurisdictional disputes will be settled in accordance with the procedure rules and decisions of the Board.

10.03 Where a jurisdictional dispute involves any Union or Employer not a party of the procedures established by the Impartial Jurisdictional Disputes Board and is not resolved between the Unions, it shall be referred for resolution to the Juneau Building and Construction Trades Council ("Council"). The nature of the dispute shall be reduced to writing, signed by the representatives of the Local Union(s) involved and presented to the Council for resolution. The Unions party to the dispute will have fifteen (15) minutes each to present their side of the argument at a special meeting of the Council scheduled as soon as possible after submission of the dispute to it by the parties, but in no event more than 5 working days thereafter. All representatives of the parties to the dispute shall leave the room after the parties' presentations and the affiliated Unions will then vote. There will be only one (1) vote per affiliate; the decision will be determined by majority vote of the affiliates present and voting. The Unions and the Employer agree to abide and be bound by the decision of the Council. The disputed work shall continue to be performed as assigned by the Employer until the dispute has been resolved. The Employer shall be held harmless against and will not be required to provide any back pay or other make whole remedy to the prevailing union in the event the Council determines that a mistake was made in the assignment(s) of work. The Employer will implement any change in work assignment (s) required by the decision of the Council, as soon as possible after receiving notice of the Council's decision.

ARTICLE 11 SAFETY AND HEALTH

11.01 The Employer and employees shall comply with all applicable provisions of state and federal laws and regulations relating to job safety and safe work practices and with the Employer's own Safety meetings will be scheduled and conducted periodically (but not less than once per week) by the Employer.

11.02 All employees shall be required to use appropriate, personal, protective equipment as is or may be prescribed by state or federal safety and health standards or by the Employer. Failure of employees to use such equipment shall be grounds for disciplinary action including dismissal.

11.03 Where an unsafe condition is alleged to exist, the affected employee shall first notify his or her immediate supervisor who shall make any necessary corrective action. If the parties fail to resolve any difference or disagreement over the existence of such an unsafe condition or the appropriate corrective measure to be taken, the

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

issue shall be referred for final and binding resolution under the procedures of Article 9 exclusively, which procedures shall be expedited.

11.04 No employee may be required to work in circumstances which place that employee in imminent danger of physical harm or injury, except that the employee may not make any such claim a pretext for refusing to carry out a work assignment for engaging in concerted activity in violation of Article 8.

11.05 It will not be a violation of this Agreement for the Employer to shut down a job, or a portion thereof, because, in the Employer's judgment, there exists an emergency situation that could endanger the life and safety of an employee. In such cases, employees will be compensated only for the actual time worked or for standby time requested by the Employer.

ARTICLE 12 WAGES, HOURS, AND WORKING CONDITIONS

12.01 Wages, Rates and Fringe Benefits.

a. All employees covered by this Agreement shall be classified in accordance with Alaska Statute Title 36, Public Contracts. This shall be applicable to all contractors and subcontractors.

b. The Employer shall make contributions to the established fringe benefit funds in the amounts designated in the appropriate Union agreement and its Schedule A.

c. When the Employer(s) contribute(s) fringe benefit payments into local, regional, or national trust funds, the Employer agrees to be bound to all lawful terms and conditions of such trust agreements, and all amendments thereto.

12.02 Workweek and Workday

a. Regular Workweek and Workday. The regular workweek shall be five consecutive days falling within Monday through Saturday. Where a single shift is worked, the regular workday shall be eight consecutive hours between 6:00 a.m. and 6:00 p.m., exclusive of a meal period of not less than one-half hour. Nothing herein shall preclude the employer from scheduling any workday in excess of eight hours or a workweek in excess of forty hours. The Employer shall determine and establish the work starting times at any time between 6:00 a.m. and 8:00 a.m. All work performed before the regular starting time or after eight consecutive hours shall be paid at the regular overtime rate, except that under conditions beyond the control of the parties to this Agreement (such as concrete paving, concrete pouring, asphalt and road oiling work) or on work requiring special crews, or when the job or weather conditions warrant, the work starting time shall be mutually arranged to fit such conditions without penalty or premium payment. Other starting times, including staggered starting times, may be mutually agreed upon by the parties without premium pay.

b. Four-Ten Hour Workweek (4-10's) With notification to the employees prior to the end of their workweek, the Employer may schedule, with the consensus of the majority of the crew, a workweek of four (4) consecutive ten (10) hour workdays between Monday and Saturday within the standard starting times as stated in 12.01 (a) at the straight time rate of pay. Any work in excess of ten (10) hours on scheduled workdays shall be paid at the overtime rate of pay, and overtime shall be paid for any hours in excess of forty (40) in any workweek.

12.03 Meal Period. The Employer will schedule a meal period of not less than one-half hour, or more than one hour's duration at approximately the mid-point of the scheduled shift regardless of such shift duration (8, 10, or 12 hours). The Employer shall make an earnest effort not to work employees six hours without a meal period. If the Employer finds it is necessary to work employees beyond six hours without a meal period, the employees shall be allowed a later meal period, and it shall be considered time worked and paid for at the proper overtime rate.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

12.04 Overtime.

a. All work performed in excess of eight consecutive hours in any one day or forty hours in any one workweek shall be paid at one and one-half times the straight time rate of pay. Saturday worked as the sixth day or Saturday worked following a holiday in any one workweek shall be paid at one and one-half times the straight time rate of pay. Employees shall be paid in accordance with the appropriate Union agreement and its Schedule A for all work performed on recognized holidays and Sundays.

b. When a shift is started at the basic rate or at the appropriate overtime rate applicable on that day, it shall be completed at that rate. There will be no restrictions upon the Employer's scheduling of overtime or the non-discriminatory designation of employees that shall be worked. There will be no pyramiding of overtime.

12.05 Holidays.

a. Recognized holidays shall be:

New Year's Day
Presidents' Day
Memorial Day (observed on the last Monday in May)
Fourth of July
Labor Day
Veteran's Day (observed on November 11)
Thanksgiving Day
Christmas Day

The holidays will be observed as set forth on the calendar.

b. All holidays, with the exception of Labor Day, may be worked. No work may be performed or scheduled on Labor Day unless an emergency situation exists.

12.06 Shift Work.

a. Shift work may be performed at the option of the Employer. The Employer shall have the sole right to establish the starting time and duration of a shift, to designate the craft or crafts performing work on a shift basis on the Project or any portion thereof, and to determine the number of employees required. Any time worked in excess of the regular shift shall be paid for at the normal overtime rate. The meal period provisions of Section 4 of this Article shall apply to both shifts.

b. On two- or three-shift operations, the work starting time for the first shift will not be established earlier than 5:00 a.m., unless an earlier starting time is mutually agreed upon. If an earlier starting time is established without such mutual consent, overtime for those hours earlier than 5:00 a.m. will be paid. When an employee is moved from one shift to another, they shall be allowed a minimum of eight consecutive hours off duty before they are required to begin work on the shift. An employee not having an eight-hour break between shifts shall be paid the overtime rate until such time as they receive an eight-hour break.

c. Employees shall remain at their designated place of work until quitting time. The parties endorse the policy of a fair day's work for a fair day's wage.

d. Scheduling and premium pay for two- or three-shift operations shall be in accordance with the appropriate local Union agreement and its Schedule A.

e. When two or three shifts are regularly established and the first or second shift cannot be worked due to conditions caused by weather, either shift may be worked in accordance with the applicable local Union agreement and its Schedule A.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

12.07 Reporting Pay.

- a. Any employee, applicant, or new hire who reports to work for a regular or assigned shift, and weather permitting, is not put to work, shall be paid two hours reporting time and shall remain at the job site for the two hours if required by the Employer.
- b. An employee who starts to work shall be paid for not less than two hours, and if the employee works beyond two hours, the employee shall be paid for actual time worked. It shall be the Employer's prerogative whether or not to stop work.
- c. Any employee who has completed a scheduled shift and is "called out" to perform special work of a casual, incidental or irregular nature, shall receive overtime pay in accordance with the applicable local Union agreement and its Schedule A.
- d. Any employee who leaves the job or work location of his or her own volition or is discharged for cause shall be paid only for the time worked.

12.08 Payday.

- a. Wages will be paid weekly by check on a designated day during working hours and in no case shall more than five days be held back in any one payroll week. It is agreed that included with the check shall be a stub or statement showing hours, deductions, and hourly rates of pay, with the Employer's name and address clearly stated. It is further agreed that the check issued by any Employer on this project shall be bankable or cashable in Juneau without penalty to the employee.
- b. It is understood and agreed, however, that when an employee is laid off, that employee's wages become due immediately and must be paid within the day of separation provided, however, that an Employee separated after 5:00 p.m., shall be given a check prior to noon of the following day. Employees who quit or who are discharged for cause shall be paid not later than the end of the first work day following separation. Where complete payroll information is not available and the check issued is less than the total amount due, a check for the balance shall be sent to the employee's local Union office. Should the Employer fail to comply with this provision, the employee will be entitled to eight hours pay at the straight time rate of pay for each day termination pay is delayed (excluding Saturdays, Sundays and holidays). Checks not picked up by the employee shall be delivered to the appropriate Union hall.

12.09 Travel and Subsistence. Travel, daily travel, subsistence, per diem, or zone pay are not required under the provisions of this Agreement.

12.10 Work and Conduct Rules. The Employer may promulgate and post rules and regulations governing the performance of work and conduct of employees at the work site. Failure to observe the posted rules and regulations by an employee shall be grounds for discipline, including discharge.

12.11 Foreman and General Foreman.

- a. The selection of craft foreman and general foremen shall be the exclusive responsibility of the Employer. Foremen and general foremen shall take directions from authorized representatives of the Employer.
- b. Craft foremen may be required to work at the trade.
- c. General foremen may perform incidental work at the trade.
- d. Craft and general foremen shall be paid at the applicable foremen rate.

All foremen shall have the authority and responsibility to terminate any employee working under their supervision who fails to satisfactorily, competently and diligently perform his or her assigned duties.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

12.12 Hazard Pay. Refer to the applicable local Union agreement.

Pre-Job Conferences: It is understood that the Employer or subcontractors at all levels working under this Project Labor Agreement shall arrange a pre-job conference with the Unions prior to the commencement of their work. Foremen and general foremen shall take orders from authorized representatives of the Employer. One of the purposes of a pre-job conference will be to establish the scope of the work in the Employer's contract. A markup conference shall be required. Such conference will include presentation of information as available to the Employer regarding jurisdictional work assignments, starting date for the work, location of the project, duration of the job, estimated peak employment, and any other conditions deemed peculiar to the particular contract or subcontract, including a general description of the nature of the work to be performed and drawings and specifications, if available. The Employer will schedule and attend all pre-job conferences and markup meetings and participate in discussions as they pertain to the terms and conditions of the Agreement. This section may be waived by mutual agreement of the parties.

ARTICLE 13 PROTECTION OF PERSON AND PROPERTY

13.01 Employees must use diligent care to perform their work in a safe manner and to protect themselves, the environment, and the property of the Employer. Failure to do so may result in immediate dismissal. The Employer shall establish and post reasonable visitor, security, and safety rules to achieve this objective.

ARTICLE 14 APPRENTICES

14.01 The owner recognizes and acknowledges that there is a need for increased training and apprenticeship opportunities in the construction industry, and that a diverse and well-trained workforce is essential to the economic and social vitality of The City & Borough of Juneau and surrounding communities as well as across the state of Alaska.

14.02 Apprentices shall be utilized in accordance with the Local Union agreement and its Schedule A and applicable law. Apprentices shall be indentured in a program through their Local Union approved by the United States Department of Labor, Office of Apprenticeship Training, Employer Labor Services, (formerly the Bureau of Apprenticeship & Training).

14.03 The Employer shall ensure that not less than fifteen percent (15%) of the total labor hours worked under this Agreement on the Project are performed by apprentices referred to in Article and Section 14.02 above.

HELMETS TO HARDHATS

14.04 The Employer and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Employer and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

Section 2. The Unions and Employer agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on this Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

ARTICLE 15 SAVINGS AND SEPARABILITY

15.01 In the event any section or provision of this Agreement shall be declared or held to be invalid or illegal by an authorized board or court of competent jurisdiction, only the part, section, provision, or the entire agreement so held or declared invalid or illegal shall forthwith cease to be of further force and effect, and in such event either party hereto may, upon not less than thirty days written notice to the other, have the right to open negotiations for the substitution of a new section, sections, or agreement consistent with the decision of the board or court. This agreement is governed by the laws of the State of Alaska and the City and Borough of Juneau. Jurisdiction for any legal dispute arising hereunder shall be in the Superior Court for the First Judicial District in Juneau.

ARTICLE 16 ENTIRE UNDERSTANDING

16.01 The parties agree that the total results of their bargaining are embodied in this Agreement and no party signatory hereto is required to render any performance not set forth in the working of this Agreement. This Agreement may be amended only by written agreement signed by the parties hereto.

ARTICLE 17 LEGAL COMPLIANCE

17.01 Nothing in this Agreement shall be interpreted to require or result in any violation of applicable federal or state laws or regulations.

ARTICLE 18 DURATION AND APPLICATION OF AGREEMENT; DECERTIFICATION

18.01 This Project Agreement shall be effective _____, 2015, and shall continue in full force and effect until completion of the Project. This Agreement applies only to this Project. Nothing in this Agreement shall be construed to limit the ability of employees through the voting process to decertify representation by one or more Unions in accordance with state and federal law.

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed as of the day and year above written.

Employer

Date

President, Juneau & Vicinity Building & Construction Trades

Date

International Brotherhood of Teamsters, Local 959

Date

International Union of Operating Engineers, Local 302

Date

Carpenters Local 2247

Date

International Association of Bridge Structural &
Ornamental Iron Workers, Local 751

Date

Laborers International Union of North America, Local 171

Date

U.A. Local 262, Plumbers and Pipefitters

Date

International Brotherhood of Electrical Workers, Local 1547

Date

International Union of Painters & Allied Trades, Local 1959

Date

Operative Plasterers & Cement Masons, Local 867

Date

SECTION 00010 – SPECIAL NOTICE TO BIDDERS

**PROJECT LABOR AGREEMENT
SUBCONTRACTOR LETTER OF ASSENT (LOA)
Downtown Seawalk – Bridge to Gold Creek Contract No. E16-011**

The Downtown Seawalk – Bridge to Gold Creek (City and Borough of Juneau Contract E16-011, hereafter "CONTRACT"), is subject to a Project Labor Agreement (PLA) The Contractor and Subcontractors who are awarded the work are contractually required to sign and comply with the PLA. The PLA is included in the CONTRACT as Section 001 – SPECIAL NOTICE TO BIDDERS.

Pursuant to the PLA, including Articles 3.02 and 5.04, the undersigned authorized representative of the Subcontractor employer acknowledges and understands that they will comply with and be bound by all of the terms and conditions of the PLA, including any present or future modifications, amendments or addenda thereto. The Subcontractor acknowledges the PLA as the singular binding Agreement for the defined Project. The PLA and this LOA shall only apply to the project defined in the PLA and to no other project(s). The Subcontractor acknowledges and agrees to make contributions to the established fringe benefit funds under Article 12.01 in the amounts designated in the Appropriate Union agreement and its accompanying Schedule A.

This LOA shall remain in effect for the duration of all work performed under the PLA, by the undersigned Employer, on the defined Project.

For the Employer (Subcontractor):

For the General Contractor:

Authorized Representative (Print):

Authorized Representative (Print):

Title:_____

Title:_____

Authorized Representative (Signature):

Authorized Representative (Signature):

Date:_____

Date:_____

Name of Employer (Subcontractor):_____

License or Registration No.:_____

Address:_____

City, State, Zip:_____

Phone:_____

Fax:_____

END OF SECTION

SECTION 00030 NOTICE INVITING BIDS

OBTAINING CONTRACT DOCUMENTS. The Contract Documents are entitled:

**Downtown Seawalk – Bridge to Gold Creek
Contract No. E16-011**

The Contract Documents may be obtained at the City & Borough of Juneau (CBJ) Engineering Department, 3rd Floor Marine View Center, upon payment of \$100 (non-refundable) for each set of Contract Documents (including Technical Specifications and Drawings) or may be downloaded for free at the CBJ Engineering Department webpage at: www.juneau.org/engineering

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 September 11, 2015, in the CBJ Engineering Department Conference Room, 3rd Floor, Marine View Center. The object of the conference is to acquaint Bidders with the project and bid documents.

DESCRIPTION OF WORK. This Project consists of construction of a park on CBJ property under the JD bridge, which includes a bronze whale sculpture (on fill), plaza, accompanying parking, covered bus waiting, picnic shelter, lighting, and other site amenities. A pile supported seawalk will run from the bridge park to Gold Creek, connecting into Egan Drive just north of the Gold Creek Bridge. Fill will be brought in to create a 2.7 acre habitat island along the seawalk.

COMPLETION OF WORK. The WORK must be completed by September 15, 2016.

DEADLINE FOR BIDS: Sealed bids must be received by the Purchasing Division **prior to 2:00 p.m., Alaska Time on September 22, 2015**, 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

SECTION 00030 NOTICE INVITING BIDS

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: <u>E16-011</u> SUBJECT: <u>SEAWALK – BRIDGE TO GOLD CREEK</u> DEADLINE DATE: <u> </u> 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 along the waterfront of downtown Juneau, Alaska, beginning at or near the Douglas Bridge on 10th Street and ending at Egan Drive near Gold Creek.

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

Greg Smith, Contract Administrator
CBJ Engineering Department, 3rd Floor, Marine View Center
Email: greg.smith@juneau.org
Telephone: (907) 586-0873
Fax: (907) 586-4530

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

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

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

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.

OWNER: City and Borough of Juneau

By: Greg Smith Date 6/27/2015
Greg Smith, Contract Administrator

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 RESPONSIBILITY OF BIDDERS. Only responsive Bids from responsible Bidders will be considered. A Bid submitted by a Bidder determined to be not responsible may be rejected. The OWNER may find a bidder to be not responsible for any one of the following reasons, but is not limited in its responsibility analysis to the following factors:

- A. Evidence of bid rigging or collusion;
- B. Fraud or dishonesty in the performance of previous contracts;
- C. Record of integrity;
- D. More than one bid for the same work from an individual, firm, or corporation under the same or different name;
- E. Unsatisfactory performance on previous or current contracts;
- F. Failure to pay, or satisfactorily settle, all bills due for labor and material on previous contracts;

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- G. Uncompleted work that, in the judgment of the OWNER, might hinder or prevent the bidder's prompt completion of additional work, if awarded;
- H. Failure to reimburse the OWNER for monies owed on any previous contracts;
- I. Default under previous contracts;
- J. Failure to comply with any qualification requirements of the OWNER; 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;
- K. Engaging in any activity that constitutes a cause for debarment or suspension under the CBJ Procurement Code 53.50 or submitting a bid during a period of debarment;
- L. Lack of skill, ability, financial resources, or equipment required to perform the contract; or
- M. Lack of legal capacity to contract.
- N. Bidders must be registered as required by law and in good standing for all amounts owed to the OWNER per Paragraph 21.0 of this Section.
- O. Failure to submit a complete Subcontractor Report as required in section Section 00360 – Subcontractor Report.

Nothing contained in this section deprives the OWNER of its discretion in determining the lowest responsible bidder. 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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- 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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- 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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

- C. Bids by corporations must be executed in the corporate name by the president, a vice-president (or other corporate officer). The corporate address and state of incorporation must appear below the signature.
 - D. Bids by partnerships must be executed in the partnership name and be signed by a managing partner, and the official address of the partnership must appear below the signature.
 - E. The Bidder's Bid must be signed. All names must be printed or typed below the signature.
 - F. The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid form. Failure to acknowledge Addenda may render Bid non-responsive and may cause its rejection.
 - G. The address to which communications regarding the Bid are to be directed must be shown.
- 9.0 QUANTITIES OF WORK.** The quantities of WORK, or material, stated in Unit Price items of the Bid are supplied only to give an indication of the general scope of the WORK; the OWNER does not expressly or by implication agree that the actual amount of WORK, or material, will correspond therewith, and reserves the right after award to increase or decrease the amount of any Unit Price item of the WORK by an amount up to and including 25 percent of any Bid item, without a change in the Unit Price, and shall include the right to delete any Bid item in its entirety, or to add additional Bid items up to and including an aggregate total amount not to exceed 25 percent of the Contract Price (see Section 00700 - General Conditions, Article 10 Changes In the WORK).
- 10.0 SUBSTITUTE OR "OR-EQUAL" ITEMS.** The procedure for the submittal of substitute or "or-equal" products is specified in Section 01300 – Contractor Submittals.
- 11.0 SUBMISSION OF BIDS.** The Bid shall be delivered by the time and to the place stipulated in Section 00030 - Notice Inviting Bids. It is the Bidder's sole responsibility to see that its Bid is received in proper time. Oral, telegraphic, emailed, or faxed Bids will not be considered. The envelope enclosing the sealed Bids shall be plainly marked in the upper left-hand corner with the name and address of the Bidder and shall also include the label included in Section 00030 – Notice Inviting Bids. The Bid Security shall be enclosed in the same envelope with the Bid
- 12.0 BID SECURITY, BONDS, AND INSURANCE.** Each Bid shall be accompanied by a certified, or cashier's check, or approved Bid Bond in an amount of at least 5 percent of the total Bid price. The "total Bid price" is the amount of the Base Bid, plus the amount of alternate Bids, if any, which total to the maximum amount for which the CONTRACT could be awarded. Said check or Bond shall be made payable to the OWNER and shall be given as a guarantee that the Bidder, if offered the WORK, will enter into an Agreement with the OWNER, and will furnish the necessary insurance certificates, Payment Bond, and Performance Bond; each of said Bonds, if required, and insurance amounts shall be as stated in the Supplementary General Conditions. In case of refusal or failure to enter into said Agreement, the check or Bid Bond, as the case may be, may be forfeited to the OWNER. If the Bidder elects to furnish a Bid Bond as its Bid security, the Bidder shall use the Bid Bond form bound herein, or one conforming substantially to it in form. Bid Bonds must be accompanied by a legible Power of Attorney.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

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

21.0 CONTRACTOR'S GOOD STANDING WITH CBJ FINANCE DEPARTMENT: Contractors must be in good standing with the CBJ prior to award, and prior to any contract renewals, and in any event no later than **seven business days** following notification by the CBJ of intent to award. **Good standing** means: all amounts owed to the CBJ are current and the Contractor is not delinquent with respect to any taxes, fees, assessment, or other monies due and owed the CBJ, or a Confession of Judgment has been executed and the Contractor is in compliance with the terms of any stipulation associated with the Confession of Judgment, including being current as to any installment payments due; and Contractor is current in all CBJ reporting obligations (such as sales tax registration and reporting and business personal property declarations). 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 CBJ Finance Department's Sales Tax Division at (907) 586-5265 for sales tax issues, Assessor's Office at (907)586-0930 for business personal property 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.

SECTION 00100 - INSTRUCTIONS TO BIDDERS

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 (<i>indicate +/-</i>)	TOTAL INCREASE OR DECREASE (<i>indicate +/-</i>)
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

**Seawalk – Bridge to Gold Creek
Contract No. E16-011**

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.

SECTION 00300 - BID

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

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

9. TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING AT THE TIME OF THE DEADLINE FOR BIDS:

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

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

- Subcontractor Report, Section 00360

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

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

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

END OF SECTION

SECTION 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

**Seawalk – Bridge to Gold Creek
Contract No. E16-011**

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.

SECTION 00300 - BID

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

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

9. TO BE CONSIDERED, ALL BIDDERS MUST COMPLETE AND INCLUDE THE FOLLOWING AT THE TIME OF THE DEADLINE FOR BIDS:

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

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

- Subcontractor Report, Section 00360

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

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

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

END OF SECTION

SECTION 00310 - BID SCHEDULE

PAY ITEM NO.	PAY ITEM DESCRIPTION	PAY UNIT	APPROX. QUANTITY	UNIT PRICE		AMOUNT	
				DOLLARS	CENTS	DOLLARS	CENTS
1505.1	Mobilization	Lump Sum	All Req'd	Lump	Sum		
1550.1	Traffic Control	Lump Sum	All Req'd	Lump	Sum		
1570.1	Erosion and Sediment Control	Lump Sum	All Req'd	Lump	Sum		
2201.1	Clearing and Grubbing	SY	1,300				
2202.1	Usable Excavation	CY	900				
2202.2	Unusable Excavation	CY	220				
2202.3	Select Borrow	Ton	2,000				
2202.4	8-Inch Minus Shot Rock Borrow	Ton	15,100				
2202.5	18-Inch Minus Shot Rock Borrow	Ton	60,100				
2202.6	Mining Area Restoration & Road Cleaning Guarantee	Contingent Sum	All Req'd	Contingent	Sum	\$10,000	00
2202.7	Individual Mining Plan	Lump Sum	All Req'd	Lump	Sum		
2204.1	2-Inch Minus Shot Rock	Ton	1,220				
2204.2	Base Course, Grading D-1	SY	3,400				
2205.1	Class IV Rip Rap	CY	2,200				
2370.1	36-Inch Minus Rounded Boulders	Ton	9,850				
2370.2	10-Inch Minus Cobble	Ton	800				
2370.3	Stone Steps Over Rip Rap	Ton	75				
2370.4	Intertidal Stepping Stones	Ton	80				
2370.5	Cobble, Gravel, Soil Mix	CY	2,400				
2370.6	Gravel, Soil Mix	CY	2,600				
2370.7	Shell Hash Fill	CY	15				
2370.8	Tide Pool	Lump Sum	All Req'd	Lump	Sum		
2398.1	Pier Timberwork, Elevated Deck	SF	22,000				
2398.2	Pier Timberwork, At-Grade Deck Island	SF	7,250				

Company Name

SEAWALK - BRIDGE TO GOLD CREEK
Contract No. E16-011

BID SCHEDULE
Page 00310-1

SECTION 00310 - BID SCHEDULE

2398.3	Pier Timberwork, At-Grade Deck Bridge Park	SF	5,000				
2401.1	Sanitary Sewer Service Laterals	Lump Sum	All Req'd	Lump	Sum		
2458.1	Steel Pipe Piles	EA	68				
2501.1	12-Inch Pipe Culvert	LF	190				
2501.2	6-Inch Underdrain	LF	300				
2502.1	Storm Drain Manhole, Type I	EA	1				
2502.2	Catch Basin, Type III	EA	1				
2502.3	Trench Drain	LF	92				
2515.1	Masonry Unit Pavers, Granite Paver	SY	200				
2515.2	Masonry Unit Pavers, Brick Paver	SY	1,500				
2603.1	Fire Hydrant Assembly	EA	1				
2605.1	1-Inch Water Services	Lump Sum	All Req'd	Lump	Sum		
2702.1	Construction Surveying	Lump Sum	All Req'd	Lump	Sum		
2710.1	Lawn Seed Mix	SY	2,300				
2710.2	Low Marsh Seed Mix	SY	2,600				
2710.3	Lower Low Marsh Seed Mix	SY	400				
2710.4	High Marsh Seed Mix	SY	2,421				
2710.5	Riparian Seed Mix	SF	500				
2711.1	Topsoil	CY	2,200				
2711.2	Planting Soil	CY	610				
2711.3	Bark Mulch	CY	240				
2711.4	Planting, Coniferous Tree 5'-6' container	EA	77				
2711.5	Planting, Coniferous Tree 1 gal. Container	EA	37				
2711.6	Planting, Deciduous Tree 3" Caliper	EA	7				
2711.7	Planting, Deciduous Tree 1.5" Caliper	EA	20				

Company Name

SECTION 00310 - BID SCHEDULE

2711.8	Planting, Deciduous Tree 4'-5' Container	EA	15				
2711.9	Planting, Deciduous Tree 5 gal. Container	EA	47				
2711.10	Planting, Plant 2 gal. Container	EA	433				
2711.11	Planting, Plant 1 gal. Container	EA	2,836				
2711.12	Planting, Plant 4" pot. Container	EA	6,579				
2711.13	Planting, Plant 10" Plug.	EA	11,635				
2711.14	Planting, Bulbs	EA	340				
2711.15	Planting, Livestake	EA	1,192				
2711.16	Habitat Snag	EA	28				
2711.17	Habitat Log	EA	14				
2711.18	Habitat Log/Rootwad	EA	20				
2711.19	Anchored Habitat Log	EA	70				
2711.20	Anchored Habitat Root Wad	EA	2				
2711.21	Transplant native herbaceous species	EA	25				
2711.22	Transplant Alkali grass	SF	5,400				
2711.23	Landscape Boulders	Ton	20				
2711.24	Tree Grate	EA	3				
2711.25	Jute Mesh	SY	800				
2714.1	Stabilization Fabric	SY	2,000				
2714.2	Geogrid	SY	1,000				
2716.1	Storm Culvert Removal	Lump Sum	All Req'd	Lump	Sum		
2717.1	Storm Structure Removal	Lump Sum	All Req'd	Lump	Sum		
2718.1	Project Sign Assembly	Lump Sum	All Req'd	Lump	Sum		
2720.1	Painted Traffic Markings	Lump Sum	All Req'd	Lump	Sum		
2801.1	A.C. Pavement, Type II-A, Class B	Ton	410				

Company Name

SECTION 00310 - BID SCHEDULE

2806.1	Remove Existing Asphalt Surfacing	SY	515				
2860.1	Undersea Garden	Lump Sum	All Req'd	Lump	Sum		
2860.2	Undersea Garden, Salvaged Boat Installation	EA	1				
2860.3	Undersea Garden, Skiff Installation	EA	1				
2870.1	Site Furnishings, Bench Type A	EA	4				
2870.2	Site Furnishings, Bench Type B	EA	22				
2870.3	Site Furnishings, Bench Type C	EA	9				
2870.4	Site Furnishings, Picnic Table Type A	EA	11				
2870.5	Site Furnishings, Picnic Table Type B	EA	5				
2870.6	Site Furnishings, Picnic Table Type C	EA	22				
2870.7	Site Furnishings, Table Type A	EA	20				
2870.8	Site Furnishings, Chair Type A	EA	40				
2870.9	Site Furnishings, Trash Receptacle Type A	EA	9				
2870.10	Site Furnishings, Bike Rack Type A	EA	2				
2870.11	Site Furnishings, Bike Rack Type B	EA	1				
2870.12	Site Furnishings, Removable Bollard	EA	6				
2870.13	Site Furnishings, Bollard	EA	4				
2870.14	Site Furnishings, Park and Camp Grill	EA	1				
2870.15	Site Furnishings, Drinking Fountain	EA	1				
2870.16	Site Furnishings, Whale Tail Bench	EA	3				
3300.1	Concrete Foundation for the Whale Sculpture	Lump Sum	All Req'd	Lump	Sum		
3300.2	Concrete Pool and Drain Channels for the Whale Sculpture	Lump Sum	All Req'd	Lump	Sum		
3300.3	Cast in Place Concrete, Seatwalls	Lump Sum	All Req'd	Lump	Sum		
3300.4	Cast in Place Concrete, Concrete Paving Header	Lump Sum	All Req'd	Lump	Sum		
3303.1	Concrete Sidewalk 4-Inches Thick	SY	340				

Company Name

SECTION 00310 - BID SCHEDULE

3303.2	Detectable Tile	SF	32				
3303.3	Curb and Gutter, Type I	LF	610				
5120.1	Structural Steel Framing, Elevated Deck	Lump Sum	All Req'd	Lump	Sum		
5500.1	Guardrail Type 1	LF	2,340				
5500.2	Guardrail Type 2	LF	524				
5500.3	Guardrail Type 3	LF	115				
5500.4	Guardrail Type 4	LF	75				
5500.5	Restroom Screen Wall	Lump Sum	All Req'd	Lump	Sum		
5500.6	Picnic Shelter	Lump Sum	All Req'd	Lump	Sum		
5500.7	Bus Shelter	Lump Sum	All Req'd	Lump	Sum		
6201.1	Boat Deck Furnishings	Lump Sum	All Req'd	Lump	Sum		
6201.2	Pine Rail Barrier Fence	LF	370				
13312.1	Tensioned Fabric Structure at Boat Deck	Lump Sum	All Req'd	Lump	Sum		
15000.1	Water Feature Piping for the Whate Sculpture	Lump Sum	All Req'd	Lump	Sum		
16000.1	Electrical Service Distribution and Lighting	Lump Sum	All Req'd	Lump	Sum		

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

SEAWALK – BRIDGE TO GOLD CREEK

Contract No. E16-011

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

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

(SEAL) _____
(Principal)

(SEAL) _____
(Surety)

By: _____
(Signature)

By: _____
(Signature)

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.***

<u>SUBCONTRACTOR</u>	¹ AK Contractor <u>License No.</u>	¹ <u>Contact Name</u>	<u>Type of</u>	<u>Contract</u>	
<u>ADDRESS</u>	² AK Business <u>License No.</u>	² <u>Phone No.</u>	<u>Work</u>	<u>Amount</u>	✓ if <u>DBE</u>
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

SECTION 00360 - SUBCONTRACTOR REPORT

- A. A Bidder may replace a listed Subcontractor if the Subcontractor:
1. fails to comply with AS 08.18;
 2. files for bankruptcy or becomes insolvent;
 3. fails to execute a contract with the Bidder involving performance of the WORK for which the Subcontractor was listed and the Bidder acted in good faith;
 4. fails to obtain bonding;
 5. fails to obtain insurance acceptable to the OWNER;
 6. fails to perform the contract with the Bidder involving work for which the Subcontractor was listed;
 7. must be substituted in order for the CONTRACTOR to satisfy required state and federal affirmative action requirements;
 8. refuses to agree or abide with the Bidder's labor agreement; or
 9. is determined by the OWNER not to be responsible.
 10. is not in "Good Standing" with the OWNER as required in Article 21.0 in Section 00100 – Instructions to Bidders.
- 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 may be found to be not a responsible Bidder and may be required to forfeit the Bid security. The OWNER will then consider the next lowest Bidder for award of the contract.

END OF SECTION

SECTION 00500 - AGREEMENT

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

ARTICLE 1. WORK.

CONTRACTOR shall complete the WORK as specified or as indicated under the Bid Schedule of the OWNER's Bid Documents entitled **Contract No. E16-011, named Downtown Seawalk – Bridge to Gold Creek.**

The WORK is generally described as follows: Construction of a park on CBJ property under the JD Bridge, which includes a bronze whale sculpture (on fill), plaza, accompanying parking, covered bus waiting, picnic shelter, lighting, and other site amenities. A pile supported seawalk will run from the bridge park to Gold Creek, connecting into Egan Drive just north of the Gold Creek Bridge. Fill will be brought into create a 2.7 acre habitat island along the seawalk, 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.

WORK shall be completed by September 15, 2016.

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 \$500 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. E16-011, named Downtown Seawalk – Bridge to Gold Creek,** 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.

SECTION 00500 - AGREEMENT

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 00005-5, inclusive)
- Notice Inviting Bids (pages 00030-1 to 00030-3, inclusive).
- Instructions to Bidders (pages 00100-1 to 00100-9, inclusive).
- Bid (pages 00300-1 to 00300-2, inclusive).
- Bid Schedule (pages 00310-1 to 00310-5, inclusive).
- Bid Bond (page 00320-1, inclusive) or Bid Security.
- Subcontractor Report (pages 00360-1 to 00360-2, inclusive).
- Performance Bond (pages 00610-1 to 00610-2, inclusive).
- Payment Bond (pages 00620-1 to 00620-2, inclusive).
- General Conditions (pages 00700-1 to 00700-46, inclusive).
- Supplementary General Conditions (pages 00800-1 to 00800-7, inclusive).
- Alaska Labor Standards, Reporting, and Prevailing Wage Determination (page 00830-1).
- Permits, (page 00852-1).
- Standard Details (page 00853-1).
- Special Provisions (pages 1 to 221 inclusive)
- Standard Specifications for Civil Engineering Projects and Subdivision Improvements
December 2003 with current Errata Sheets.
- Drawings consisting of 124 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.

SECTION 00500 - AGREEMENT

ARTICLE 8. MISCELLANEOUS. (Cont'd.)

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

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

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

OWNER:

CONTRACTOR:

City and Borough of Juneau

(Company Name)

(Signature)

(Signature)

By: Kimberly A. Kiefer, City & Borough Manager
(Printed Name)

By: _____
(Printed Name, Authority or Title)

Date: _____

CONTRACTOR Signature Date: _____

OWNER's address for giving notices:

CONTRACTOR's address for giving notices:

155 South Seward Street

Juneau, Alaska 99801

907-586-0873 907-586-4530
(Telephone) (Fax)

(Telephone) (Fax)

(E-mail address)

Contractor License No. _____

SECTION 00500 - AGREEMENT

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)

SECTION 00500 - AGREEMENT

CERTIFICATE
(if Partnership)

STATE OF)
) SS:
COUNTY OF)

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

"RESOLVED, that _____, as _____ of the Partnership, be and is
hereby authorized to **execute the Agreement** with the 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)

SECTION 00500 - AGREEMENT

CERTIFICATE
(if Joint Venture)

STATE OF)
) SS:
COUNTY OF)

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

"RESOLVED, that _____, as _____ of the
Joint Venture, be and is hereby authorized to **execute the Agreement** with the 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:

**Seawalk – Bridge to Gold Creek
CBJ Contract No. E16-011**

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

**Seawalk – Bridge to Gold Creek
CBJ Contract No. E16-011**

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)

(Mailing Address)

(City, State, Zip Code)

SURETY:

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

Date Issued: _____

(Printed Name)

(Company Name)

(Mailing Address)

(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:

**Seawalk – Bridge to Gold Creek
CBJ Contract No. E16-011**

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

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

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

SECTION 00620 - PAYMENT BOND

**Seawalk – Bridge to Gold Creek
CBJ Contract No. E16-011**

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)

(Mailing Address)

(City, State, Zip Code)

SURETY:

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

Date Issued: _____

(Printed Name)

(Company Name)

(Mailing Address)

(City, State, Zip Code)

(Affix SURETY'S SEAL)

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

END OF SECTION

SECTION 00700 - GENERAL CONDITIONS

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SECTION 00700 - GENERAL CONDITIONS

ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SECTION 00700 - GENERAL CONDITIONS

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

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

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

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

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

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

General Requirements - Division 1 of the Technical Specifications.

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

Holidays - The CBJ legal holidays occur on:

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

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

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

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

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

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

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

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

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

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

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

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

PCB's - Polychlorinated biphenyls.

PERMITTEE – See definition for CONTRACTOR.

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

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

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

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

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Specifications - Same definition as "Technical Specifications" hereinafter.

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

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

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

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

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

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

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

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

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

ARTICLE 2 PRELIMINARY MATTERS

- 2.1 DELIVERY OF BONDS/INSURANCE CERTIFICATES. When the CONTRACTOR delivers the signed Agreements to the OWNER, the CONTRACTOR shall also deliver to the OWNER such Bonds and Insurance Policies and Certificates as the CONTRACTOR may be required to furnish in accordance with the Contract Documents.
- 2.2 COPIES OF DOCUMENTS. The OWNER shall furnish to the CONTRACTOR the required number of copies of the Contract Documents specified in the Supplementary General Conditions.
- 2.3 COMMENCEMENT OF CONTRACT TIME; NOTICE TO PROCEED. The Contract Time will start to run on the commencement date stated in the Notice to Proceed.

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2.4 STARTING THE WORK

- A. The CONTRACTOR shall begin to perform the WORK within 10 days after the commencement date stated in the Notice to Proceed, but no WORK shall be done at the site prior to said commencement date.
- B. Before undertaking each part of the WORK, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. The CONTRACTOR shall promptly report in writing to the ENGINEER any conflict, error, or discrepancy which the CONTRACTOR may discover and shall obtain a written interpretation or clarification from the ENGINEER before proceeding with any WORK affected thereby.
- C. The CONTRACTOR shall submit to the ENGINEER for review those documents called for under Section 01300 - CONTRACTOR Submittals in the General Requirements.

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

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

ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 INTENT

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

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standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the OWNER, the CONTRACTOR, or the ENGINEER or any of their consultants, agents, or employees from those set forth in the Contract Documents.

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

3.2 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

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

1. Permits from other agencies as may be required by law, excepting the definition of "PERMITEE" in these permits.
2. Field Orders
3. Change Orders
4. ENGINEER's written interpretations and clarifications.
5. Agreement
6. Addenda
7. CONTRACTOR's Bid (Bid Form)
8. Supplementary General Conditions
9. Notice Inviting Bids
10. Instructions to Bidders
11. General Conditions
12. Technical Specifications
13. Drawings

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

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

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

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

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ARTICLE 4 AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; REFERENCE POINTS

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

4.2 PHYSICAL CONDITIONS - SUBSURFACE AND EXISTING STRUCTURES

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

4.3 DIFFERING SITE CONDITIONS

- A. The CONTRACTOR shall promptly upon discovery (but in no event later than 14 days thereafter) and before the following conditions are disturbed, notify the ENGINEER, in writing of any:
 - 1. Material that the CONTRACTOR believes may be material that is hazardous waste, as defined in Article 1 of these General Conditions, or asbestos, PCB's, petroleum or any other substance or material posing a threat to human or to the environment.
 - 2. Subsurface or latent physical conditions at the site differing from those indicated.

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3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the contract.
- B. The OWNER shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the WORK shall issue a Change Order under the procedures described in the contract.
- C. In the event that a dispute arises between the OWNER and the CONTRACTOR whether the conditions materially differ, or involved hazardous waste or other materials listed above, or cause a decrease or increase in the CONTRACTOR's cost of, or time required for, performance of any part of the WORK, the CONTRACTOR shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all WORK to be performed under the contract. The CONTRACTOR shall retain any and all rights provided either by contract or by Law which pertain to the resolution of disputes and protests between the contracting parties.

4.4 PHYSICAL CONDITIONS - UNDERGROUND UTILITIES

- A. Indicated. The information and data indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site are based on information and data furnished to the OWNER or the ENGINEER by the owners of such Underground Utilities or by others. Unless it is expressly provided in the Supplementary General Conditions and/or Section 01530 - Protection and Restoration of Existing Facilities of the General Requirements, the OWNER and the ENGINEER shall not be responsible for the accuracy or completeness of any such information or data, and the CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Utilities indicated in the Contract Documents, for coordination of the WORK with the owners of such Underground Utilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the WORK, the cost of which will be considered as having been included in the Contract Price.
- B. Not Indicated. If an Underground Utility is uncovered or revealed at or contiguous to the site which was not indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall identify the owner of such Underground Utility and give written notice thereof to that owner and shall notify the ENGINEER in accordance with the requirements of the Supplementary General Conditions and Section 01530 - Protection and Restoration of Existing Facilities of the General Requirements.

4.5 REFERENCE POINTS

- A. The ENGINEER will provide one bench mark, near or on the site of the WORK, and will provide two points near or on the site to establish a base line for use by the CONTRACTOR for alignment control. Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish all other lines, grades, and bench marks required for proper execution of the WORK.
- B. The CONTRACTOR shall preserve all bench marks, stakes, and other survey marks, and in case of their removal or destruction by its own employees or by its Subcontractor's employees,

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the CONTRACTOR shall be responsible for the accurate replacement of such reference points by personnel qualified under the Alaska Statute governing the licensing of Architects, Engineers, and Land Surveyors.

4.6 USE OF THE CBJ/STATE LEMON CREEK GRAVEL PIT

- A. On City and Borough of Juneau (CBJ) construction projects, the CBJ may make unclassified material available to CONTRACTORS, from the CBJ/State Lemon Creek gravel pit, at a rate less than charged other customers. CONTRACTORS are not required to use material from the CBJ/State pit and the CBJ makes no guarantee as to the quantity or quality of the available material. For this Project, the price shall be \$1.90 per ton.
- B. CONTRACTORS proposing to use gravel from the CBJ/State pit are required to be in good standing for all amounts owed to the CBJ, for previous gravel operations, prior to submitting a mining plan for approval. CONTRACTORS using the pit must comply with Allowable Use Permit USE 98-00047. Failure to meet these requirements, if so subject, shall be sufficient reason to deny use of the CBJ/State pit as a gravel source. To determine if your company is subject to these requirements, contact the CBJ Engineering Department, Gravel Pit Management, at (907) 586-0800.
- C. CONTRACTORS deciding to use material from the CBJ/State pit shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing operations within the pit. CONTRACTORS shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ.
- D. If CONTRACTOR operations for a project do not exceed 500 tons of material, the CONTRACTOR will not be required to provide an Individual Mining Plan prepared by an engineer. However, the CONTRACTOR must submit an Individual Mining Plan that is in compliance with Allowable Use Permit USE 98-00047 for gravel extraction within the CBJ/State pit. The CONTRACTOR must contact the CBJ Engineering Department for conditions for the extraction.
- E. CONTRACTORS using the CBJ material may do primary dry separation (screening) of materials within the pit. Crushing and washing of material will not be allowed. CONTRACTORS shall account for placement of materials removed from the pit. The CBJ may require CONTRACTORS to cross-check weight tickets, submit to an audit, or participate in other measures required by the CBJ to ensure accountability. Unprocessed overburden removed from the pit will not be weighed. All other material mined will be weighed at the CBJ scale. CONTRACTORS will be responsible for loading and/or screening their own material. If asphalt pavement is removed as part of the WORK, CONTRACTORS shall dispose of the material at a to-be-specified location within the pit area, as directed by the CBJ Project Manager.
- F. The gravel pit overhead charge shall be paid to the CBJ by the CONTRACTOR within 60 days after removal of all materials from the pit and prior to requesting and/or receiving final payment. Upon completion of each excavation CONTRACTORS shall notify the CBJ, in writing, in sufficient time to perform a field-compliance examination prior to vacating the pit. Any significant deviation from the stipulations of the Individual Mining Plan identified during

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the field inspection shall be corrected by the CONTRACTOR prior to release of the bond. A signed release from CBJ will be required prior to releasing the CONTRACTOR's bond.

- G. If asphalt pavement is removed as part of this WORK, the CONTRACTOR shall dispose of the material at the location designated as the Asphalt Storage Facility, or as directed by the ENGINEER.
- H. The CBJ/State pit is a seasonal operation. The hours of operation are from 7:00 a.m. to 6:00 p.m., Monday through Friday, from April 1 through October 15 of the year. CONTRACTORS may obtain gravel on weekends, or during the off-season, by applying for a separate agreement with the City and Borough of Juneau Engineering Department. The CONTRACTOR will be responsible for any additional costs incurred during weekend or off-season operations at the gravel pit.
- I. All Contractors/Equipment Operators using the CBJ/State Pit shall be in compliance with Federal Mine Safety and Health Administration regulations for quarry and gravel operations.

ARTICLE 5 BONDS AND INSURANCE

5.1 PERFORMANCE, PAYMENT, AND OTHER BONDS

- A. The CONTRACTOR shall furnish, when required, Performance and Payment Bonds on forms provided by the CBJ for the penal sums of 100% of the amount of the Bid award. The surety on each bond may be any corporation or partnership authorized to do business in the State of Alaska as an insurer under AS 21.09. These bonds shall remain in effect for 12 months after the date of final payment and until all obligations and liens under this contract have been satisfied. The CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary General Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.
- B. If the surety on any Bond furnished by the CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the WORK is located, the CONTRACTOR shall within 7 days thereafter substitute another Bond and Surety, which must be acceptable to the OWNER.
- C. All Bonds required by the Contract Documents to be purchased and maintained by CONTRACTOR shall be obtained from surety companies that are duly licensed or authorized in the State of Alaska to issue Bonds for the limits so required. Such surety companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions. The City Engineer may, on behalf of the OWNER, notify the surety of any potential default or liability.

5.2 INSURANCE

- A. The CONTRACTOR shall purchase and maintain the insurance required under this paragraph. Such insurance shall include the specific coverages set out herein and be written

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

- B. All insurance required by the Contract Documents to be purchased and maintained by the CONTRACTOR shall be obtained from insurance companies that are duly licensed or authorized in the State of Alaska to issue insurance policies for the limits and coverages so required. Such insurance companies shall have a current Best's Rating of at least an "A" (Excellent) general policy holder's rating and a Class VII financial size category and shall also meet such additional requirements and qualifications as may be provided in the Supplementary General Conditions.
- C. The CONTRACTOR shall furnish the OWNER with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, reduced in coverage, or renewal refused until at least 30 days' prior written notice has been given to the OWNER by certified mail. All such insurance required herein (except for Workers' Compensation and Employer's Liability) shall name the OWNER, its Consultants and subconsultants and their officers, directors, agents, and employees as "additional insureds" under the policies. The CONTRACTOR shall purchase and maintain the following insurance:
 - 1. Workers' Compensation and Employer's Liability. This insurance shall protect the CONTRACTOR against all claims under applicable state workers' compensation laws. The CONTRACTOR shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a Workers' Compensation law. This policy shall include an "all states" endorsement. The CONTRACTOR shall require each Subcontractor similarly to provide Workers' Compensation Insurance for all of the latter's employees to be engaged in such WORK unless such employees are covered by the protection afforded by the CONTRACTOR's Workers' Compensation Insurance. In case any class of employees is not protected, under the Workers' Compensation Statute, the CONTRACTOR shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance for the protection of such of its employees as are not otherwise protected.
 - 2. Commercial General Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims arising from injuries to persons other than its employees or damage to property of the OWNER or others arising out of any act or omission of the CONTRACTOR or its agents, employees, or Subcontractors. The policy shall contain no exclusions for any operations within the scope of this contract.
 - 3. Comprehensive Automobile Liability. This insurance shall be written in comprehensive form and shall protect the CONTRACTOR against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles, and shall cover operation on or off the site of all motor vehicles licensed for highway use,

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whether they are owned, non-owned, or hired. Coverage for hired motor vehicles should include endorsement covering liability assumed under this Agreement.

4. Subcontractor's Commercial General Liability Insurance and Commercial Automobile Liability Insurance. The CONTRACTOR shall either require each of its Subcontractors to procure and to maintain Subcontractor's Commercial General Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Supplementary General Conditions or insure the activities of its Subcontractors in the CONTRACTOR's own policy, in like amount.
5. Builder's Risk. This insurance shall be of the "all risks" type, shall be written in completed value form, and shall protect the CONTRACTOR, the OWNER, and the ENGINEER, against risks of damage to buildings, structures, and materials and equipment. The amount of such insurance shall be not less than the insurable value of the WORK at completion. Builder's risk insurance shall provide for losses to be payable to the CONTRACTOR and the OWNER, as their interests may appear. The policy shall contain a provision that in the event of payment for any loss under the coverage provided, the insurance company shall have no rights of recovery against the CONTRACTOR, the OWNER, and the ENGINEER. The Builder's Risk policy shall insure against all risks of direct physical loss or damage to property from any external cause including flood and earthquake. Allowable exclusions, if any, shall be as specified in the Supplementary General Conditions.

ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES

6.1 SUPERVISION AND SUPERINTENDENCE

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

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6.2 LABOR, MATERIALS, AND EQUIPMENT

- A. The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the WORK and perform construction as required by the Contract Documents. The CONTRACTOR shall furnish, erect, maintain, and remove the construction plant and any temporary works as may be required. The CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the WORK or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all WORK at the site shall be performed during regular working hours, and the CONTRACTOR will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without the OWNER's written consent. The CONTRACTOR shall apply for this consent through the ENGINEER.
- B. Except as otherwise provided in this Paragraph, the CONTRACTOR shall receive no additional compensation for overtime work, i.e., work in excess of 8 hours in any one calendar day or 40 hours in any one calendar week, even though such overtime work may be required under emergency conditions and may be ordered by the ENGINEER in writing. Additional compensation will be paid the CONTRACTOR for overtime work only in the event extra work is ordered by the ENGINEER and the Change Order specifically authorizes the use of overtime work and then only to such extent as overtime wages are regularly being paid by the CONTRACTOR for overtime work of a similar nature in the same locality.
- C. All costs of inspection and testing performed during overtime work by the CONTRACTOR which is allowed solely for the convenience of the CONTRACTOR shall be borne by the CONTRACTOR. The OWNER shall have the authority to deduct the cost of all such inspection and testing from any partial payments otherwise due to the CONTRACTOR.
- D. Unless otherwise specified in the Contract Documents, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up, and completion of the WORK.
- E. All materials and equipment to be incorporated into the WORK shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of the OWNER. If required by the ENGINEER, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provisions of any such instructions will be effective to assign to the ENGINEER, or any of the ENGINEER consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of Paragraphs 9.9C and 9.9D.
- F. The CONTRACTOR shall at all times employ sufficient labor and equipment for prosecuting the several classes of WORK to full completion in the manner and time set forth in and required by these specifications. All workers shall have sufficient skill and experience to perform properly the WORK assigned to them. Workers engaged in special WORK, or skilled

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WORK, shall have sufficient experience in such WORK and in the operation of the equipment required to perform all WORK, properly and satisfactorily.

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

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

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

6.5 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS.

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

6.6 PERMITS

- A. Unless otherwise provided in the Supplementary General Conditions, the CONTRACTOR shall obtain and pay for all construction permits and licenses from the agencies having jurisdiction, including the furnishing of insurance and bonds if required by such agencies. The enforcement of such requirements under this contract shall not be made the basis for claims for additional compensation. The OWNER shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the WORK, which are applicable at the time of opening of Bids. The CONTRACTOR shall pay all charges of utility owners for connections to the WORK.
- B. These Contract Documents may require that the WORK be performed within the conditions and/or requirements of local, state and/or federal permits. These permits may be bound within the Contract Documents, included within the Contract Documents by reference, or included as

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

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

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

6.11 SAFETY AND PROTECTION

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

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

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

6.12 SHOP DRAWINGS AND SAMPLES

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

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

6.14 INDEMNIFICATION

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

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4. Liability or claims arising directly or indirectly from the use or manufacture by the CONTRACTOR, its employees, or agents in the performance of this contract of any copyrighted or non-copyrighted composition, secret process, patented or non-patented invention, computer software, article, or appliance, unless otherwise specifically stipulated in this contract.
 5. Liability or claims arising directly or indirectly from the breach of any warranties, whether express or implied, made to the OWNER or any other parties by the CONTRACTOR, its employees, or agents;
 6. Liabilities or claims arising directly or indirectly from the willful or criminal misconduct of the CONTRACTOR, its employees, or agents; and,
 7. Liabilities or claims arising directly or indirectly from any breach of the obligations assumed herein by the CONTRACTOR.
- B. The CONTRACTOR shall reimburse the ENGINEER and the OWNER for all costs and expenses, (including but not limited to fees and charges of engineers, attorneys, and other professionals and court costs including all costs of appeals) incurred by said OWNER, and the ENGINEER in enforcing the provisions of this Paragraph 6.14.
- C. The indemnification obligation under this Paragraph 6.14 shall not be limited in any way by any limitation of the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR or any such Subcontractor or other person or organization under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- 6.15 **CONTRACTOR'S DAILY REPORTS.** The CONTRACTOR shall complete a daily report indicating total manpower for each construction trade, major equipment on site, each Subcontractor's manpower, weather conditions, etc., involved in the performance of the WORK. The daily report shall be completed on forms provided by the ENGINEER and shall be submitted to the ENGINEER at the conclusion of each workday. The report should comment on the daily progress and status of the WORK within each major component of the WORK. These components will be decided by the ENGINEER. CONTRACTOR shall record the name, affiliation, time of arrival and departure, and reason for visit for all visitors to the location of the WORK.
- 6.16 **ASSIGNMENT OF CONTRACT.** The CONTRACTOR shall not assign, sublet, sell, transfer, or otherwise dispose of the contract or any portion thereof, or its right, title, or interest therein, or obligations thereunder, without the written consent of the OWNER except as imposed by law. If the CONTRACTOR violates this provision, the contract may be terminated at the option of the OWNER. In such event, the OWNER shall be relieved of all liability and obligations to the CONTRACTOR and to its assignee or transferee, growing out of such termination.
- 6.17 **CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES.** It is understood that any turn-on or turn-off, line locates and any other work or assistance necessary by the CBJ Water Utilities Division, will be at the CONTRACTOR's expense unless otherwise stated in the bid documents. All cost must be agreed to prior to any related actions, and will be considered incidental to the project cost. Billing to the CONTRACTOR will be direct from the CBJ Water Utilities Division.
- 6.18 **OPERATING WATER SYSTEM VALVES**
- A. The CONTRACTOR shall submit a written request, to the ENGINEER, for approval to operate any valve on any in-service section of the CBJ water system. The request must be submitted at least 24-hours prior to operating any valves. The CBJ Water Utilities Division

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reserves the right to approve or deny the request. The request shall specifically identify each valve to be operated, the time of operation, and the operation to be performed. The CONTRACTOR shall obtain the written approval of the ENGINEER for any scheduled operation before operating any valve.

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

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

ARTICLE 7 OTHER WORK

7.1 RELATED WORK AT SITE

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

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

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

ARTICLE 8 OWNER'S RESPONSIBILITIES

8.1 COMMUNICATIONS

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

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

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

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

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

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

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

ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION

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

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

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

- A. Duties, Responsibilities and Limitations of Authority of Inspector

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

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with the ENGINEER and the CONTRACTOR, and dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR. Written communication with the OWNER will be only through or as directed by the ENGINEER.

Duties and Responsibilities. The Inspector may:

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

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decisions, observations in general, and specific observations in more detail as in the case of performing and observing test procedures. Send copies to the ENGINEER.

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

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

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

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

9.5 AUTHORIZED VARIATIONS IN WORK. The ENGINEER may authorize variations in the WORK from the requirements of the Contract Documents. These may be accomplished by a Field Order and will require the CONTRACTOR to perform the WORK involved in a manner that minimizes the

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impact to the WORK and the contract completion date. If the CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time, the CONTRACTOR may make a claim therefor as provided in Article 11 or 12.

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

9.7 CONTRACTOR SUBMITTALS, CHANGE ORDERS, AND PAYMENTS

- A. In accordance with the procedures set forth in the General Requirements, the ENGINEER will review all CONTRACTOR submittals, including Shop Drawings, samples, substitutes, or "or equal" items, etc., in order to determine if the items covered by the submittals will, after installation or incorporation in the WORK, conform to the requirements of the Contract Documents and be compatible with the design concept of the completed project as a functioning whole as indicated by the Contract Documents. The ENGINEER's review will not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto.
- B. In connection with the ENGINEER's responsibilities as to Change Orders, see Articles 10, 11, and 12.
- C. In connection with the ENGINEER's responsibilities in respect of Applications for Payment, see Article 14.

9.8 DECISIONS ON DISPUTES

- A. The ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the WORK thereunder. Claims, disputes, and other matters relating to the acceptability of the WORK; the interpretation of the requirements of the Contract Documents pertaining to the performance of the WORK; and those claims under Articles 11 and 12 in respect to changes in the Contract Price or Contract Time will be referred initially to the ENGINEER in writing with a request for formal decision in accordance with this paragraph, which the ENGINEER will render in writing within 30 days of receipt of the request. Written notice of each such claim, dispute, and other matter will be delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 30 days) after the occurrence of the event giving rise thereto. Written supporting data will be submitted to the ENGINEER within 60 days after such occurrence unless the ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim.
- B. The rendering of a decision by the ENGINEER with respect to any such claim, dispute, or other matter (except any which have been waived by the making or acceptance of final payment as provided in Paragraph 14.12) will be a condition precedent to any exercise by the OWNER or the CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Law or Regulations in respect of any such claim, dispute, or other matter.

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9.9 LIMITATION ON ENGINEER'S RESPONSIBILITIES

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

ARTICLE 10 CHANGES IN THE WORK

10.1 GENERAL

- A. Without invalidating the Agreement and without notice to any surety, the OWNER may at any time or from time to time, order additions, deletions, or revisions in the WORK; these will be authorized by a written Field Order and/or a Change Order issued by the ENGINEER.
- B. If the CONTRACTOR believes that it is entitled to an increase or decrease in the Contract Price, or an extension or shortening in the Contract Time as the result of a Field Order, a claim may be made as provided in Articles 11 and 12.
- C. If the OWNER and CONTRACTOR agree on the value of any work, or the amount of Contract Time that should be allowed as a result of a Field Order, upon receiving written notice from the ENGINEER, the CONTRACTOR shall proceed so as to minimize the impact on and delays to the work pending the issuance of a Change Order.
- D. If the OWNER and the CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time

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that should be allowed as a result of a Field Order, the ENGINEER can direct the CONTRACTOR to proceed on the basis of Time and Materials so as to minimize the impact on and delays to WORK, and a claim may be made therefor as provided in Articles 11 and 12.

- E. The CONTRACTOR shall not be entitled to an increase in the Contract Price nor an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified, supplemented by Change Order, except in the case of an emergency and except in the case of uncovering work as provided in Paragraph 13.3G.
- F. The OWNER and the CONTRACTOR shall execute appropriate Change Orders covering:
 - 1. changes in the WORK which are ordered by the OWNER pursuant to Paragraph 10.1A;
 - 2. changes required because of acceptance of Defective WORK under Paragraph 13.7;
 - 3. changes in the Contract Price or Contract Time which are agreed to by the parties; or
 - 4. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by the ENGINEER pursuant to Paragraph 9.8.
- G. If notice of any change is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

10.2 ALLOWABLE QUANTITY VARIATIONS

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

ARTICLE 11 CHANGE OF CONTRACT PRICE

11.1 GENERAL

- A. The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the WORK. All duties, responsibilities, and obligations assigned to or undertaken by the CONTRACTOR to complete the WORK shall be at its expense without change in the Contract Price.
- B. The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the ENGINEER promptly (but in no event later than 7 days) after the start of the occurrence or

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

- C. The value of any WORK covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:
 - 1. Where the WORK involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.
 - 2. By mutual acceptance of a lump sum, which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.4.
 - 3. On the basis of the cost of WORK (determined as provided in Paragraphs 11.3) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.4).

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

11.3 COST OF WORK (BASED ON TIME AND MATERIALS)

- A. General. The term "cost of work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR for labor, materials, and equipment in the proper performance of extra work. Except as otherwise may be agreed to in writing by the OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.5 EXCLUDED COSTS.
- B. Labor. The costs of labor will be the actual cost for wages prevailing for each craft or type of workers performing the extra work at the time the extra work is done, plus employer payments of payroll taxes, worker's compensation insurance, liability insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. Labor costs for equipment operators and helpers shall be paid only when such costs are not included in the invoice for equipment rental. The labor costs for forepersons shall be proportioned to all of their assigned work and only that applicable to extra work shall be paid. Non-direct labor costs including superintendence shall be considered part of the mark-up set out in paragraph 11.4.

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- C. Materials. The cost of materials reported shall be at invoice or lowest current price at which materials are locally available and delivered to the job in the quantities involved, plus the cost of freight, delivery and storage, subject to the following:
1. Trade discounts available to the purchaser shall be credited to the OWNER notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.
 2. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost shall be deemed to be the price paid to the actual supplier as determined by the ENGINEER. Mark-up except for actual costs incurred in the handling of such materials will not be allowed.
 3. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on extra work items or the current wholesale price for such materials delivered to the work site, whichever price is lower.
 4. If in the opinion of the ENGINEER the cost of material is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of such material, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned delivered to the work site less trade discount. The OWNER reserves the right to furnish materials for the extra work and no claim shall be allowed by the CONTRACTOR for costs and profit on such materials.
- D. Equipment. The CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the Supplementary General Conditions. Such rental rate will be used to compute payments for equipment whether the equipment is under the CONTRACTOR's control through direct ownership, leasing, renting, or another method of acquisition. The rental rate to be applied for use of each item of equipment shall be the rate resulting in the least total cost to the OWNER for the total period of use. If it is deemed necessary by the CONTRACTOR to use equipment not listed in the publication specified in the Supplementary General Conditions, an equitable rental rate for the equipment will be established by the ENGINEER. The CONTRACTOR may furnish cost data which might assist the ENGINEER in the establishment of the rental rate.
1. All equipment shall, in the opinion of the ENGINEER, be in good working condition and suitable for the purpose for which the equipment is to be used.
 2. Before construction equipment is used on the extra work, the CONTRACTOR shall plainly stencil or stamp an identifying number thereon at a conspicuous location, and shall furnish to the ENGINEER, in duplicate, a description of the equipment and its identifying number.
 3. Unless otherwise specified, manufacturer's ratings and manufacturer approved modifications shall be used to classify equipment for the determination of applicable rental rates. Equipment which has no direct power unit shall be powered by a unit of at least the minimum rating recommended by the manufacturer.
 4. Individual pieces of equipment or tools having a replacement value of \$200 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.
 5. Rental time will not be allowed while equipment is inoperative due to breakdowns.
 6. Equipment Rental Rates. Unless otherwise agreed in writing, the CONTRACTOR will be paid for the use of equipment at the rental rate listed for such equipment specified in the current edition of the following reference publication: "Rental Rate Blue Book" as

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published by Dataquest (a company of the Dunn and Bradstreet Corporation), 1290 Ridder Park Drive, San Jose, CA 95131, telephone number (800) 227-8444.

- E. Equipment on the Work Site. The rental time to be paid for equipment on the work site shall be the time the equipment is in productive operation on the extra work being performed and, in addition, shall include the time required to move the equipment to the location of the extra work and return it to the original location or to another location requiring no more time than that required to return it to its original location; except, that moving time will not be paid if the equipment is used on other than the extra work, even though located at the site of the extra work. Loading and transporting costs will be allowed, in lieu of moving time, when the equipment is moved by means other than its own power, except that no payment will be made for loading and transporting costs when the equipment is used at the site of the extra work on other than the extra work. The following shall be used in computing the rental time of equipment on the work site.
1. When hourly rates are listed, any part of an hour less than 30 minutes of operation shall be considered to be 1/2-hour of operation, and any part of an hour in excess of 30 minutes will be considered one hour of operation.
 2. When daily rates are listed, any part of a day less than 4 hours operation shall be considered to be 1/2-day of operation. When owner-operated equipment is used to perform extra work to be paid for on a time and materials basis, the CONTRACTOR will be paid for the equipment and operator, as set forth in Paragraphs (3), (4), and (5), following.
 3. Payment for the equipment will be made in accordance with the provisions in Paragraph 11.3D, herein.
 4. Payment for the cost of labor and subsistence or travel allowance will be made at the rates paid by the CONTRACTOR to other workers operating similar equipment already on the work site, or in the absence of such labor, established by collective bargaining agreements for the type of worker and location of the extra work, whether or not the operator is actually covered by such an agreement. A labor surcharge will be added to the cost of labor described herein in accordance with the provisions of Paragraph 11.3B, herein, which surcharge shall constitute full compensation for payments imposed by state and federal laws and all other payments made to or on behalf of workers other than actual wages.
 5. To the direct cost of equipment rental and labor, computed as provided herein, will be added the allowances for equipment rental and labor as provided in Paragraph 11.4, herein.
- F. Specialty Work. Specialty work is defined as that work characterized by extraordinary complexity, sophistication, or innovation or a combination of the foregoing attributes which are unique to the construction industry. The following shall apply in making estimates for payment for specialty work:
1. Any bid item of WORK to be classified as Specialty Work shall be listed as such in the Supplementary General Conditions. Specialty work shall be performed by an entity especially skilled in the work to be performed. After validation of invoices and determination of market values by the ENGINEER, invoices for specialty work based upon the current fair market value thereof may be accepted without complete itemization of labor, material, and equipment rental costs.
 2. When the CONTRACTOR is required to perform work necessitating special fabrication or machining process in a fabrication or a machine shop facility away from

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the job site, the charges for that portion of the work performed at the off-site facility may, by agreement, be accepted as specialty work and accordingly, the invoices for the work may be accepted without detailed itemization.

3. All invoices for specialty work will be adjusted by deducting all trade discounts offered or available, whether the discounts were taken or not. In lieu of the allowances for overhead and profit specified in Paragraph 11.4, herein, an allowance of 5 percent will be added to invoices for specialty work.

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

11.4 CONTRACTOR'S FEE

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

Actual Overhead and Profit Allowance

Labor.....	15 percent
Materials	10 percent
Equipment.....	10 percent

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

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

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

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

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- B. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- C. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the WORK and charges against CONTRACTOR for delinquent payments.
- D. Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by paragraph 11.4 above).
- E. Costs due to the negligence of CONTRACTOR , any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective WORK, disposal of materials or equipment wrongly supplied and making good any damage to property.
- F. Other overhead or general expense costs of any kind and the cost of any item not specifically and expressly included in paragraph 11.4.

ARTICLE 12 CHANGE OF CONTRACT TIME

12.1 GENERAL

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

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

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

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

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

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WORK. The cost of all inspections, tests, and approvals in addition to the above which are required by the Contract Documents shall be paid by the OWNER (unless otherwise specified).

- C. The ENGINEER will make, or have made, such inspections and tests as the ENGINEER deems necessary to see that the WORK is being accomplished in accordance with the requirements of the Contract Documents. Unless otherwise specified in the Supplementary General Conditions, the cost of such inspection and testing will be borne by the OWNER. In the event such inspections or tests reveal non-compliance with the requirements of the Contract Documents, the CONTRACTOR shall bear the cost of corrective measures deemed necessary by the ENGINEER, as well as the cost of subsequent reinspection and retesting. Neither observations by the ENGINEER nor inspections, tests, or approvals by others shall relieve the CONTRACTOR from the CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents.
 - D. All inspections, tests, or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to the ENGINEER and the CONTRACTOR.
 - E. If any WORK (including the work of others) that is to be inspected, tested, or approved is covered without written concurrence of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the ENGINEER timely notice of the CONTRACTOR's intention to perform such test or to cover the same and the ENGINEER has not acted with reasonable promptness in response to such notice.
 - F. If any WORK is covered contrary to the written request of the ENGINEER, it must, if requested by the ENGINEER, be uncovered for the ENGINEER's observation and recovered at the CONTRACTOR's expense.
 - G. If the ENGINEER considers it necessary or advisable that covered WORK be observed by the ENGINEER or inspected or tested by others, the CONTRACTOR, at the ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, material, and equipment. If it is found that such WORK is defective, the CONTRACTOR shall bear all direct, indirect, and consequential costs and damages of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction, including but not limited to fees and charges of engineers, attorneys, and other professionals. However, if such WORK is not found to be defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, the CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.
- 13.4 OWNER MAY STOP THE WORK. If the WORK is defective, or the CONTRACTOR fails to perform work in such a way that the completed WORK will conform to the Contract Documents, the OWNER may order the CONTRACTOR to stop the WORK, or any portion thereof, until the cause for such order has been eliminated; however, this right of the OWNER to stop the WORK shall not give rise to any duty on the part of the OWNER to exercise this right for the benefit of the CONTRACTOR or any other party.

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- 13.5 CORRECTION OR REMOVAL OF DEFECTIVE WORK. If required by the ENGINEER, the CONTRACTOR shall promptly, either correct all defective work, whether or not fabricated, installed, or completed, or, if the WORK has been rejected by the ENGINEER, remove it from the site and replace it with non-defective work. The CONTRACTOR shall bear all direct, indirect and consequential costs and damages of such correction or removal, including but not limited to fees and charges of engineers, attorneys, and other professionals made necessary thereby.
- 13.6 ONE YEAR CORRECTION PERIOD
- A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any work is found to be defective, the CONTRACTOR shall promptly, without cost to the OWNER and in accordance with OWNER's written notification, (i) correct such Defective WORK, or, if it has been rejected by the OWNER, remove it from the site and replace it with non-defective work, and (ii) satisfactorily correct or remove and replace any damage to other work of others resulting therefrom. If the CONTRACTOR does not promptly comply with such notification, or in an emergency where delay would cause serious risk of loss or damage, the OWNER may have the Defective WORK corrected or the rejected WORK removed and replaced, and all direct, indirect, and consequential costs and damages of such removal and replacement including but not limited to fees and charges of engineers, attorneys and other professionals will be paid by the CONTRACTOR.
- B. Where Defective WORK (and damage to other WORK resulting therefrom) has been corrected, removed or replaced under this paragraph 13.6, the correction period hereunder with respect to such WORK will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- 13.7 ACCEPTANCE OF DEFECTIVE WORK. If, instead of requiring correction or removal and replacement of defective work, the OWNER prefers to accept the WORK, the OWNER may do so. The CONTRACTOR shall bear all direct, indirect, and consequential costs attributable to the OWNER's evaluation of and determination to accept such defective work. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK, and the OWNER shall be entitled to an appropriate decrease in the Contract Price.

ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION

- 14.1 SCHEDULE OF VALUES (LUMP SUM PRICE BREAKDOWN). The schedule of values or lump sum price breakdown established as provided in the General Requirements shall serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the ENGINEER.
- 14.2 UNIT PRICE BID SCHEDULE. Progress payments on account of Unit Price work will be based on the number of units completed.
- 14.3 APPLICATION FOR PROGRESS PAYMENT
- A. Unless otherwise prescribed by law, on the 25th of each month, the CONTRACTOR shall submit to the ENGINEER for review, an Application for Payment filled out and signed by the

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CONTRACTOR covering the WORK completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

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

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Application for Payment with the ENGINEER's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.5B) become due and when due will be paid by the OWNER to the CONTRACTOR.

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

14.6 PARTIAL UTILIZATION

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

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

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

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14.9 FINAL PAYMENT AND ACCEPTANCE

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

14.10 RELEASE OF RETAINAGE AND OTHER DEDUCTIONS

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

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

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

ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

- 15.1 SUSPENSION OF WORK BY OWNER. The OWNER, acting through the ENGINEER, may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than 90 days by notice in writing to the CONTRACTOR. The CONTRACTOR shall resume the WORK on receipt from the ENGINEER of a notice of resumption of work. The CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.
- 15.2 TERMINATION OF AGREEMENT BY OWNER (CONTRACTOR DEFAULT)
- A. In the event of default by the CONTRACTOR, the OWNER may give 10 days written notice to the CONTRACTOR of OWNER's intent to terminate the Agreement and provide the CONTRACTOR an opportunity to remedy the conditions constituting the default. It shall be considered a default by the CONTRACTOR whenever CONTRACTOR shall: (1) declare bankruptcy, become insolvent, or assign its assets for the benefit of its creditors; (2) fail to provide materials or quality of work meeting the requirements of the Contract Documents; (3) disregard or violate provisions of the Contract Documents or ENGINEER's instructions; (4) fail to prosecute the WORK according to the approved progress schedule; or, (5) fail to provide a qualified superintendent, competent workers, or materials or equipment meeting the requirements of the Contract Documents. If the CONTRACTOR fails to remedy the conditions constituting default within the time allowed, the OWNER may then issue the Notice of Termination.
- B. In the event the Agreement is terminated in accordance with Paragraph 15.2A, herein, the OWNER may take possession of the WORK and may complete the WORK by whatever method or means the OWNER may select. The cost of completing the WORK shall be deducted from the balance which would have been due the CONTRACTOR had the Agreement not been terminated and the WORK completed in accordance with the Contract Documents. If such cost exceeds the balance which would have been due, the CONTRACTOR shall pay the excess amount to the OWNER. If such cost is less than the balance which would have been due, the CONTRACTOR shall not have claim to the difference.
- 15.3 TERMINATION OF AGREEMENT BY OWNER (FOR CONVENIENCE). The OWNER may terminate the Agreement at any time if it is found that reasons beyond the control of either the OWNER or CONTRACTOR make it impossible or against the OWNER's interests to complete the WORK. In such a case, the CONTRACTOR shall have no claims against the OWNER except: (1) for the value of work performed up to the date the Agreement is terminated; and, (2) for the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Agreement

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is terminated which would be needed in the WORK and which meet the requirements of the Contract Documents. The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined by the ENGINEER in accordance with the procedure prescribed for the making of the final application for payment and payment under Paragraphs 14.8 and 14.9.

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

ARTICLE 16 MISCELLANEOUS

- 16.1 **GIVING NOTICE.** Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.
- 16.2 **RIGHTS IN AND USE OF MATERIALS FOUND ON THE WORK**
- A. The CONTRACTOR may use on the Project, with ENGINEER's approval, such stone, gravel, sand, or other material determined suitable by the ENGINEER, as may be found in the excavation. The CONTRACTOR will be paid for the excavation of such material at the corresponding contract unit price. No additional payment will be made for utilizing the material from excavation as borrow, or select borrow.
 - B. The CONTRACTOR shall replace, at its own expense, with other acceptable material, all of that portion of the excavated material so removed and used which was needed for use on the project. No charge for the materials so used will be made against the CONTRACTOR except that the CONTRACTOR shall be responsible for payment of any royalties required.
 - C. The CONTRACTOR shall not excavate or remove any material from within the Project location which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from the ENGINEER.
 - D. In the event the CONTRACTOR has processed materials from OWNER-furnished sources in excess of the quantities required for performance of this contract, including any waste material produced as a by-product, the CBJ may retain possession of such materials without obligation to reimburse the CONTRACTOR for the cost of their production. When such materials are in a stockpile, the ENGINEER may require: That it remain in stockpile; the CONTRACTOR level such stockpile(s); or that the CONTRACTOR remove such materials and restore the premises to a satisfactory condition at the CONTRACTOR's expense. This provision shall not preclude the CBJ from arranging with the CONTRACTOR to produce

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material over and above the contract needs, payment for which shall be by written agreement between the CBJ and the CONTRACTOR.

- E. Unless otherwise provided, the material from any existing old structure may be used temporarily by the CONTRACTOR in the erection of the new structure. Such material shall not be cut or otherwise damaged except with the approval of the ENGINEER.
- 16.3 RIGHT TO AUDIT. If the CONTRACTOR submits a claim to the OWNER for additional compensation, the OWNER shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR's books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which the claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR's plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon Subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the OWNER deems desirable during the CONTRACTOR's normal business hours at the office of the CONTRACTOR. The CONTRACTOR shall make available to the OWNER for auditing, all relevant accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the OWNER.
- 16.4 ARCHEOLOGICAL OR HISTORICAL DISCOVERIES. When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, such as shell heaps, land or sea mammal bones or tusks, or other items of historical significance, the CONTRACTOR shall cease operations immediately and notify the ENGINEER. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the ENGINEER order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra work, such order(s) shall be covered by an appropriate contract change document.
- 16.5 CONSTRUCTION OVER OR ADJACENT TO NAVIGABLE WATERS. All work over, on, or adjacent to navigable waters shall be so conducted that free navigation of the waterways will not be interfered with and the existing navigable depths will not be impaired, except as allowed by permit issued the U.S. Coast Guard and/or the U.S. Army Corps of Engineers, as applicable.
- 16.6 GRATUITY AND CONFLICT OF INTEREST. The CONTRACTOR agrees to not extend any loan, gratuity or gift of money of any form whatsoever to any employee or elected official of the OWNER, nor will the CONTRACTOR rent or purchase any equipment or materials from any employee or elected official of the OWNER, or to the best of the CONTRACTOR's knowledge, from any agent of any employee or elected official of the OWNER. Before final payment, the CONTRACTOR shall execute and furnish the OWNER an affidavit certifying that the CONTRACTOR has complied with the above provisions of the contract.
- 16.7 SUITS OF LAW CONCERNING THE WORK
- A. Should a suit of law be entered into, either by the CONTRACTOR (or the CONTRACTOR's surety) against the OWNER, or by the OWNER against the CONTRACTOR (or the CONTRACTOR's surety), the suit of law shall be tried in the First Judicial District of Alaska.

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

16.8 CERTIFIED PAYROLLS

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

16.9 PREVAILING WAGE RATES

- A. Wage rates for Laborers and Mechanics on Public Contracts, AS 36.05.070. The CONTRACTOR, or Subcontractors, shall pay all employees unconditionally and not less than once a week. Wages may not be less than those stated in Paragraph 16.8C, regardless of the contractual relationship between the CONTRACTOR or Subcontractors and laborers, mechanics, or field surveyors. The scale of wages to be paid shall be posted by the CONTRACTOR in a prominent, easily accessible place at the site of the WORK.
- B. Failure to Pay Agreed Wages, AS 36.05.080. If it is found that a laborer, mechanic, or field surveyor employed by the CONTRACTOR or Subcontractor has been, or is being, paid a rate or wages less than the established rate, the OWNER may, by written notice, terminate the CONTRACTOR or Subcontractors right to proceed with the work. The OWNER may prosecute the work to completion by contract or otherwise, and the CONTRACTOR and sureties will be held liable to the OWNER for excess costs for completing the WORK. (Section 2 ch 52 SLA 1959).
- C. Listing Contractor's Who Violate Contracts, AS 36.05.090. In addition, a list giving the names of persons who have disregarded the rights of their employees shall be distributed to all departments of State government and all political subdivisions. No person appearing on this list, and no firm, corporation, partnership or association in which the person has an interest, may work as a CONTRACTOR or Subcontractor on a public construction contract for the State, or a political subdivision of the state, until three years after the date of publication of the list. (Section 3 ch 52 SLA 1959; am Section 9 ch 142 SLA).

16.10 EMPLOYMENT REFERENCE. Workers employed in the execution of the contract by the CONTRACTOR or by any Subcontractor under this contract shall not be required or permitted to

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labor more than 8 hours a day or 40 hours per week in violation of the provisions of the Alaska Wage and Hour Act, Section 23.10.060.

16.11 COST REDUCTION INCENTIVE

- A. At any time within 45 days after the date of the Notice of Award, the CONTRACTOR may submit to the ENGINEER in writing, proposals for modifying the plans, specifications, or other requirements of this contract for the sole purpose of reducing the total cost of construction. The cost reduction proposal shall not impair in any manner the essential functions or characteristics of the project, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance or design and safety standards.
- B. The cost reduction proposal shall contain the following information:
 - 1. Description of both the existing contract requirements for performing the WORK and the proposed changes.
 - 2. An itemization of the contract requirements that must be changed if the proposal is adopted.
 - 3. A detailed estimate of the time required and the cost of performing the WORK under both the existing contract and the proposed change.
 - 4. A statement of the date by which the CONTRACTOR must receive the decision from the OWNER on the cost reduction proposal.
 - 5. The contract items of WORK effected by the proposed changes including any quantity variations.
 - 6. A description and estimate of costs the OWNER may incur in implementing the proposed changes, such as test and evaluation and operating and support costs.
 - 7. A prediction of any effects the proposed change would have on future operations and maintenance costs to the OWNER.
- C. The provisions of this section shall not be construed to require the OWNER to consider any cost reduction proposal which may be submitted; nor will the OWNER be liable to the CONTRACTOR for failure to accept or act upon any cost reduction proposal submitted, or for delays to the work attributable to the consideration or implementation of any such proposal.
- D. If a cost reduction proposal is similar to a change in the plans or specifications for the project under consideration by the OWNER at the time the proposal is submitted, the OWNER will not accept such proposal and reserves the right to make such changes without compensation to the CONTRACTOR under the provisions of this section.
- E. The CONTRACTOR shall continue to perform the work in accordance with the requirements of the contract until an executed Change Order incorporating the cost reduction proposal has been issued. If any executed Change Order has not been issued by the date upon which the CONTRACTOR's cost reduction proposal specifies that a decision should be made by the OWNER, in writing, the cost reduction proposal shall be considered rejected.
- F. The OWNER, shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings in Contract Time and construction costs resulting from the adoption of all or any part of such proposal. Should the CONTRACTOR disagree with OWNER's decision on the cost reduction proposal, there is no further consideration. The OWNER reserves the right to make final determination.

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- G. If the CONTRACTOR's cost reduction proposal is accepted in whole or in part, such acceptance will be made by a contract Change Order, which specifically states that the change is executed pursuant to this cost reduction proposal section. Such Change Order shall incorporate the changes in the plans and specifications which are necessary to permit the cost reduction proposal or such part of it as has been accepted to be put into effect and shall include any conditions upon which the OWNER's approval is based, if such approval is conditional. The Change Order shall also describe the estimated net savings in the cost of performing the work attributable to the cost reduction proposal, and shall further provide that the contract cost be adjusted by crediting the OWNER with the estimated net savings amount.
- H. Acceptance of the cost reduction proposal and performance of the work does not extend the time of completion of the contract, unless specifically provided in the Change Order authorizing the use of the submitted proposal. Should the adoption of the cost reduction proposal result in a Contract Time savings, the total Contract Time shall be reduced by an amount equal to the time savings realized.
- I. The amount specified to the CONTRACTOR in the Change Order accepted in the cost reduction proposal shall constitute full compensation for the performance of WORK. No claims for additional costs as a result of the changes specified in the cost reduction proposal shall be allowed.
- J. The OWNER reserves the right to adopt and utilize any approved cost reduction proposal for general use on any contract administered when it is determined suitable for such application. Cost reduction proposals identical, similar, or previously submitted will not be accepted for consideration if acceptance and compensation has previously been approved. The OWNER reserves the right to use all or part of any cost reduction proposal without obligation or compensation of any kind to the CONTRACTOR.
- K. The CONTRACTOR shall bear the costs, if any, to revise all bonds and insurance requirements for the project, to include the cost reduction WORK.

END OF SECTION

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

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

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

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

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

The OWNER shall furnish to the CONTRACTOR up to ten (10) copies of the Contract Documents which will include bound reduced Drawings, together with up to five (5) sets of full-scale 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 and full-scale Drawings will be furnished at reproduction cost.

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

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

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

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

1. The following report of exploration and tests of subsurface conditions at the site of the WORK:
 - a. “Geotechnical Findings and Recommendations, Juneau Seawalk - Bridge to Gold Creek”, report prepared by Golder Associates Inc., Golder Project No. 133-95014, dated March 24, 2014.
 - b. “Gold Creek Seawalk Project, Basis of Coastal Engineering Design” Technical Memorandum by Coast and Harbor Engineering, dated February 24, 2014.
 - c. Copies of these reports may be examined at the office of the CBJ Engineer during regular business hours. As provided in paragraph 4.2 of the General Conditions and as identified and established above, the CONTRACTOR may rely upon the accuracy of the technical data contained in this report, which is incorporated into the Contract Documents by reference. However, the interpretation of such technical data,

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including any interpolation or extrapolation thereof, together with non-technical data, interpretations and opinions contained in such reports or drawings, which are not a part of Contract Documents, or the completeness thereof, is the responsibility of the CONTRACTOR.

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

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

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

SGC - 4.6 USE OF THE CBJ/STATE LEMON CREEK GRAVEL PIT.

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

- *Delete* the last sentence of Paragraph A and *replace with* the following: “Contact Alan Steffert, CBJ Material Source Manager, at (907) 586-0481 for the current material rates.”
- *Delete* paragraph C., and *replace* with the following paragraph C.
 - C. CONTRACTORS deciding to use material from the CBJ/State pit shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing operations within the pit. CONTRACTORS shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ. A \$10,000 cash processing restoration bond is required prior to screening or primary crushing operations.
- *Add* the following paragraph:
 - J. Contractors choosing to mine material from CBJ material sources are also subject to the conditions contained in each site’s Multi Sector General Permit for Stormwater Discharges associated with industrial activities (MSGP) and the Storm Water Pollution Prevention Plan (SWPPP).

Add the following SGC 4.7:

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

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

Add the following SGC 4.7:

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

- A. On City and Borough of Juneau construction projects, the CBJ may make unclassified material available to the CONTRACTOR, from the City/State Stabler's Point rock quarry, at a rate less than

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charged other customers. The CONTRACTOR is not required to use material from the CBJ/State quarry and the CBJ makes no guarantee as to the quantity or quality of material. Contact Alan Steffert, CBJ Material Source Manager, at (907) 586-0481 for the current material rates.

- B. The CONTRACTOR proposing to use material from the City/State quarry is required to be in good standing for all amounts owed to the CBJ, for previous gravel operations, prior to submitting a mining plan for approval. The CONTRACTOR using the quarry must comply with Conditional Use Permit USE2011-00017. Failure to meet these requirements, if so subject, shall be sufficient reason to deny use of the City/State Stabler's Point rock quarry as a rock source. To determine if your company is subject to these requirements, contact the CBJ Engineering Department, Rock Quarry Management, at (907) 586-0481.
- C. The CONTRACTOR deciding to use material from the CBJ/State Stabler's Point rock quarry shall provide an Individual Mining Plan prepared by a professional engineer registered in the State of Alaska. The Individual Mining Plan must be reviewed and approved by the CBJ, prior to commencing operations with the pit. The CONTRACTOR shall also secure a Performance Bond to ensure compliance with contract provisions, including any Individual Mining Plan stipulations. The bond shall remain in full force and effect until a release is obtained from the CBJ. A \$10,000.00 cash processing restoration bond is required prior to screening or primary crushing operations.
- D. The CONTRACTOR must submit an Individual Mining Plan that is in compliance with Conditional Use Permit No. USE 2011-00017 for rock extraction with the City/State Stabler's Point rock quarry. The CONTRACTOR must contact the CBJ Engineering Department for conditions for the extraction.
- E. The CONTRACTOR shall account for placement of materials removed from the quarry. The CBJ may require the CONTRACTOR to cross-check weight tickets, submit to an audit, or participate in other measures required by the CBJ to ensure accountability. Unprocessed overburden removed from the quarry will not be weighed. All other material mined will be measured by truck load or survey. The CONTRACTOR will be responsible for loading, screening and sorting their own material. Primary screening may be allowed in the quarry. Primary crushing may be allowed according to the conditions of the Conditional Use Permit No USE2011-00017.
- F. The rock quarry overhead charge shall be paid to the CBJ within 60 days after removing material from the quarry and prior to requesting and/or receiving final payment. Upon completion of the excavation the CONTRACTOR shall notify the CBJ, in writing, in sufficient time to perform a field-compliance examination prior to vacating the quarry. Any significant deviation from the stipulations of the Individual Mining Plan identified during the field inspection shall be corrected by the CONTRACTOR prior to release of the bond. A signed release from CBJ will be required prior to releasing the CONTRACTOR's bond.
- G. The City/State Stabler's Point rock quarry is a by-project operation. The hours of operation are stipulated in Conditional Use Permit No. USE2011-00017.
- H. All Contractors/Equipment Operators using the CBJ/State Stabler's Point rock quarry shall be in compliance with Federal Mine Safety and Health Administration regulations for quarry and gravel operations.
- I. Contractors choosing to mine material from CBJ material sources are also subject to the conditions contained in each site's Multi Sector General Permit for Stormwater Discharges associated with industrial activities (MSGP) and the Storm Water Pollution Prevention Plan (SWPPP).

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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

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, **with NO "Marine Exclusions"**: (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 |

NOTE: If CGL policy includes "Marine Exclusions," CONTRACTOR shall carry a separate Marine General Liability policy with the limits above.

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

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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. BUILDERS RISK is not required for this project.
- E. Marine Protection and Indemnity \$2,000,000 per Accident or Occurrence including coverage for all crew members. Divers must have appropriate certifications.
- F. Policies shall also specify insurance provided by CONTRACTOR will be considered primary and not contributory to any other insurance available to the OWNER.
- G. Should any of the policies described above be cancelled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

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

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

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

- C. CONTRACTOR must pay Subcontractors and/or Suppliers within 30 days of receiving payment from the OWNER, if that payment was made for Work performed by the Subcontractor and/or materials received. Failure to pay Subcontractors within 30 days of receiving payment from which Subcontractor and/or Supplier is to be paid may result in the OWNER initiating debarment proceedings as prescribed in the City and Borough of Juneau Purchasing Code. *The 30 day City and Borough of Juneau requirement does not supersede AS 36.90.210.*

SGC 6.6 PERMITS *Add* the following paragraph:

- D. 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%.

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

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

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

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

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

Add the following SGC 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 2014 Series I Bond Proceeds, FY13 Port Revenue Bond, Port Development Fees, and State Marine Passenger Fees.

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

Employment Security Tax Clearance

Date: _____

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

From: _____

**Subject: Seawalk – Bridge to Gold Creek
Contract No. E16-011**

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:

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

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

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

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

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

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

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

Contact Information:

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

Greg Smith, Contract Administrator
City and Borough of Juneau
155 S. Seward Street
Juneau, AK 99801
(907) 586-0873
greg.smith@juneau.org

END OF SECTION

SECTION 00852 - PERMITS

PART 1 - GENERAL

1.1 INDEX OF PERMITS

- A. US Army Corps of Engineers, Permit No. POA-2014-251, attached, has been issued for this project.
- B. City and Borough of Juneau, City State Project Review and Building Permit, attached, has been issued for the project.
- C. Stormwater Pollution Prevention Plan for Construction Activities, and all other permits required to complete the Work shall be obtained by CONTRACTOR.
- D. Contractor shall comply with all conditions of all permits required for the project.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION



DEPARTMENT OF THE ARMY
ALASKA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
P.O. BOX 22270
JUNEAU, ALASKA 99802

RECEIVED

MAR 05 2015

CBJ ENGINEERING

Regulatory Division
POA-2014-251

March 4, 2015

Mr. Skye Stekoll
City and Borough of Juneau
155 South Seward Street
Juneau, Alaska 99801

Dear Mr. Stekoll:

Enclosed is the signed Department of the Army permit, file number POA-2014-251, Gastineau Channel, which authorizes the construction of a habitat island, park, habitat enhancement activities, and an elevated walkway. The project site is located within Section 23, T. 41 S., R. 67 E., Copper River Meridian; USGS Quad Map Juneau B-2; Latitude 58.298629° N., Longitude -134.42309° W.; in Juneau, Alaska. Also enclosed is a Notice of Authorization which should be posted in a prominent location near the authorized work.

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

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

Please contact me via email at Matthew.T.Brody@usace.army.mil, by mail at the address above, or by phone at (907) 790-4493, if you have questions. For more information about the Regulatory Program, please visit our website at <http://www.poa.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,

Matthew Brody
Regulatory Specialist

Enclosures

CF:

Skye.Stekoll@juneau.org
Michel.Elfers@juneau.org
Rorie.Watt@juneau.org

DEPARTMENT OF THE ARMY PERMIT

Permittee: City and Borough of Juneau – Skye Stekoll

Permit No.: POA-2014-251

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

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

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

Project Description: Place dredged and/or fill material into waters of the U.S. below the high tide line, including special aquatic sites, as well as the placement of structures into waters of the U.S. below the Mean High Water to facilitate the construction of a habitat island, park, and elevated walkway. Specifically the work includes:

1. Discharge 410 cubic yards of riprap, soil material, cobble, and gravel below the high tide line (HTL) (+20.8 feet above the 0.0 foot contour line) impacting 0.1 acres of marine intertidal substrate to vegetate the existing riprap side slopes.
2. Discharge 11,500 cubic yards of shot rock and riprap below the HTL impacting 0.58 acres of marine intertidal substrate to construct a park.
3. Discharge 30,000 cubic yards of shot rock and riprap below the HTL impacting 2.69 acres of marine intertidal and subtidal substrate including 0.12 acres of vegetated shallows to construct a recreational island.
4. Discharge 360 cubic yards of shot rock below the HTL impacting 0.07 acres of marine intertidal substrate to access the proposed island.
5. Discharge 127 cubic yards of rock below the HTL impacting 0.05 acres of marine intertidal substrate to construct two pedestrian paths for access to the proposed recreational island and intertidal waters.
6. Install 65 each 14-inch to 16-inch diameter steel piles below the Mean High Water Mark (+15.4 feet above the 0.0 foot contour line) to construct two viewing platforms and one pedestrian and bicycle path.
7. Create a total of 0.37 acres of tidal wetland vegetation through transplanting, and new plantings including the transplanting of 0.12 acres of existing Alkali grass and other native species on site.

All work will be performed in accordance with the attached plan, sheets **[1-17]**, dated **[January 26, 2015]**.

Project Location: The project site is located within Section 23, T. 41 S., R. 67 E., Copper River Meridian; USGS Quad Map Juneau B-2; Latitude 58.298629° N., Longitude -134.42309° W.; in Juneau, Alaska.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **February 29, 2020.**

If you find that you need more time to complete the authorized activity, submit your request for a permit renewal to this office for consideration at least six months before the above date is reached.

2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. Effective erosion control measures shall be installed and maintained before, during, and after construction to prevent erosion and the introduction of sediments and/or contaminants into adjacent waters of the United States. These structures shall remain in place until all fills (including side slopes) or other disturbed areas subject to potential erosion have been permanently stabilized.
2. The permittee shall ensure that all synthetic erosion control features (e.g., floating silt curtain, silt fencing, netting, mats), which are intended for temporary use during construction, are completely removed and properly disposed of after their initial purpose has been served. Only natural fiber materials, which will degrade after time, may be used as permanent measures, or if used temporarily, may be abandoned in place.
3. Project boundaries shall be clearly identified in the field (e.g., staking, flagging, silt fencing, etc.) prior to site clearing and construction to ensure avoidance of impacts to waters of the United States, including wetlands, beyond the authorized project footprint. All areas of existing tidal vegetation that are to remain undisturbed, as identified on sheets 5 and 6 of 17 in the project plans, shall be clearly identified in the field (e.g., staking, flagging, silt fencing, etc.) prior to construction.
4. All fill material for the authorized work shall be clean, free from toxic pollutants in toxic amounts. Material used for construction or discharge shall not consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.).
5. Excess fill material shall not be staged or disposed within wetlands or other waters of the United States.

6. All fill slopes are expected to retain their design grade and location. The Habitat Island portion of the project shall be within ± 5 feet from the original design elevations.
7. The portion of the project identified in the attached map (sheet 16 of 17) that would include the authorized Habitat Island and enhancement activities on parcel 1C060K670010 within and owned by the City and Borough of Juneau shall be protected from future development and disturbance through the recording of a Restrictive Covenant. The Restrictive Covenant shall be recorded within 6 months of the date of this permit and proof in writing shall be submitted to this office once completed. The restrictive covenant shall be reviewed and approved by the Corps of Engineers Juneau Regulatory Field Office prior to recording. The language in the Restrictive Covenant shall protect the site from degradation and support the continued presence and functions of the current aquatic resources as well as any established or enhanced aquatic resources and their functions. The language in the Restrictive Covenant shall prohibit site degradation through prohibition of development, including any structures, grading, vegetation removal, motorized vehicle use/access. Exemptions to these requirements include structures or work that improves the sites function and/or habitat, site maintenance, and any vegetation removal associated with the control of invasive plant or animal species. The Restrictive Covenant shall be recorded with the Registrar of Deeds or other appropriate official charged with the responsibility for maintain records of title to or interest in real property.
8. Vegetation and plant community establishment proposed as part of the authorized project shall achieve the following by the end of the 5th growing season:
 - a. Achieve aerial cover of native vegetation of at least 50% over 0.37 acres of tidal wetland vegetation such as Alkali grass (*Puccinellia nutkaensis*) Lyngbye sedge (*Carex lyngbyei*) after five full growing seasons from initial planting.
 - b. Achieve aerial cover of native vegetation of at least 50% over 0.93 acres on the authorized Habitat Island of species such as Beach Rye (*Elymus mollis*), Red Fescue (*Festuca rubra*), Tufted Hairgrass (*Deschamosia caespitosa*), Red Osier Dogwood (*Cornus stolonifera*), Sitka Spruce (*Picea sitchensis*), and Black Cottonwood (*Populus balsamifera*) after five full growing seasons from initial planting.
 - c. Achieve aerial cover of native vegetation of at least 50% along 830 linear feet of existing rocky shoreline of species such as Red Osier Dogwood (*Cornus stolonifera*), Sitka Spruce (*Picea sitchensis*), and Black Cottonwood (*Populus balsamifera*) after five full growing seasons of planting.
9. The growth and/or spread of invasive plants onsite is prohibited. Prior to construction the site will be surveyed for invasive plants. All identified invasive plants shall be removed and disposed of offsite prior to construction. Corrective measures shall be implemented to preclude the growth and/or spread of any invasive plants within the project area identified by the annual vegetation cover maps submitted as part of the annual monitoring reports. Invasive plant species are identified as the 37 species listed in table 1.1 of the *Disposal and Control of Invasive Plant Species* report prepared by Alaska Department of Transportation and Public Facilities Southeast Region dated February 2014. The species identified in this report is attached to this permit.
10. An Adaptive Management Plan shall be developed by the applicant in the event of unsuccessful achievement of conditions 6, 8, and 9 of this permit. The plan shall be developed with in consultation with the Corps and any other Federal or State agencies as appropriate. The plan shall analyze any noncompliance with conditions 6, 8, and 9 and develop a strategy to address the issue.
11. All pile driving shall only be performed during low tidal stages (a six hour period beginning three hours before low tide and ending three hours past low tide). Piles shall be driven using a vibratory hammer to the extent practicable. If an impact hammer is required because of substrate type or the need for seismic stability a pile cushion shall be used between hammer and pile.
12. Monitoring reports are required: Annual monitoring reports shall be submitted on the status of the Habitat Island and associated enhancement work. The reports shall be submitted by December 31 following each of the first five growing seasons and produced by a member of the projects design science team or another qualified individual designated by the applicant. The reports shall be

forwarded to the U.S. Army Corps of Engineers Juneau Field Office at: Alaska District, Army Corps of Engineers, Regulatory Division, Juneau Field Office at address P.O. Box 22270, Juneau, Alaska 99802-2270. The reports shall, at a minimum, include the following information:

- a. Vegetation cover maps at an appropriate scale shall be submitted for each reported growing season. Vegetation cover maps shall be submitted for existing vegetation, new plantings (seeds, transplanted or purchased plugs, and transplanted or purchased contained plants), and invasive plants. The vegetation cover maps shall identify the vegetation type (species name), vegetated area, and percent cover for the vegetated area. The maps shall demonstrate compliance with the above special condition number 8 and 9. Photographs illustrating the vegetation identified above shall be included.
 - b. A report documenting the stability of slopes for the Habitat Island and identifying any change from the design slope grade shall be submitted. The report shall document and identify any change in original design elevation of greater than $\pm$ one foot through the submission of a topographic survey. Photographs shall be submitted identifying the surveyed area and slopes. The survey(s) shall demonstrate compliance with the above special condition number 6.
13. Your use of the permitted activity must not interfere with the public's right to free navigation on all navigable waters of the U.S.
 14. You must install and maintain, at your expense, any safety lights and signals prescribed by the U.S. Coast Guard (USCG), through regulations or otherwise, on your authorized facilities. The USCG may be reached at the following address and telephone number: Commander (oan), 17th Coast Guard District, P.O. Box 25517, Juneau, Alaska 99802, (907) 463-2272.
 15. The permittee understands and agrees that, if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

Special Information:

Any condition incorporated by reference into this permit by General Condition 5, remains a condition of this permit unless expressly modified or deleted, in writing, by the District Engineer or his authorized representative.

Further Information:

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

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

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

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

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

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this permit.

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

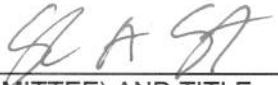
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

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

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

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



(PERMITTEE) AND TITLE
SKYE A. STEKOLL, PROJECT MANAGER
CBJ ENGINEERING

3/2/15

(DATE)

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



FOR (DISTRICT COMMANDER)
Colonel Christopher D. Lestochi
Matthew Brody
Regulatory Specialist
Southeast Section

3/4/2015

(DATE)

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

(TRANSFEREE)

(DATE)



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

Department of Environmental
Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
Fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

October 28, 2014

Certified Mail: 7012-3460-0002-9326-6629

Skye Stekoll
City and Borough of Juneau
155 South Seward Street
Juneau, AK 99801

Re: Gastineau Channel Waterfront Upgrade
Reference No. POA-2014-251

Dear Mr. Stekoll:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for placement of fill material in waters of the U.S. in association with the upgrades to the Juneau Waterfront area.

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

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

By copy of this letter we are advising the U.S. Army Corps of Engineers of our actions and enclosing a copy of the certification for their use.

Sincerely,

James Rypkema

Program Manager, Storm Water and Wetlands

Enclosure: 401 Certificate of Reasonable Assurance

cc: (with encl.)
Matthew Brody, USACE, Juneau
Jackie Timothy, ADF&G

USFWS Field Office Juneau
Mark Jen, EPA Operations, Anchorage

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the Federal Clean Water Act and the Alaska Water Quality Standards is issued to City and Borough of Juneau at 155 South Street, Juneau, Alaska for placement of fill material in waters of the U.S. in association with the upgrades to the Juneau Waterfront in Gastineau Channel. The applicant's stated purpose is to restore and enhance the downtown Juneau waterfront by providing public access to bicycles and pedestrians, create a gateway park that incorporates a whale statue, and to provide educational interpretation for coastal environments. The applicant requests authorization for the following work in waters and navigable waters of the United States (U.S.):

1. Discharge 410 cubic yards of riprap, soil material, cobble, and gravel below the High Tide Line (+20.8 feet above the 0.0 foot contour line) (HTL) impacting 0.1 acres of marine intertidal substrate to vegetate the existing riprap side slopes.
2. Discharge 11,500 cubic yards of shot rock, and riprap below the HTL impacting 0.58 acres of marine intertidal substrate to construct a park.
3. Discharge 30,000 cubic yards of shot rock and riprap below the HTL impacting 2.69 acres of marine intertidal and subtidal substrate including 0.12 acres of vegetated shallows to construct a recreational island.
4. Discharge 360 cubic yards of shot rock below the HTL impacting 0.07 acres of marine intertidal substrate to access the proposed island.
5. Discharge 127 cubic yards of rock below the HTL impacting 0.05 acres of marine intertidal substrate to construct two pedestrian paths for access to the proposed recreational island and intertidal waters.
6. Install 65, 14-inch to 16-inch diameter steel piles below the Mean High Water Mark (+15.4 feet above the 0.0-foot contour line) to construct two viewing platforms and one pedestrian and bicycle path.

A State Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a U.S. Army Corps of Engineers permit, reference number POA-2014-251 and a discharge of pollutants to waters of the U.S. located in the State of Alaska may result from the proposed activity. Public notice of the application for this certification was given as required by 18 AAC 15.180 in the Corps Public Notice POA-2014-251 posted from August 19, 2014 to September 18, 2014.

The proposed activity is located within Section 23, T. 41 S., R. 67 E., Copper River Meridian; USGS Quad Map Juneau B-2; Latitude 58.298629° N., Longitude -134.42309° W.; in Juneau, Alaska..

The Department of Environmental Conservation (DEC) reviewed the application and certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act and the Alaska Water Quality Standards, 18 AAC 70, provided that the following alternative measures are adhered to.

1. Reasonable precautions and controls must be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances. Fuel storage and handling activities for equipment must be sited and conducted so there is no petroleum contamination of the ground, surface runoff or water bodies.
2. During construction, spill response equipment and supplies such as sorbent pads shall be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills. Any spill amount must be reported in accordance with Discharge Notification and Reporting Requirements (AS 46.03.755 and 18 AAC 75 Article 3). The applicant must contact by telephone the DEC Area Response Team for Southeast Alaska (907) 465-5340 during work hours or 1-800-478-9300 after hours. Also, the applicant must contact by telephone the National Response Center at 1-800-424-8802.
3. Construction equipment shall not be operated below the ordinary high water mark if equipment is leaking fuel, oil, hydraulic fluid, or any other hazardous material. Equipment shall be inspected on a daily basis for leaks. If leaks are found the equipment shall not be used and pulled from service until the leak is repaired.
4. All work areas, material access routes, and surrounding wetlands involved in the construction project shall be clearly delineated and marked in such a way that equipment operators do not operate outside of the marked areas.
5. Organic overburden soil stockpiles shall be stabilized as soon as practicable after placement to minimize erosion, sediment runoff, or dust generation. Indicators of excess erosion include: gullyng, head cutting, caving, block slippage, material sloughing, etc.
6. Fill material must be clean sand, gravel or rock, free from petroleum products and toxic contaminants in toxic amounts.
7. Fill placed during winter construction within wetlands that during the summer contain surface water that is connected to natural bodies of water, must be stabilized or contained in the spring prior to breakup. This action is to ensure that silts are not carried from the fill to the natural bodies of water in the spring and summer.
8. Prior to fill placement in the spring or summer, a silt fence or similar structure shall be installed on a line parallel to and within five feet of the proposed fill toe of slope within all wetland areas that contain standing water that is connected to any natural body of water or where the fill toe is within 25 feet of such a water body. This structure shall remain in place until the fill has been stabilized or contained in another manner.
9. Any disturbed ground and exposed soil not covered with fill must be stabilized and re-vegetated with endemic species, grasses, or other suitable vegetation in an appropriate manner to minimize erosion and sedimentation, so that a durable vegetative cover is established in a timely manner.

This certification expires five (5) years after the date the certification is signed. If your project is not completed by then and work under U.S Army Corps of Engineers Permit will continue, you must submit an application for renewal of this certification no later than 30 days before the expiration date (18 AAC 15.100).

Date: October 28, 2014



James Rypkema, Program Manager
Storm Water and Wetlands

**CITY/BOROUGH OF JUNEAU
DOWNTOWN SEAWALK
BRIDGE TO GOLD CREEK**

CORPS PERMIT GRAPHICS

DATE: March 13, 2014

PREPARED BY:

- TETRA TECH
- J.A. BRENNAN ASSOCIATES, PLLC
- BOSWORTH BOTANICAL CONSULTING
- CATHY POHL
- CH2M HILL
- COAST AND HARBOR, ENGINEERING
Inc.
- DOWL
- PATRICIA HARRIS

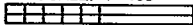
LIST OF SHEETS:

1. COVER
2. VICINITY MAP
3. WETLAND JURISDICTIONAL DETERMINATION MAP
4. EXISTING CONDITIONS PLAN - WEST
5. EXISTING CONDITIONS PLAN - EAST
6. IMPACT AREAS MAP
7. GRADING & LAYOUT PLAN - WEST
8. GRADING & LAYOUT PLAN - EAST
9. PLANTING PLAN - WEST
10. PLANTING PLAN - EAST
11. SITE SECTION A
12. SITE SECTIONS B AND C
13. SITE SECTIONS D AND F
14. SITE SECTION E
15. SITE SECTION G

PERMIT NUMBER: POA-2014-251
APPLICANT: CITY AND BOROUGH OF JUNEAU
WATERWAY: GASTINEAU CHANNEL
PROJECT NAME: SEAWALK AND BRIDGE PARK
LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
LAT: 58.2986 LON: -134.4230
PAGE: 1 OF 17, DATE: JANUARY 26, 2015

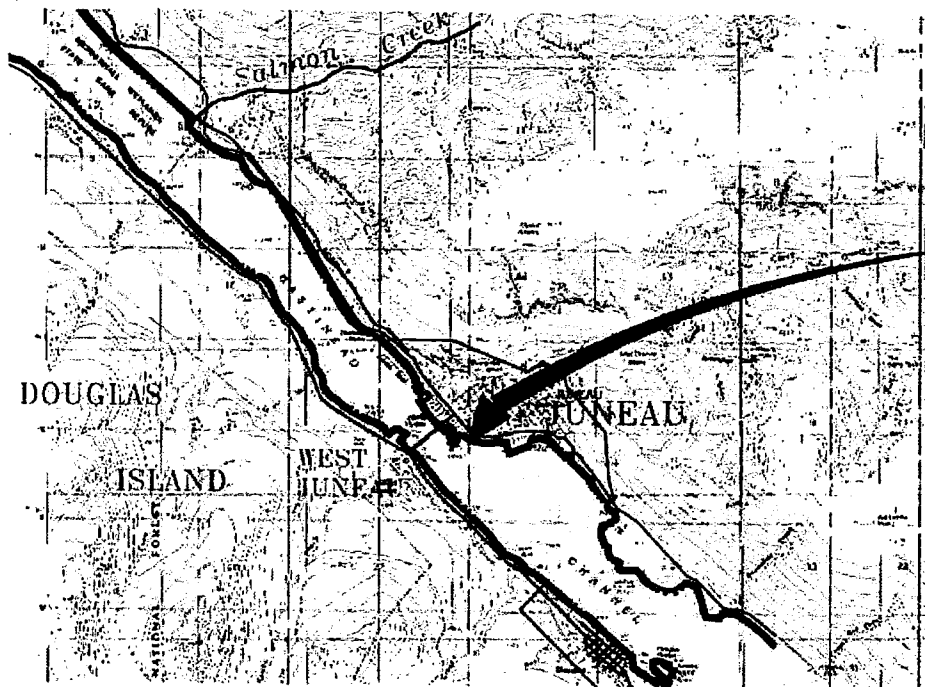


SCALE: 1"=100'



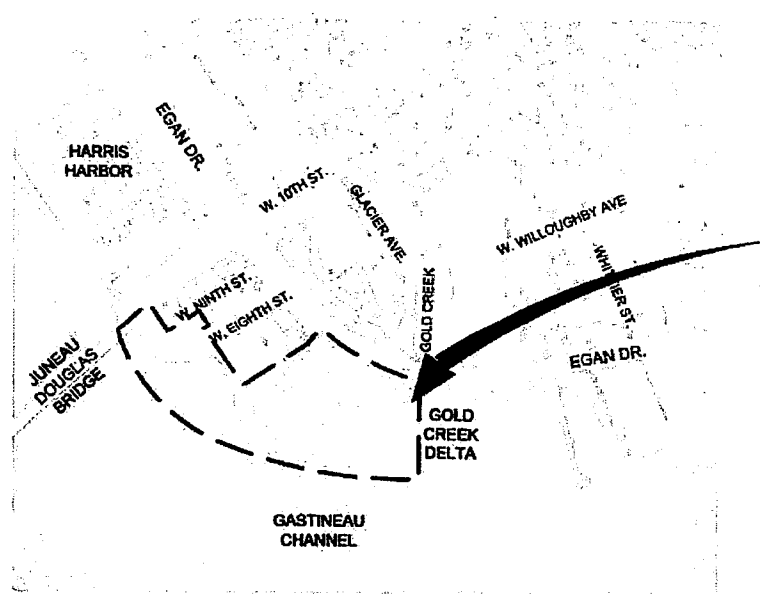
DATUM: MLLW

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
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PROJECT LOCATION

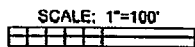
LOCATION MAP



PROJECT LOCATION

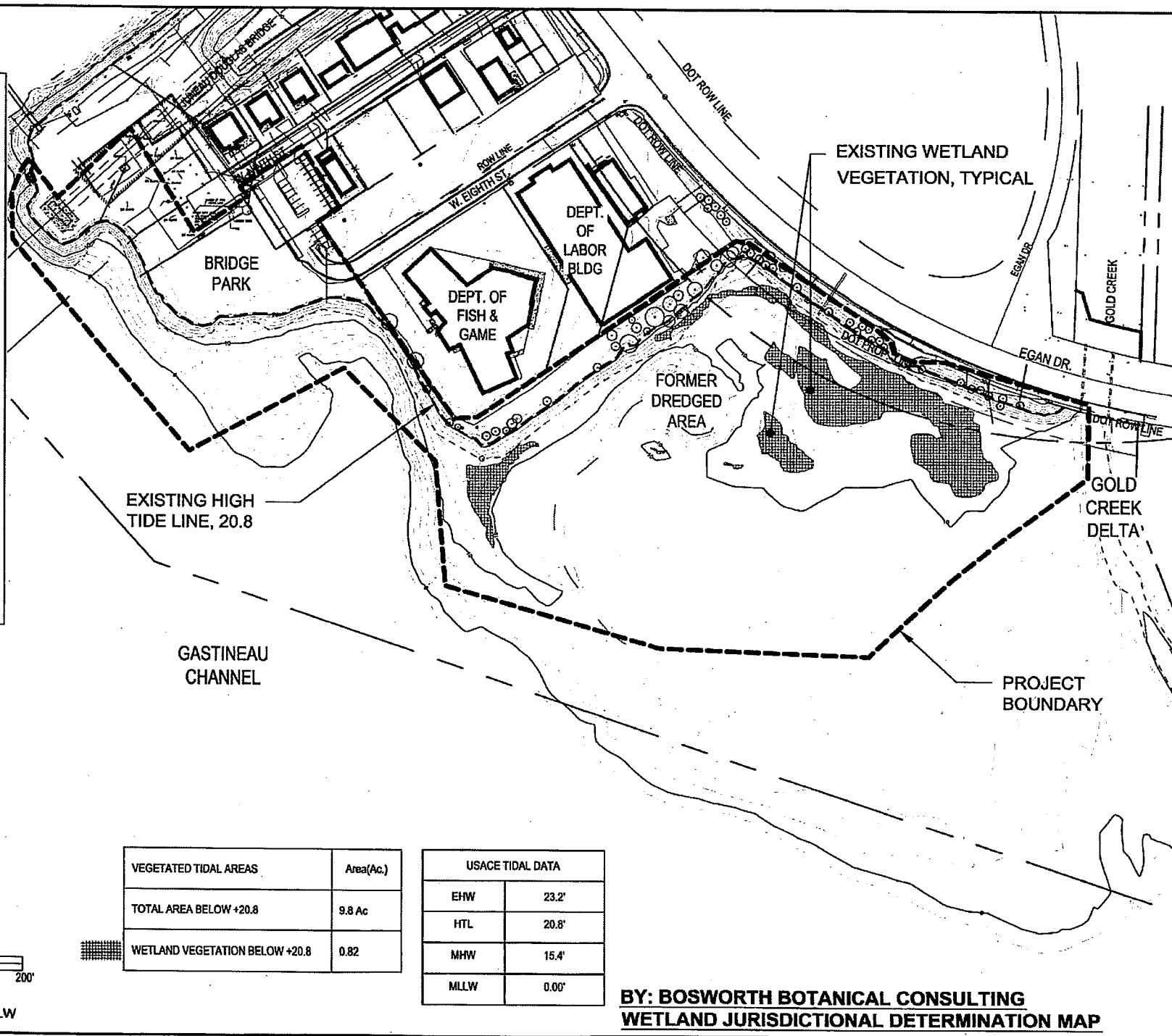
VICINITY MAP

LOCATION AND VICINITY MAP



DATUM: MLLW

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
 PAGE: 3 OF 17, DATE: JANUARY 26, 2015



SCALE: 1"=200'
 0 100' 200'

DATUM: MLLW

VEGETATED TIDAL AREAS	Area(Ac.)
TOTAL AREA BELOW +20.8	9.8 Ac
WETLAND VEGETATION BELOW +20.8	0.82

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'

BY: BOSWORTH BOTANICAL CONSULTING
 WETLAND JURISDICTIONAL DETERMINATION MAP

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
 PAGE: 4 OF 17, DATE: JANUARY 26, 2015

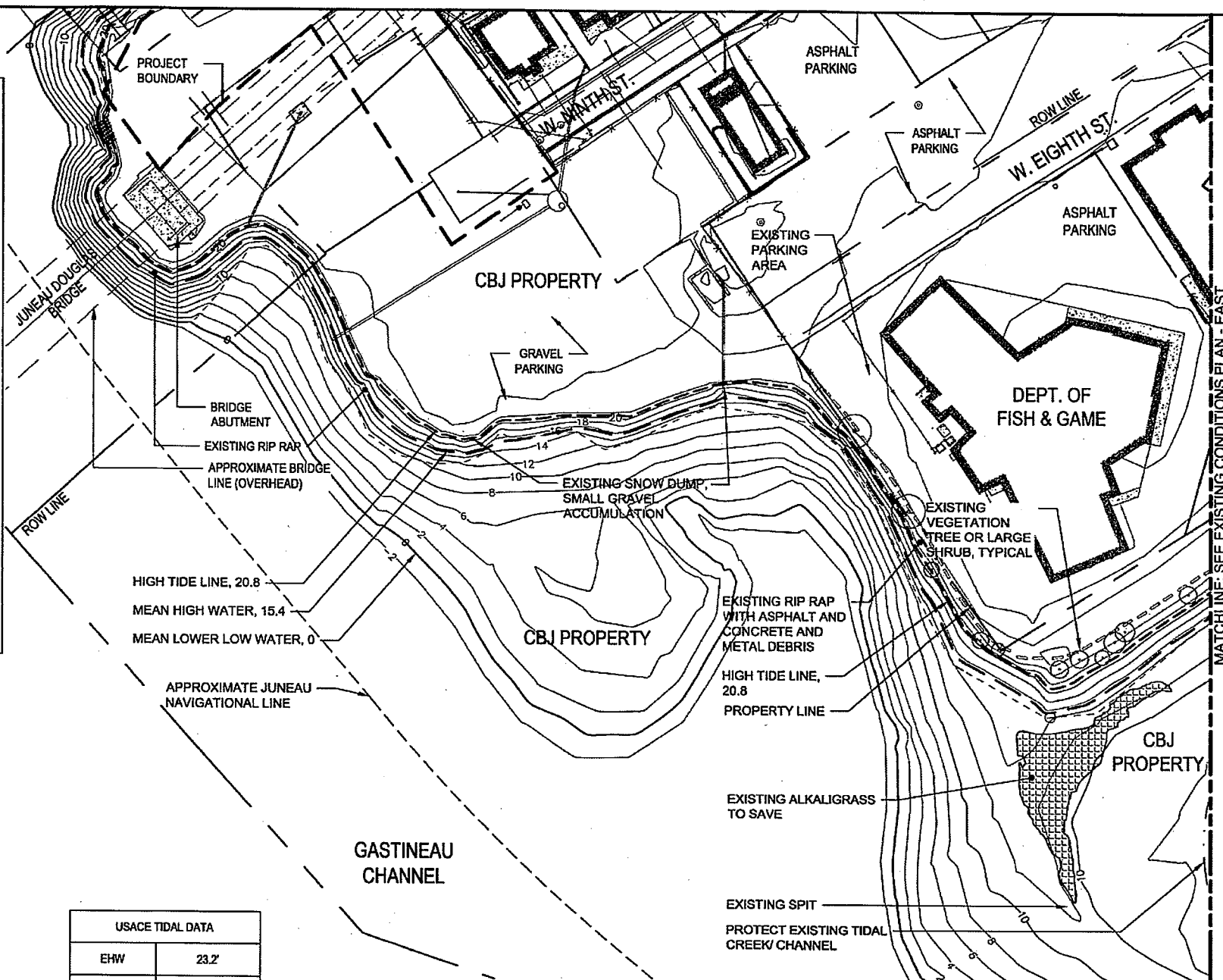


SCALE: 1"=100'



DATUM: MLLW

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'



EXISTING CONDITIONS PLAN - WEST

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
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MATCHLINE: SEE EXISTING CONDITIONS PLAN - WEST

GRAVEL PARKING
 DEPT. OF
 LABOR BLDG

CBJ
 PROPERTY

PROPERTY
 LINE
 MID TO HIGH
 INTERTIDAL
 HABITAT (TYP)

EXISTING ALKALIGRASS TO BE
 IMPACTED, REMOVE AND
 TRANSPLANT

30" CMP CULVERT
 OUTLET
 STORM DRAINAGE
 FLOW

RIP RAP
 VIEWPOINT
 ON EGAN DR.
 SIDEWALK ON
 EGAN DR.

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'

EXISTING VEGETATION,
 TREE OR LARGE SHRUB,
 TYP.

RIPRAP WITH CONCRETE
 CHUNKS

FORMER
 DREDGED
 AREA

MEAN HIGH
 WATER, 15.4
 HIGH TIDE
 LINE, 20.8

MEAN LOWER
 LOW WATER, 0

PROTECT
 EXISTING TIDAL
 CREEK/CHANNEL

CBJ
 PROPERTY

EXISTING ALKALIGRASS
 TO BE IMPACTED, REMOVE
 AND TRANSPLANT

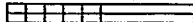
EXISTING ALKALIGRASS
 TO SAVE

GOLD
 CREEK
 DELTA

CBJ
 PROPERTY



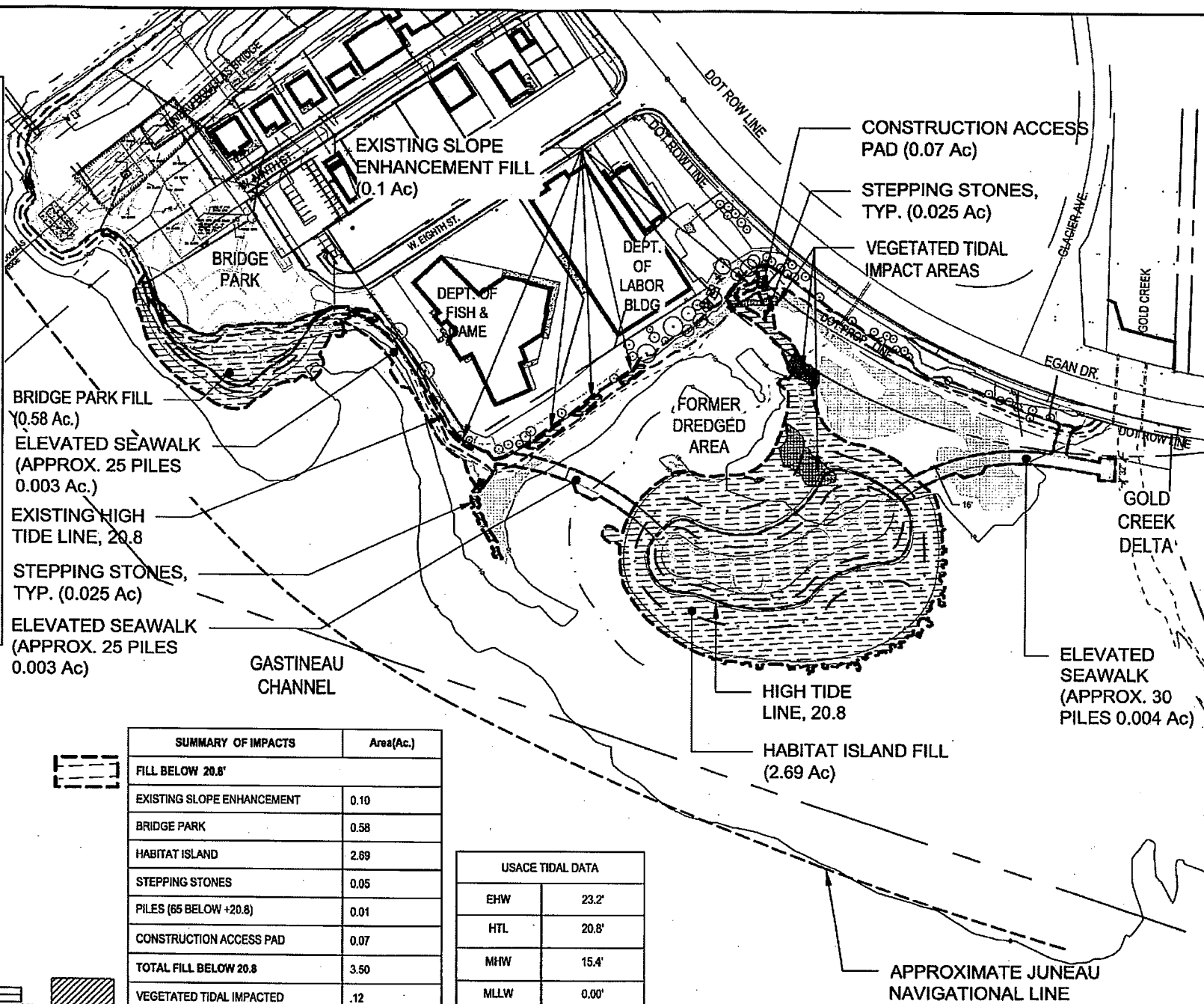
SCALE: 1"=100'



DATUM: MLLW

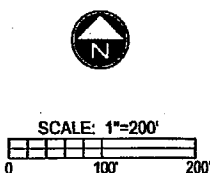
EXISTING CONDITIONS PLAN - EAST

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23, T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
 PAGE: 6 OF 17, DATE: JANUARY 26, 2015



SUMMARY OF IMPACTS	Area(Ac.)
FILL BELOW 20.8'	
EXISTING SLOPE ENHANCEMENT	0.10
BRIDGE PARK	0.58
HABITAT ISLAND	2.69
STEPPING STONES	0.05
PILES (65 BELOW +20.8)	0.01
CONSTRUCTION ACCESS PAD	0.07
TOTAL FILL BELOW 20.8	3.50
VEGETATED TIDAL IMPACTED	.12

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'



DATUM: MLLW

IMPACT AREAS MAP

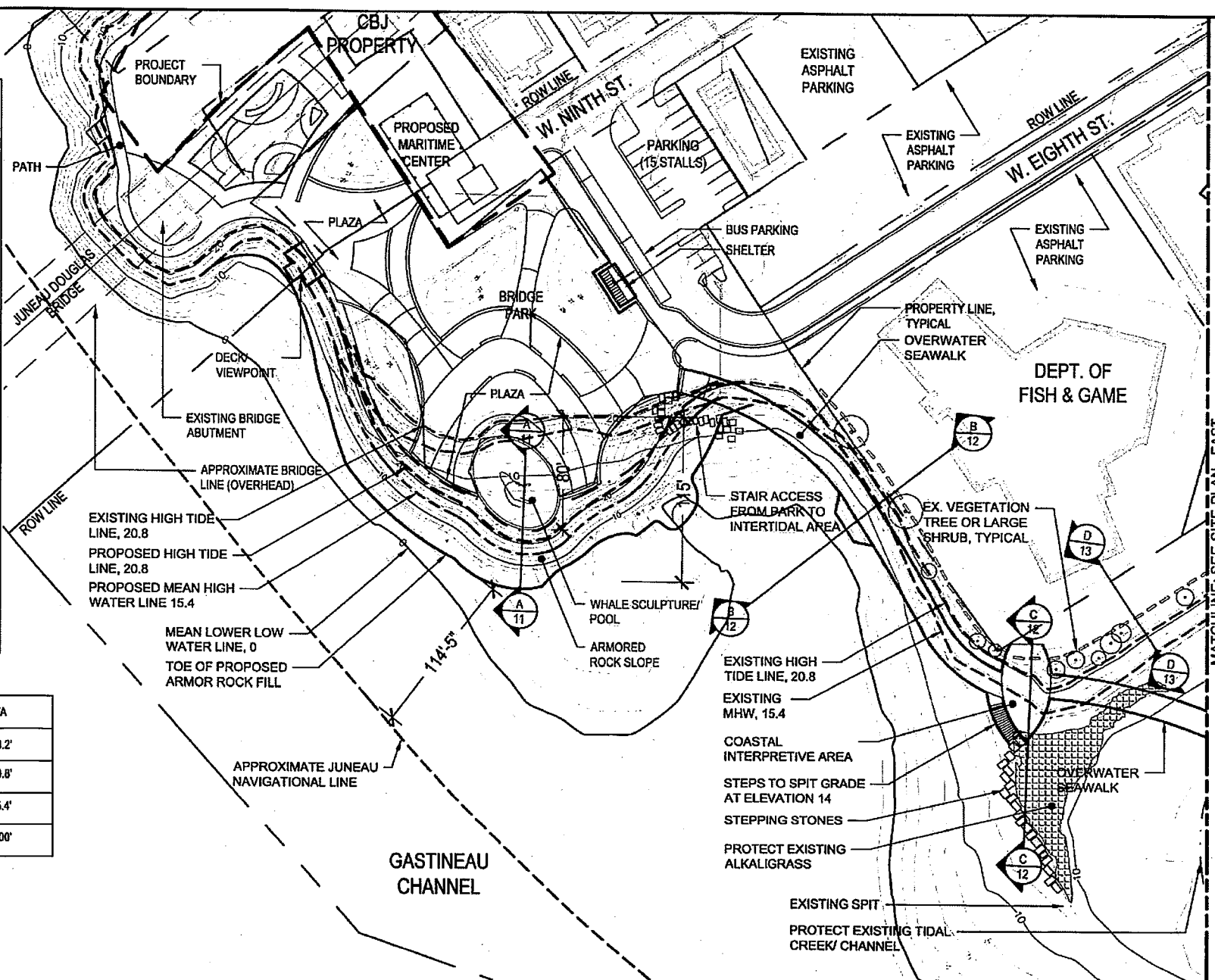
PAGE: 7 OF 17, DATE: JANUARY 26, 2015

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'



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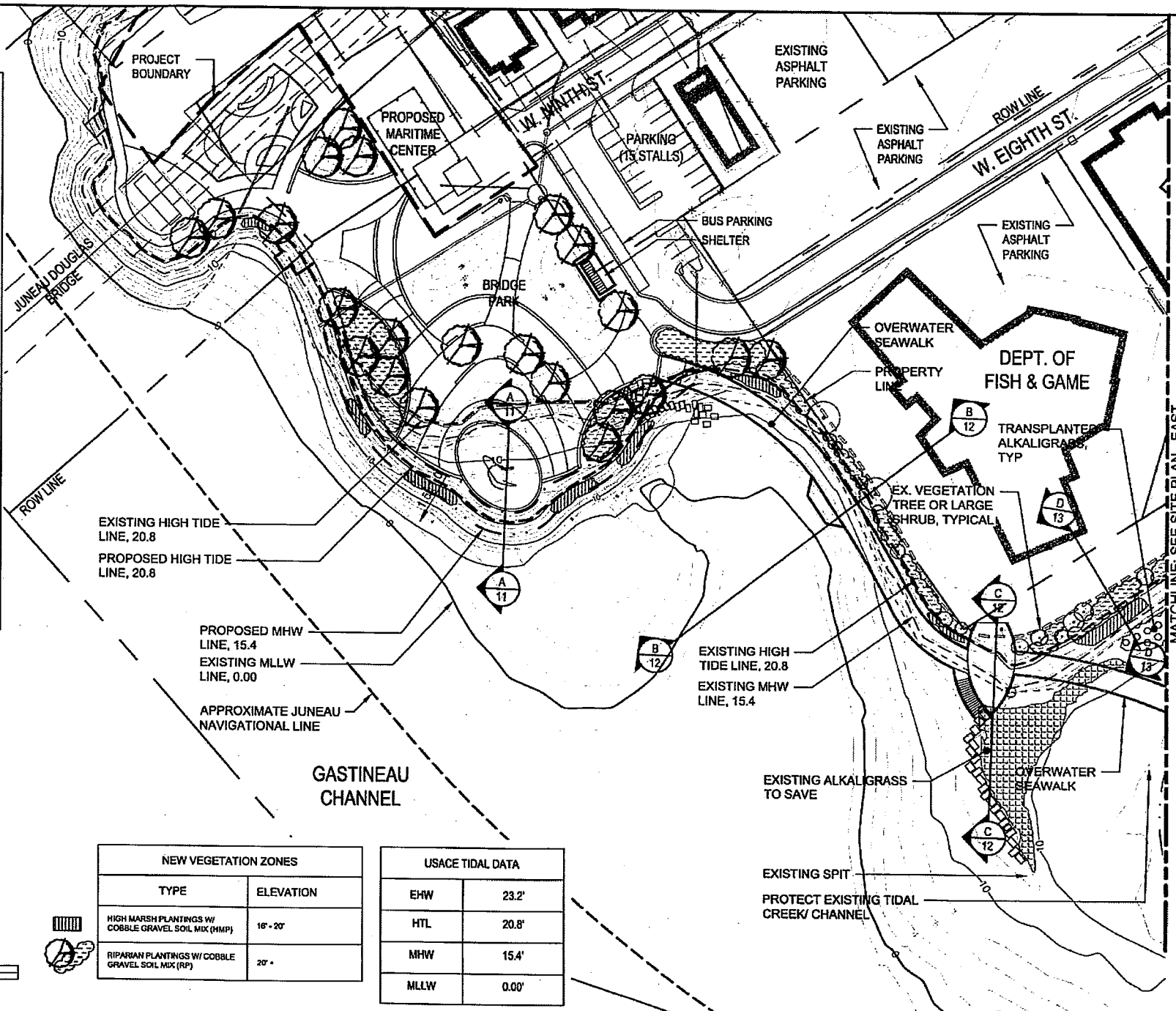
DATUM: MLLW



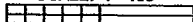
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GRADING AND LAYOUT - WEST

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
 PAGE: 9 OF 17, DATE: JANUARY 26, 2015



SCALE: 1"=100'



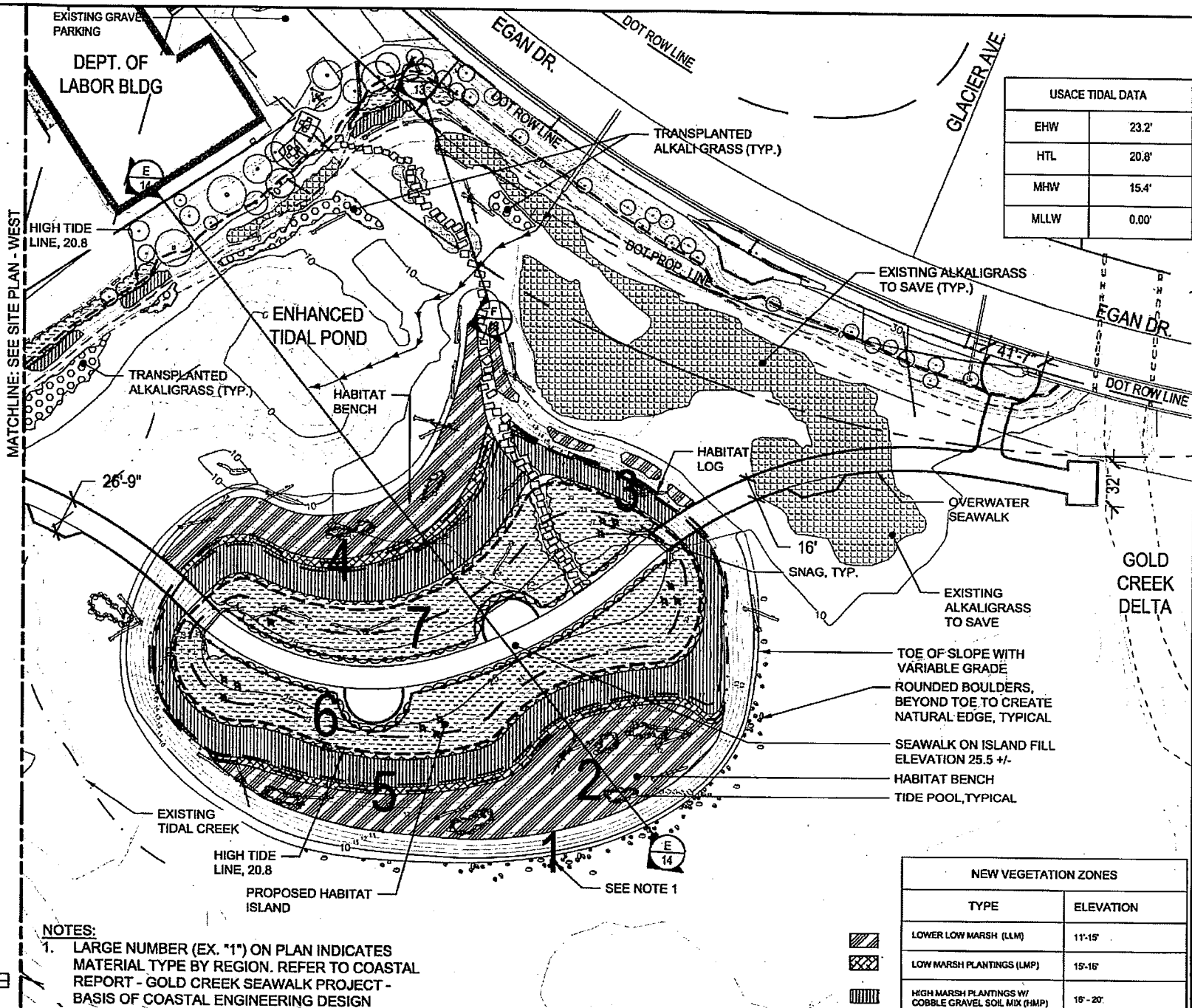
NEW VEGETATION ZONES	
TYPE	ELEVATION
HIGH MARSH PLANTINGS W/ COBBLE GRAVEL SOIL MIX (HMP)	16' - 20'
RIPARIAN PLANTINGS W/ COBBLE GRAVEL SOIL MIX (RP)	20' +

USACE TIDAL DATA	
EHW	23.2'
HTL	20.8'
MHW	15.4'
MLLW	0.00'

DATUM: MLLW

PLANTING PLAN - WEST

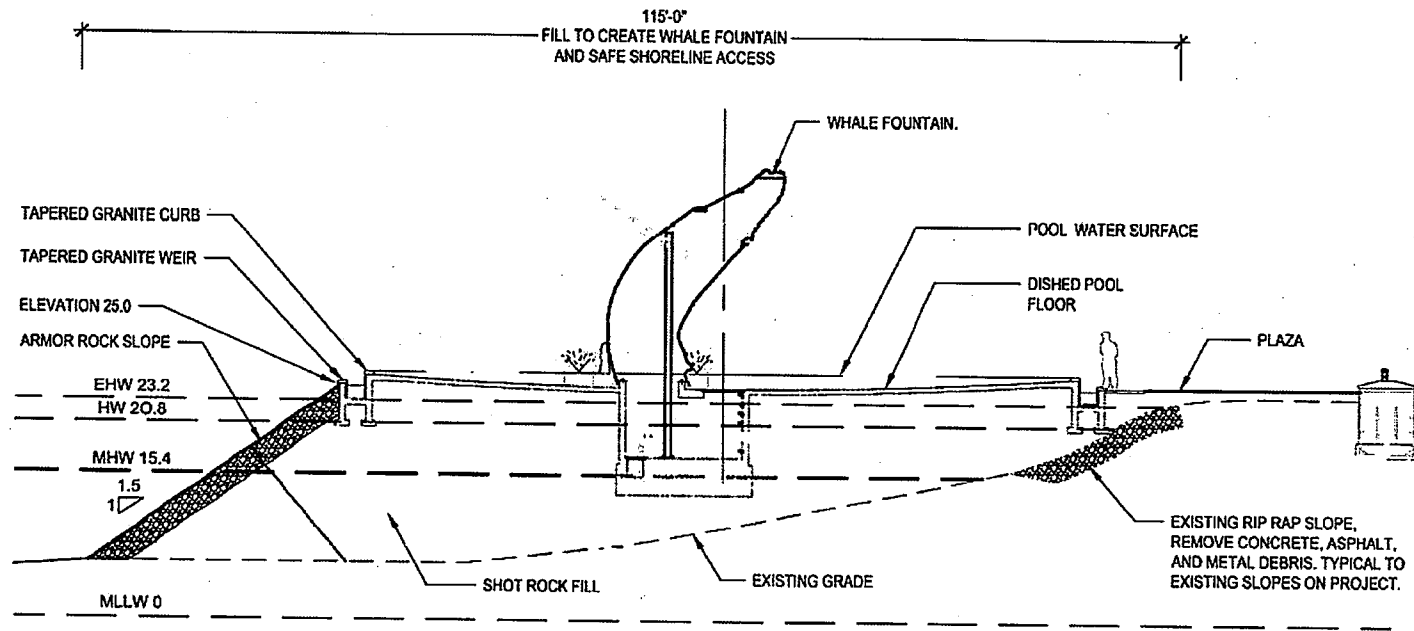
PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23, T. 41 S., R. 67 E., CRM.,
 LAT: 58.2886 LON: -134.4230
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SCALE: 1"=100'

DATUM: MLLW

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
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 PROJECT NAME: SEAWALK AND BRIDGE PARK
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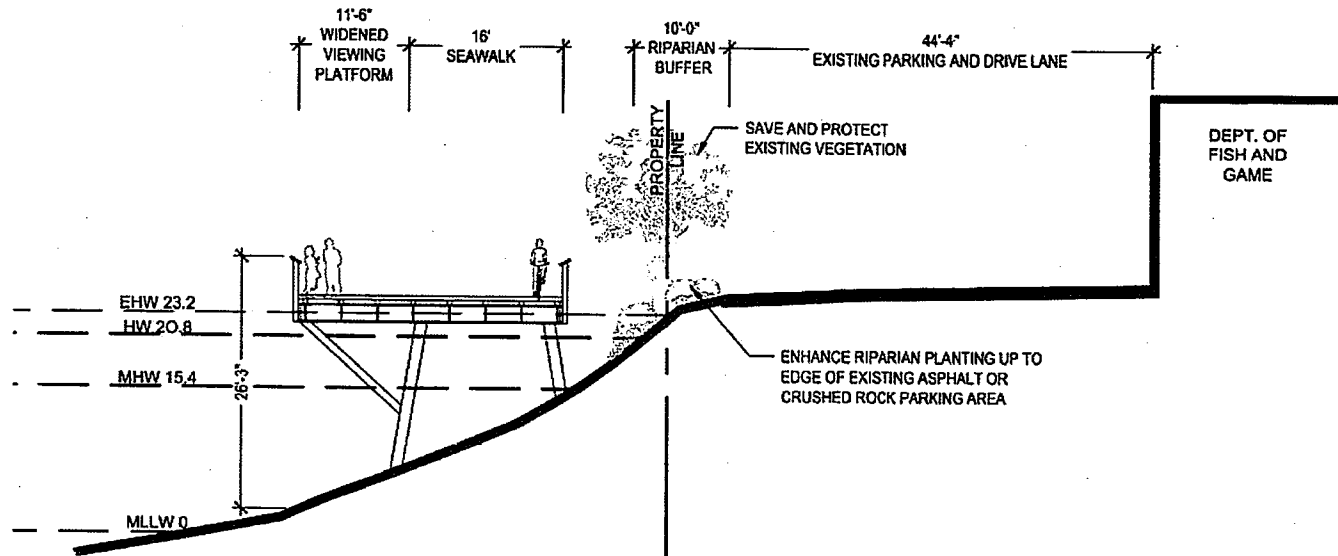
Section A - WHALE SCULPTURE AT BRIDGE PARK

SCALE: 1" = 20'-0"

A

SITE SECTIONS

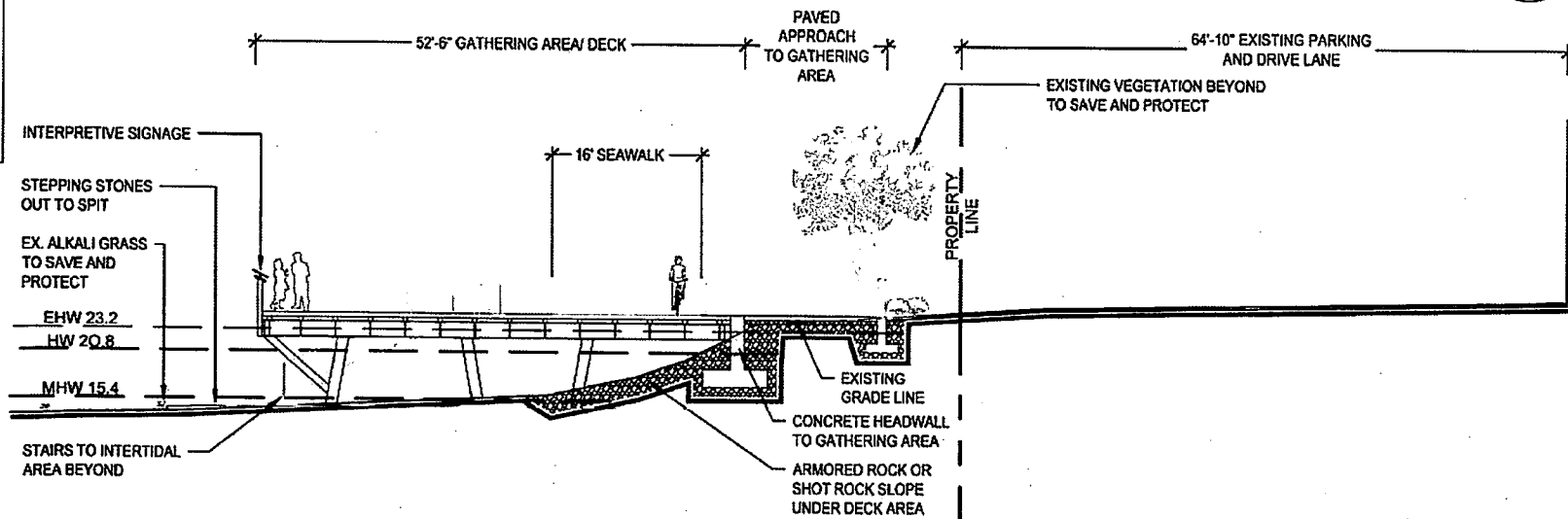
PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
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Section B - SEAWALK SECTION AT DEPT. OF FISH AND GAME

SCALE: 1" = 20'-0"

B



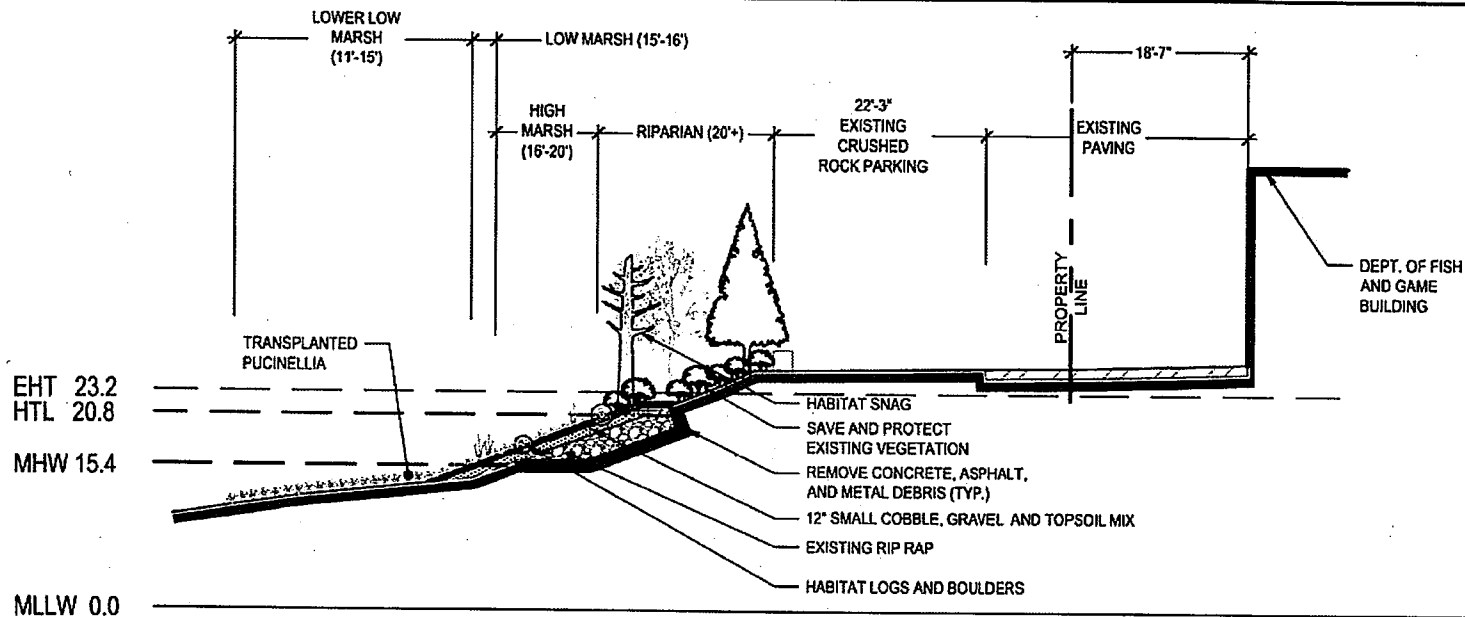
Section C - SECTION AT COASTAL INTERPRETIVE AREA

SCALE: 1" = 20'-0"

C

SITE SECTIONS

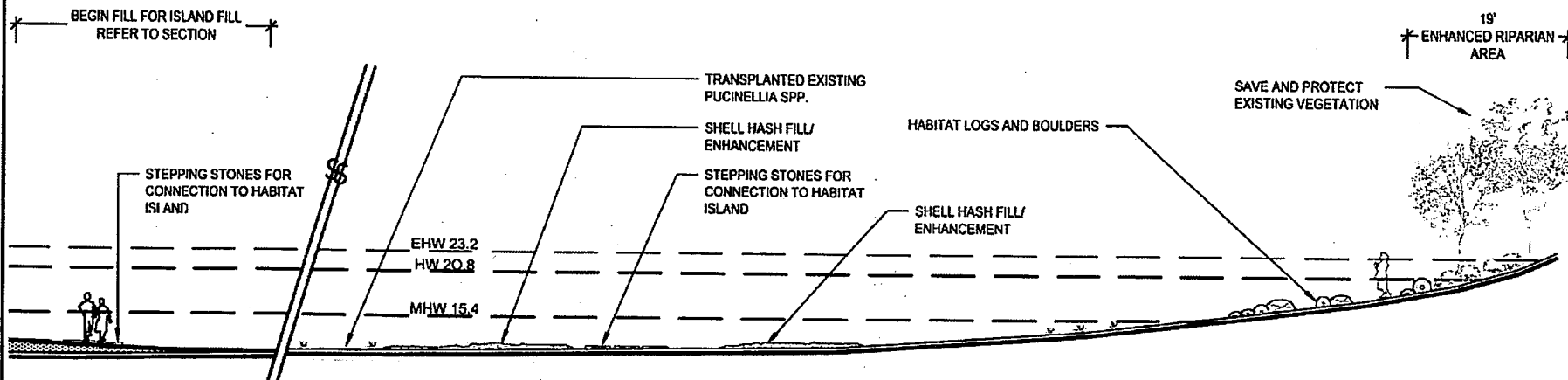
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 APPLICANT: CITY AND BOROUGH OF JUNEAU
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Section D - RIPARIAN SECTION AT DEPT. OF FISH AND GAME

SCALE: 1" = 20'-0"

D



Section F - SECTION AT BEACH AND ISLAND

SCALE: 1" = 20'

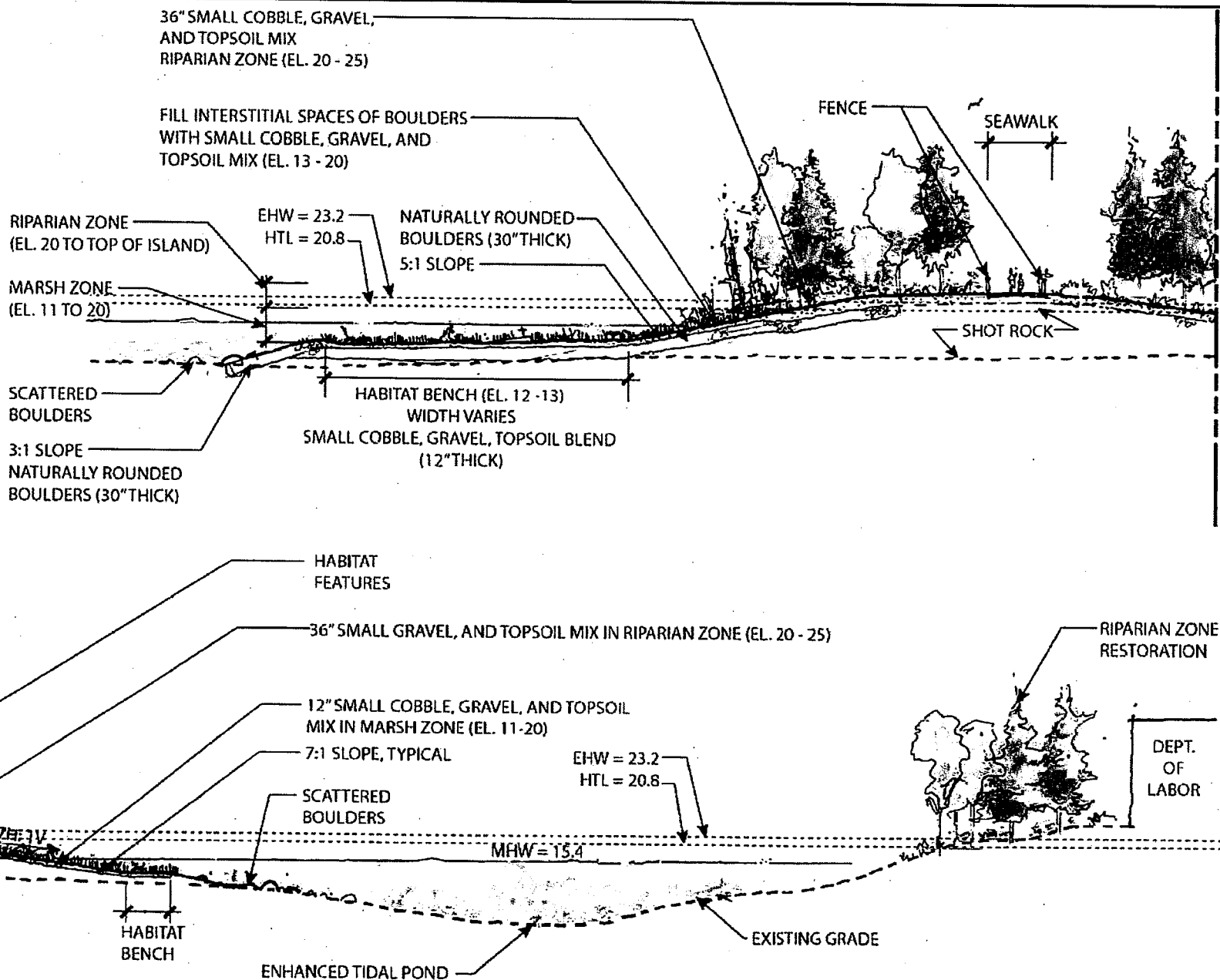
F

SITE SECTIONS

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
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MATCHLINE: SEE ABOVE

MATCHLINE: SEE BELOW



Section E - SECTION AT ISLAND/ RIPARIAN ENHANCEMENT

SCALE: 1" = 40'

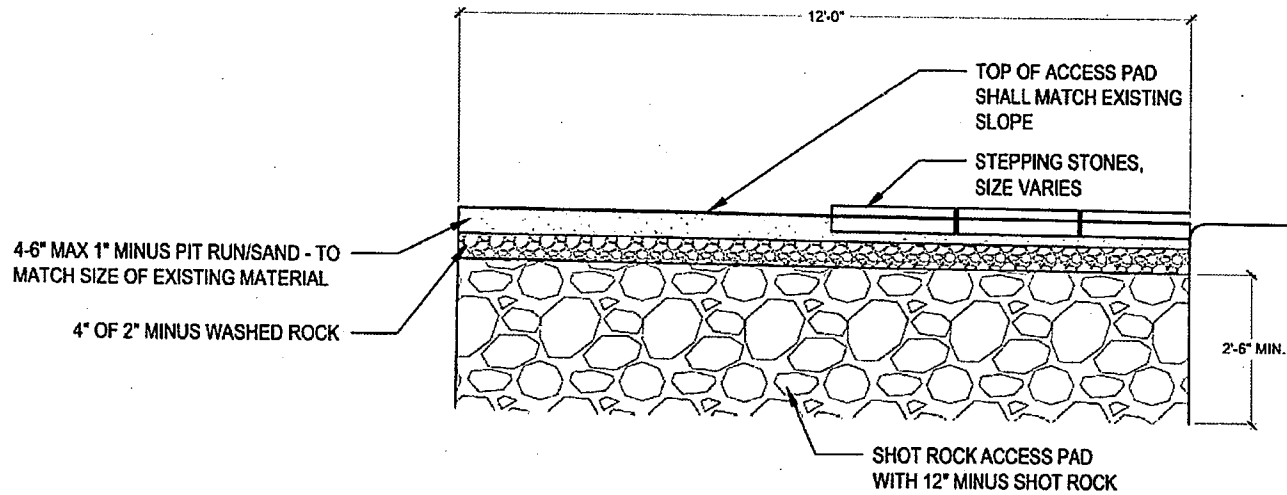
E

SITE SECTION E

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
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NOTES:

1. EXCAVATED MATERIAL SHALL BE REMOVED FROM SITE TO AN APPROVED UPLAND SITE
2. SHOT ROCK SURFACE FOR CONSTRUCTION ACCESS, INSTALL FINAL SURFACE MATERIAL AT CONCLUSION OF CONSTRUCTION ACTIVITIES



Section G - CONSTRUCTION ACCESS PAD

SCALE: NOT TO SCALE

G

SITE SECTIONS

[illegible]

SE WIND

PERMIT NUMBER: POA-2014-251
 APPLICANT: CITY AND BOROUGH OF JUNEAU
 WATERWAY: GASTINEAU CHANNEL
 PROJECT NAME: SEAWALK AND BRIDGE PARK
 LOCATION: SEC 23., T. 41 S., R. 67 E., CRM.,
 LAT: 58.2986 LON: -134.4230
 PAGE: 17 OF 17, DATE: JANUARY 26, 2015

Number	Common Name	Latin Name
1	Leafy spurge	<i>Euphorbia esula</i>
2	Purple loosestrife	<i>Lythrum salicaria</i>
3	Orange hawkweed	<i>Hieracium aurantiacum</i>
4	Canada thistle	<i>Cirsium arvense</i>
5	Perennial sowthistle	<i>Sonchus arvensis</i>
6	Whitetops and its varieties	<i>Cardaria draba</i> , <i>C. pubescens</i> , <i>Lepidium latifolium</i>
7	Russian knapweed	<i>Acroptilon repens</i>
8	Quackgrass	<i>Elymus repens</i>
9	Field bindweed	<i>Convolvulus arvensis</i>
10	Hempnettle	<i>Galeopsis tetrahit</i>
11	Galinsoga	<i>Galinsoga parviflora</i>
12	Austrian fieldcress	<i>Rorippa austriaca</i>
13	Horsenettle	<i>Solanum carolinense</i>
14	Blue-flowering lettuce	<i>Lactuca tatarica</i> , (<i>L. pulchella</i>)
15	Japanese knotweed	<i>Polygonum cuspidatum</i> , <i>P. bohemicum</i>
16	Spotted knapweed	<i>Centaurea stoebe</i> (<i>C. maculosa</i>)
17	Reed canarygrass	<i>Phalaris arundinacea</i>
18	Ornamental jewelweed	<i>Impatiens glandulifera</i>
19	White sweetclover	<i>Melilotus alba</i>
20	Meadow hawkweed	<i>Hieracium caespitosum</i>
21	Cheatgrass	<i>Bromus tectorum</i>
22	Siberian pea shrub	<i>Caragana arborescens</i>
23	European bird cherry	<i>Prunus padus</i>
24	Bird vetch	<i>Vicia cracca</i>
25	Garlic mustard	<i>Alliaria petiolata</i>
26	Common toadflax	<i>Linaria vulgaris</i>
27	Scotchbroom	<i>Cytisus scoparius</i>
28	Rampion bellflower	<i>Campanula rapunculoides</i>
29	Foxtail barley	<i>Hordeum jubatum</i>
30	Tansy ragwort	<i>Senecio jacobaea</i>
31	Bull thistle	<i>Cirsium vulgare</i>
32	Oxeye daisy	<i>Leucanthemum vulgare</i>
33	Common tansy	<i>Tanacetum vulgare</i>
34	Narrowleaf hawksbeard	<i>Crepis tectorum</i>
35	Splitlip hempnettle	<i>Galeopsis bifida</i>
36	Western salsify	<i>Tragopogon dubius</i>
37	Hairy catsear	<i>Hypochaeris radicata</i>

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), which are available on-line at the following link:

http://www.juneau.org/engineering/Rev_Standards.php

- 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

111A	CURB AND GUTTER, TYPE I
303	STORM DRAIN MANHOLE, TYPE I
304A	CATCH BASIN, TYPE III
403	FIRE HYDRANT

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

**City and Borough of Juneau
Downtown Seawalk
Bridge to Gold Creek
Project No. E16-011
Specification Professional Responsibilities**

Civil Dowl/HKM		Architecture Tetra Tech	
Landscape JA Brennan	 8-12-2015	Piping Tetra Tech	
Structural Tetra Tech		Electrical Haight and Assoc.	
Coastal Coast and Harbor Engineering			

SPECIAL PROVISIONS

The Standard Specifications for Civil Engineering Projects and Subdivision Improvements December 2003 Edition, with all 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. The Standard Specifications for Civil Engineering Projects and Subdivision Improvements December 2003 Edition is available for a fee from the City and Borough of Juneau Engineering Contracts Office, (907) 586-0490, or you may view them online at: www.juneau.org/engineering.

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SPECIAL PROVISIONS

Add the following Section:

SECTION 01010 – SUMMARY OF WORK

PART 1 – GENERAL

1.1. GENERAL

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

1.2. WORK COVERED BY CONTRACT DOCUMENTS

- A. The WORK as shown on the attached Drawings and specified herein, consists of Bridge Park located along Gastineau Channel between 8th and 9th Streets, and an extension of the downtown Juneau Seawalk from the park to Gold Creek.
 - 1. Bridge Park includes a small active recreation zone, a water viewing plaza, whale sculpture and water feature, and a bus drop off and vehicle parking area.
 - 2. The Seawalk includes approximately 1000 lf of pile-supported walkway with a 16-ft nominal width varying in deck elevation from +25 to +29 above MLLW.
 - 3. The Seawalk also includes approximately 350 lf of at-grade boardwalk across an area of intertidal fill constructed to increase habitat diversity.
- B. Any additional work items required to complete all the WORK shown on the Drawings.
- C. SITE OF WORK. The site of the WORK is along the waterfront of downtown Juneau, Alaska, beginning at or near the Douglas Bridge on 10th Street and ending at Egan Drive near Gold Creek.

1.3. BEGINNING AND COMPLETION OF THE WORK

- A. Time is the essence of the contract. This site and adjacent downtown streets are of critical importance to commerce and traffic in Downtown Juneau. Egan Drive is the primary access to Juneau from the north, and 8th and 9th Streets are used by both state and private sector employees and visitors to buildings in the vicinity. All WORK shall be coordinated closely with anticipated levels of traffic.
- B. In accordance with the provisions of Article 2 of Section 00500 – Agreement, the CONTRACTOR shall begin the WORK on the date specified in the written Notice to Proceed from the OWNER, and all WORK shall be substantially completed and available for public occupancy on or before August 30, 2016. Only specified landscape plantings and minor final cleanup may occur after that date. Final completion shall occur on or before September 15, 2016.

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- C. Work is scheduled to commence on or about October 5, 2015, with the following conditions:
 - 1. Rounded boulders, cobble and topsoil mixes, and plantings shall not be installed before April 1, 2016.
 - 2. The at-grade boardwalk on intertidal fill shall not be installed before April 1, 2016.
 - 3. Concrete for the whale pool and other structures adjacent to the rip rap at Bridge Park shall not be installed before April 1, 2016.
 - 4. Site shall be ready to receive the Whale Sculpture July 1, 2016
 - 5. Intertidal plantings shall be completed by July 1, 2016
 - 6. Substantial Completion August 30, 2016.
 - 7. Final Completion: September 15, 2016
- D. No marine WORK requiring the use of major vessels, equipment or materials within the Gastineau Channel safety zone defined by CFR 165.1702 shall occur after May 1, 2016. After that time, permission to anchor within the safety zone will require express consent from the Captain of the Port, Southeast Alaska.

1.4. CONTRACT METHOD

- A. The WORK hereunder will be constructed under a Lump Sum contract with Unit prices for piling and splicing.

1.5. WORK BY OTHERS

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

1.6. CONTRACTOR USE OF PROJECT SITE

- A. The CONTRACTOR's use of the Project site shall be limited to its construction operations, including on-site storage of materials.
- B. Contractor shall coordinate construction activities in the areas of Bridge Park and Gold Creek and parking lot with property owners. The contractor shall notify the Owners and Engineer a minimum of 48 hours prior to beginning any construction activity that will affect access for parking users or to any part of the site. The Contractor shall provide access to land for the dock users at all times.

1.7. OWNER USE OF THE PROJECT SITE

- A. The OWNER may utilize all or part of the existing site during the entire period of construction for the conduct of the OWNER's normal operations. The

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CONTRACTOR shall cooperate and coordinate with the ENGINEER to facilitate the OWNER's operations and to minimize interference with the CONTRACTOR's operations at the same time. In any event, the OWNER shall be allowed access to the Project site during the period of construction.

1.8. PROJECT MEETINGS

A. Pre-Construction Conference

1. Prior to the commencement of WORK at the site, a Pre-Construction Conference will be held at a mutually agreed time and place which shall be attended by the CONTRACTOR'S Project manager, its superintendent, and its Subcontractors as the CONTRACTOR deems appropriate. Other attendants will be:
 - a. ENGINEER and the Inspector.
 - b. Representatives of OWNER.
 - c. Governmental representatives as appropriate.
 - d. Others as requested by CONTRACTOR, OWNER, or ENGINEER.
2. Unless previously submitted to the ENGINEER, the CONTRACTOR shall bring to the Pre-Construction Conference one copy each of the following:
 - a. Plan of Operation.
 - b. Project Overview Bar Chart Schedule.
 - c. Procurement schedule of major equipment and materials and items requiring long lead time.
 - d. Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.
 - e. Name and telephone number of CONTRACTOR's Project supervisor.
 - f. Erosion Control Plan with Storm Water Pollution Prevention Plan (SWPPP).
 - g. Site Access, Material Storage, and Truck Haul route plan.
3. The purpose of the Pre-Construction Conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the CONTRACTOR prior to the meeting date.

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

- a. Status of CONTRACTOR's insurance and bonds.
- b. CONTRACTOR's tentative schedules.
- c. Transmittal, review, and distribution of CONTRACTOR's submittals.
- d. Processing applications for payment.
- e. Maintaining record documents.
- f. Critical WORK sequencing.
- g. Field decisions and Change Orders.

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- h. Use of Project site, office and storage areas, security, housekeeping, and OWNER's needs.
 - i. Major equipment deliveries and priorities.
 - j. CONTRACTOR's assignments for safety and first aid.
 - 4. The OWNER will preside at the Pre-Construction Conference and will arrange for keeping and distributing the minutes to all persons in attendance.
 - 5. The CONTRACTOR and its Subcontractors should plan on the conference taking no less than 3 hours. Items listed in paragraph 3 will be covered, as well as a review of Drawings and Specifications with the ENGINEER and OWNER.
- B. Progress Meetings
 - 1. The CONTRACTOR shall schedule and hold regular on-site progress meetings at least weekly and at other times as requested by the ENGINEER or OWNER, or as required by progress of the WORK. The CONTRACTOR, ENGINEER, and all Subcontractors active on the site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other Subcontractors.
 - 2. The ENGINEER shall preside at the meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings will be to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the CONTRACTOR is required to present any issues which may impact his work, with a view to resolve these issues expeditiously.

1.9. PERMITTING

- A. The OWNER has obtained Department of Army Permit No. POA-2014-251 for this project. The authorizing letter is attached to this specification. The contractor shall comply with the requirements of the authorization letter and all other applicable permits.

1.10. DEFINITIONS APPLICABLE TO TECHNICAL SPECIFICATIONS

- A. The following words have the meaning defined in the technical portions of the WORK:
 - 1. Furnish – means to supply and deliver to the site, to unload and unpack ready for assembly, installation, testing, and start-up.
 - 2. Indicated – is a word used to direct the CONTRACTOR to information contained on the drawings or in the Specifications. Terms such as “shown,” “noted,” “scheduled,” and “specified” also may be used to assist in locating information but no limitation of location is implied or intended.
 - 3. Install – defines operations at the site including assembly, erection, placing, anchoring, applying, shaping to dimension, finishing, curing, protecting, and cleaning, ready for the OWNER's use.
 - 4. Installer – a person or firm engaged by the CONTRACTOR or its Subcontractor or any Subcontractor for the performance of installation,

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erection, or application WORK at the site. Installers must be expert in the operations they are engaged to perform.

5. Provide – is defined as furnish and install, ready for the intended use.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

END OF SECTION

Add the following Section:

SECTION 01025 – MEASUREMENT AND PAYMENT

PART 1 – GENERAL AND DIVISION ONE PAY ITEMS

1.1. SCOPE

- A. Payment for the various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items for WORK being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA) and Occupational Safety and Health Standards of the Alaska Department of Labor, Division of Labor Standards and Safety.
- 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, the following items shall also be considered as incidental to other items of WORK under this contract:
 1. Maintenance of all services through the Project area including power, water, storm and sanitary sewers, garbage pickup, bus service 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 – 2009 Edition and the current AKDOT&PF supplements.
 3. Repair or replacement of existing adjacent facilities including piping, landscaping, steel, timber, concrete, stone and asphalt items.
 4. Final clean-up and site restoration.

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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. The removal and disposal of existing fencing.
 8. Watering of the roadway as necessary for dust control.
 9. Relocation of the existing sign assemblies within the Project Limits.
 10. All connections and fittings required for storm drain piping.
 11. All erosion and pollution control work required.
 12. All restoration of disturbed areas behind sidewalks or curbing to equal or better condition.
 13. Adjustment of electrical box frames and covers to grade.
 14. Crack sealing all joints following paving operations.
 15. Assembly and Installation of the project sign.
 16. Decommissioning of the existing vector dump site at the end of west eighth.
 17. Delivery of the modular concrete blocks within bridge park to consolidated public works.
- D. Payment for LUMP SUM bid items will be made in accordance with the Schedule of Values for work completed and accepted by the OWNER.
1. Work performed which is payable on a lump sum basis shall be measured for payment by percentage of work completed at the time each pay request is submitted.
 2. Indirect costs, such as supervision and overheads, profit, and the general conditions specified in the Contract shall be equitably spread between each schedule of value item. No separate payment will be made to the Contractor for these items.
 3. Upon approval of Change Orders, values for items contained within those Change Orders will be incorporated into the project Schedule of Values.
- E. Methods used to measure for payment of unit price items shall comply with Alaska Department of Transportation and Public Facilities Standard Specifications for Highways, 2015 Edition, Section 109.

1.2. SCHEDULE OF VALUES

- A. The Schedule of Values shall be developed as follows:
1. The CONTRACTOR shall submit a preliminary Schedule of Values for the major components of the WORK at the Preconstruction Conference.
 2. In preparing the Schedule of Values, break up the work into construction activities such that the value of each activity shall not exceed \$50,000 unless approved by the Project Representative.
 3. The CONTRACTOR and the OWNER shall meet and jointly review the preliminary Schedule of Values and make any adjustments in value allocations necessary, if in the opinion of the OWNER, allocation adjustments are necessary to establish fair and reasonable allocation of values for the major WORK components. Front end loading will not be permitted. The OWNER may require inclusion of other major WORK components not included in the above listing if, in the opinion of the

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OWNER, such additional components are appropriate. This review and any necessary revisions shall be completed within 15 Days from the date of Notice To Proceed. The CONTRACTOR will provide a final Schedule of Values at this time.

1.3. CHANGES TO SCHEDULE OF VALUES

- A. Changes to the CPM Schedule which add activities not included in the original schedule but included in the original WORK (schedule omissions) shall have values assigned as approved by the CBJ. Other activity values shall be reduced to provide equal value adjustment increases for added activities as approved by the CBJ.
- B. In the event that the CONTRACTOR and CBJ agree to make adjustments to the original Schedule of Values because of inequities discovered in the original accepted detailed Schedule of Values, increases and equal decreases to values for activities may be made.

1.4. 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, complete, all in accordance with the requirements of the Contract Documents.
- B. Payment for Mobilization will be made at the amount shown on the Bid Schedule under Pay Item No. 1505.1, which payment will constitute full compensation for all WORK described in Section 01505 – Mobilization, as shown on the Drawings and as directed by the ENGINEER.
- C. Partial payments will be made as the WORK progresses as follows:
 - 1. When 5% of the total original contract amount is earned from other Pay Items, 50% of the amount bid for Mobilization, or 5% of the original contract amount, whichever is lesser, will be paid.
 - 2. When 10% of the total original contract amount is earned from other Pay Items, 100% of the amount bid for Mobilization, or 10% of the original contract amount, whichever is lesser, will be paid.
 - 3. Upon completion of all WORK on the Project, payment of any amount bid for Mobilization in excess of 10% of the total contract amount will be paid.

1.5. TRAFFIC CONTROL (PAY ITEM NO. 1550.1) PRICE BASED ON LUMP SUM PAY UNIT

- A. Measurement for payment for Traffic Control will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
- B. Payment for Traffic Control will be made at the amount shown on the Bid Schedule under Pay Item No. 1550.1, which payment will constitute full compensation for all WORK described in Section 01550 – Site Access and Storage, as shown on the Drawings, and as directed by the ENGINEER.

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- 1.6. EROSION AND SEDIMENT CONTROL (PAY ITEM NO. 1570.1) 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 requirements of the Contract Documents.
 - B. WORK under this Pay Item includes obtaining all necessary permits for storm water control as required by Alaska Department of Environmental Conservation and the Environmental Protection Agency. This includes furnishing, installing and maintaining all measures required by these permits.
 - C. Payment for Erosion and Sediment Control will be made at the amount shown on the Bid Schedule under Pay Item No. 1570.1, which payment will constitute full compensation for all WORK described in Section 01570 – Erosion and Sediment Control, as shown on the Drawings and as directed by the ENGINEER.

PART 2 – DIVISION TWO PAY ITEMS

- 2.1. CLEARING AND GRUBBING (PAY ITEM NO. 2201.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement for payment for Clearing and Grubbing shall be per square yard (SY) based upon the completion of the entire WORK, as measured in place all in accordance with the requirements of the Contract Documents.
 - B. WORK under this Pay Item includes removal and disposal of debris, trees, tree clusters, stumps and brush, and other vegetation within the construction limits, as shown or described on the Drawings. Protection, reuse and transplant of native materials as shown on the Drawings shall be considered incidental to, and included in the payment for, this Pay Item.
 - C. Payment for Clearing and Grubbing will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2201.1, which payment will constitute full compensation for all WORK described in Section 02201 – Clearing and Grubbing, as shown on the Drawings and as directed by the ENGINEER.
- 2.2. USABLE EXCAVATION (PAY ITEM NO. 2202.1) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Usable 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 of the lines and grades indicated in the Drawings, or without direction from the ENGINEER will not be measured for payment.
 - 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 limits as shown on the Typical Sections.
 - C. Measurement for payment may be selected by the CONTRACTOR from one of the following methods:

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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 the 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. Material used for the purpose other than directed.
 5. Site 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, within the project limits as borrow.
- E. Payment for Usable Excavation will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2202.1, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings and as directed by the ENGINEER.
- 2.3. UNUSABLE EXCAVATION (PAY ITEM NO. 2202.2) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Unusable 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 of the lines and grades indicated in the Drawings, or without direction from the ENGINEER will not be measured for payment.
 - B. Work under this item will include, but is not limited to, excavation for the construction access pad to the habitat island.
 - C. 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 limits as shown on the Typical Sections.
 - D. Measurement for payment may be selected by the CONTRACTOR from one of 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

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- 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.
- E. The following will not be measured for direct payment; the cost of such WORK will be considered incidental to other WORK under the 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. Disposal of unusable excavation as directed by the ENGINEER.
 - 5. Site material scarified in place and not removed.
 - 6. Material excavated when benching.
 - 1. Slide or slipout material attributable to the carelessness of the CONTRACTOR.
- F. Payment for Unusable Excavation will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2202.2, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings and as directed by the ENGINEER.
- 2.4. SELECT BORROW (PAY ITEM 2202.3) PRICE BASED ON QUANTITY, TON
- A. Select Borrow shall be measured for payment by the ton delivered and placed in accordance with the contract documents.
 - B. Placement of usable excavation meeting the requirements of select borrow shall not be measured for payment under this Pay Item, but shall be considered incidental to other WORK under the contract.
 - C. Payment for Select Borrow will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2202.3, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings as and as directed by the ENGINEER.
- 2.5. 8-INCH MINUS SHOT ROCK BORROW (PAY ITEM NO. 2202.4) PRICE BASED ON QUANTITY, TON
- A. 8-Inch Minus Shot Rock Borrow shall be measured for payment by the ton delivered and placed in accordance with the contract documents.
 - B. 8-Inch Minus Filter Rock shall also be measured for payment under this pay item. Any additional screening or sorting required shall be considered incidental to the WORK.
 - C. Payment for 8-Inch Minus Shot Rock Borrow will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2202.4, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings as and as directed by the ENGINEER.

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- 2.6. 18-INCH MINUS SHOT ROCK BORROW (PAY ITEM NO. 2202.5) PRICE BASED ON QUANTITY, TON
- A. 18-Inch Minus Shot Rock Borrow shall be measured for payment by the ton delivered and placed in accordance with the contract documents.
 - B. No deduction shall be made for material deformation or loss for material placed in accordance with the contract documents prior to April 1 2016. Any re-shaping and final grading prior to placement of rounded boulders, and cobble/topsoil mixes shall be incidental to this pay item.
 - C. Payment for 18-Inch Minus Shot Rock Borrow will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2202.5, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings as and as directed by the ENGINEER.
- 2.7. MINING AREA RESTORATION AND ROAD CLEANING GUARANTEE (PAY ITEM NO. 2202.6) 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. It is the intent that the traveled public way 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 CBJ may hire outside forces to perform the work and deduct the cost from this contingent sum item.
 - C. The Contractor shall be responsible for restoration of their mining area in accordance to the conditions of the material source used and mining plan submitted. If the Contractor fails to perform the required mining area restoration, the CBJ may hire outside forces to perform the work and deduct the cost from this contingent sum item.
 - D. Release of final payment for Mining Area Restoration and Road Cleaning Guarantee will be made upon determination of completeness by the ENGINEER after deduction of OWNER incurred costs for necessary road cleaning and/or mining area restoration not completed by the CONTRACTOR.
 - E. Payment for Mining Area Restoration and Road Cleaning Guarantee will be made at the amount shown in the Bid Schedule under Pay Item No. 2202.6, with deductions as described in this article, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings and as directed by the ENGINEER.
- 2.8. INDIVIDUAL MINING PLAN (PAY ITEM NO. 2202.7) PRICE BASED ON LUMP SUM PAY UNIT
- A. Measurement for payment for Individual Mining Plan will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, including preparation and approval of the Individual Mining Plan by a registered Civil

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Engineer in the State of Alaska, all in accordance with the requirements of the Contract Documents.

- B. Payment for Individual Mining Plan will be made at the amount shown in the Bid Schedule under Pay Item No. 2202.7, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment, as shown on the Drawings and as directed by the ENGINEER.
- 2.9. 2-INCH MINUS SHOT ROCK (PAY ITEM NO. 2204.1) PRICE BASED ON QUANTITY, TON
- A. 2-Inch Minus Shot Rock shall be measured for payment by the ton delivered and placed in accordance with the contract documents. Material outside of the lines, grades and cross sections indicated in the Drawings, or as directed by the ENGINEER, will be deducted from 2-Inch Minus Shot Rock quantities for pay purposes.
 - B. Where 2-Inch Minus Shot Rock with Base Course is specified in the Contract Documents, the material shall be measured for payment under the two respective Pay Items: 2-Inch Minus Shot Rock, and Base Course, Grading D-1. Base Course, Grading D-1 shall be placed and compacted into a layer 1-inch to 2-inches thick on top of the 2-inch minus shot rock layer. The Base Course, Grading D-1 will be measured for payment under its respective Pay Item, and the underlying 2-Inch Minus Shot Rock will be measured for payment under this Pay Item. 2-Inch Minus Shot Rock shall meet the requirements of Section 02202 – Excavation and Embankment.
 - C. Payment for 2-Inch Minus Shot Rock will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2204.1, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment and Section 02204 – Base Course, as shown on the Drawings and as directed by the ENGINEER.
- 2.10. BASE COURSE, GRADING D-1 (PAY ITEM NO. 2204.2) PRICE BASED ON QUANTITY, SY
- A. Base Course, Grading D-1 will be measured by the number of square yards of material in place. Material outside of the lines, grades and cross sections indicated in the Drawings, or as directed by the ENGINEER, will be deducted from Base Course, Grading D-1 quantities for pay purposes.
 - B. Water needed for compaction and added to the base material on the grade will be considered incidental.
 - C. Where 2-Inch Minus Shot Rock with Base Course is specified in the Contract Documents, the material shall be measured for payment under the two respective Pay Items: 2-Inch Minus Shot Rock, and Base Course, Grading D-1. Base Course, Grading D-1 shall be placed and compacted into a layer 1-inch to 2-inches thick on top of the 2-inch minus shot rock layer. The 2-inch minus shot rock will be measured for payment under its respective Pay Item, and the Base Course, Grading D-1 will be measured for payment under this Pay Item. Base Course, Grading D-1 shall meet the requirements of Section 02204 – Base Course.

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- D. Base Course, Grading D-1 will be measured for payment where the contract documents specify AC Pavement, concrete sidewalk, and brick pavers. The leveling course required under seatwalls, trench drains, paving headers, timber decking support beams, and concrete retaining walls will be considered incidental to other WORK.
 - E. Payment for Base Course, Grading D-1 shall be made at the Unit Price named in the Bid Schedule under Pay Item No. 2204.2, which payment will constitute full compensation for all WORK described in Section 02202 – Excavation and Embankment and Section 02204 – Base Course, as shown on the Drawings and as directed by the ENGINEER.
- 2.11. CLASS IV RIPRAP (PAY ITEM NO. 2205.1) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement for payment for Class IV Riprap shall be based on the number of cubic yards in place 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.
 - B. Riprap placed outside of the lines, grades and typical sections indicated in the Plans or as directed by the ENGINEER shall not be included in the quantities for pay purposes.
 - C. The volume of Class II Riprap specified at the top of the Class IV Riprap slope will also be measured for payment under this Pay Item.
 - D. Payment for Class IV Riprap will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2205.1, which payment will constitute full compensation for all WORK described in Section 02205 – Riprap, as shown on the Drawings as and as directed by the ENGINEER.
- 2.12. 36-INCH MINUS ROUNDED BOULDERS (PAY ITEM NO. 2370.1) PRICE BASED ON QUANTITY, TON
- A. 36-Inch Minus Rounded Boulders shall be measured for payment by the ton delivered and placed in accordance with the contract documents. This material shall not be used to compensate for material deformation or loss for subgrade material placed in accordance with the contract documents prior to April 1 2016. Any re-shaping and final grading prior to placement of rounded boulders, and cobble/topsoil mixes shall be performed using Shot Rock Borrow and considered incidental to the Shot Rock Borrow pay item.
 - B. Payment for 36-Inch Minus Rounded Boulders will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.1, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Restoration, as shown on the Drawings as and as directed by the ENGINEER.
- 2.13. 10-INCH MINUS COBBLE (PAY ITEM NO. 2370.2) PRICE BASED ON QUANTITY, TON
- A. 10-Inch Minus Cobble shall be measured for payment by the ton delivered and placed in accordance with the contract documents. Refer to section 02370 for additional installation procedures for measurement.

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- B. This material shall not be used to compensate for material deformation or loss for subgrade material placed in accordance with the contract documents prior to April 1 2016. Any re-shaping and final grading prior to placement of rounded boulders, and cobble/topsoil mixes shall be performed using Shot Rock Borrow and considered incidental to the Shot Rock Borrow pay item.
 - C. 10-Inch Minus Cobble will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.2, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Restoration, as shown on the Drawings as and as directed by the ENGINEER.
- 2.14. STONE STEPS OVER RIP RAP (PAY ITEM NO. 2370.3) PRICE BASED ON QUANTITY, TON
- A. Stone Steps over Rip Rap shall be measured for payment by the ton delivered and placed in accordance with the contract documents.
 - B. Stone Steps over Rip Rap will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.3, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Restoration, as shown on the Drawings as and as directed by the ENGINEER.
- 2.15. INTERTIDAL STEPPING STONES (PAY ITEM NO. 2370.4) PRICE BASED ON QUANTITY, TON
- A. Intertidal Stepping Stones shall be measured for payment by the ton delivered and placed in accordance with the contract documents.
 - B. Intertidal Stepping Stones will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.4, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Restoration, as shown on the Drawings as and as directed by the ENGINEER.
- 2.16. COBBLE, GRAVEL, SOIL MIX (PAY ITEM NO. 2370.5) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Cobble, Gravel, Soil mix shall be measured for payment by cubic yard (CY) delivered and placed in accordance with the contract documents.
 - B. This material shall not be used to compensate for material deformation or loss for subgrade material placed in accordance with the contract documents prior to April 1 2016. Any re-shaping and final grading prior to placement of rounded boulders, and cobble/topsoil mixes shall be performed using Shot Rock Borrow and considered incidental to the Shot Rock Borrow pay item.
 - C. Cobble Gravel Soil will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.5, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Protection, as shown on the Drawings as and as directed by the ENGINEER
- 2.17. GRAVEL, SOIL MIX (PAY ITEM NO. 2370.6) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Gravel, Soil mix shall be measured for payment by cubic yard (CY) delivered and placed in accordance with the contract documents.

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- B. This material shall not be used to compensate for material deformation or loss for subgrade material placed in accordance with the contract documents prior to April 1 2016. Any re-shaping and final grading prior to placement of rounded boulders, and cobble/topsoil mixes shall be performed using Shot Rock Borrow and considered incidental to the Shot Rock Borrow pay item.
 - C. Gravel Soil will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.6, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Restoration, as shown on the Drawings as and as directed by the ENGINEER
- 2.18. SHELL HASH FILL (PAY ITEM NO. 2370.7) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Shell Hash Fill shall be measured for payment by the cubic yard (CY) delivered and placed in accordance with the contract documents.
 - B. Shell Hash Fill will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2370.7, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Protection, as shown on the Drawings as and as directed by the ENGINEER.
- 2.19. TIDE POOL (PAY ITEM NO. 2370.8) PRICE BASED ON QUANTITY, LUMP SUM
- A. Measurement for payment for Tide Pool will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, including preparation, installation, materials and approval of the Tide Pool feature in accordance with the contract documents.
 - B. Tide Pool will be made at the amount shown in the Bid Schedule under Pay Item No. 2370.8, which payment will constitute full compensation for all WORK described in Section 02370 – Shore Protection, as shown on the Drawings as and as directed by the ENGINEER.
- 2.20. PIER TIMBERWORK, ELEVATED DECK (PAY ITEM NO. 2398.1) PRICE BASED ON QUANTITY, SQUARE FOOT
- A. Measurement for payment for Pier Timberwork will be based upon the completion of the entire WORK, complete in place, all in accordance with the requirements of the Contract Documents. Work shall include furnishing and installing all Pier Timberwork shown on the Drawings and specified herein, including but not limited to, glulam beams, timber decking, and all necessary fasteners, bolts, spikes and other appurtenances necessary for the complete installation of the timberwork.
 - B. The quantity of Pier Timberwork for payment shall be the total square foot area of surface decking measured in place after all material is trimmed to final dimensions shown on the Drawings, or as directed by the Engineer. Any additional material required to install the work, but trimmed or removed to obtain the final dimensions, shall be considered to this pay item and not paid for under this or any other pay item. Construction of concrete transition foundations shown on the Drawings at shore connections shall be paid for under, and considered incidental to, this pay item. Installation of the banner poles shown on the Drawings shall also be paid for under, and considered incidental to, this pay item.

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Supply of the banner poles shall be included in Pay Item 16000.1, Electrical Service, Distribution, and Lighting.

- C. Payment for Pier Timberwork will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2398.1, which payment will constitute full compensation for all WORK described in Section 02498 – Pier Timberwork, as own on the Drawings and as directed by the ENGINEER.

2.21. PIER TIMBERWORK, AT-GRADE DECK ISLAND (PAY ITEM NO. 2398.2) PRICE BASED ON QUANTITY, SQUARE FOOT

- A. Measurement for payment for Pier Timberwork will be based upon the completion of the entire WORK, complete in place, all in accordance with the requirements of the Contract Documents. Work shall include furnishing and installing all Pier Timberwork shown on the Drawings and specified herein, including but not limited to, glulam beams, timber decking, and all necessary fasteners, bolts, spikes and other appurtenances necessary for the complete installation of the timberwork.
- B. The quantity of Pier Timberwork for payment shall be the total square foot area of surface decking measured in place after all material is trimmed to final dimensions shown on the Drawings, or as directed by the Engineer. Any additional material required to install the work, but trimmed or removed to obtain the final dimensions, shall be considered to this pay item and not paid for under this or any other pay item.
- C. Payment for Pier Timberwork will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2398.2, which payment will constitute full compensation for all WORK described in Section 02498 – Pier Timberwork, as own on the Drawings and as directed by the ENGINEER.

2.22. PIER TIMBERWORK, AT-GRADE DECK BRIDGE PARK (PAY ITEM NO. 2398.3) PRICE BASED ON QUANTITY, SQUARE FOOT

- A. Measurement for payment for Pier Timberwork will be based upon the completion of the entire WORK, complete in place, all in accordance with the requirements of the Contract Documents. Work shall include furnishing and installing all Pier Timberwork shown on the Drawings and specified herein, including but not limited to, glulam beams, timber decking, and all necessary fasteners, bolts, spikes and other appurtenances necessary for the complete installation of the timberwork.
- B. The quantity of Pier Timberwork for payment shall be the total square foot area of surface decking measured in place after all material is trimmed to final dimensions shown on the Drawings, or as directed by the Engineer. Any additional material required to install the work, but trimmed or removed to obtain the final dimensions, shall be considered to this pay item and not paid for under this or any other pay item.
- C. Payment for Pier Timberwork will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2398.3, which payment will constitute full compensation for all WORK described in Section 02498 – Pier Timberwork, as own on the Drawings and as directed by the ENGINEER.

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- 2.23. SANITARY SEWER SERVICE LATERALS (PAY ITEM NO. 2401.1) PRICE BASED ON LUMP SUM PAY UNIT.
- A. Measurement for payment for Sanitary Sewer Service Laterals will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete in place, including pipe, fittings, trench excavation, bedding, backfill, sheeting and bracing, dewatering, cleaning and testing, and all other items necessary for a complete installation in accordance with the requirements of the Contract Documents.
 - B. Connection to the sanitary sewer manhole at the end of west ninth street, including the re-channelization of the invert, shall be incidental to this Pay Item.
 - C. Connection to the water fountain in bridge park shall also be incidental to this Pay Item.
 - D. Payment for Sanitary Sewer Service Laterals will be made at the amount shown in the Bid Schedule under Pay Item No. 2401.1, which payment will constitute full compensation for all WORK described in Section 02401 – Sanitary Sewer Pipe, as shown on the Drawings and as directed by the ENGINEER.
- 2.24. STEEL PIPE PILES (PAY ITEM NO. 2458.1) PRICE BASED ON QUANTITY, EACH
- A. Steel Pipe Piles, will be measured per each, complete in place, including but not limited to:
 - 1. Acquisition, freight and delivery of the piles to the site.
 - 2. Mobilization and operation of all necessary labor and equipment.
 - 3. Surface preparation and protection of existing structures and natural conditions.
 - 4. Installation with pile driving equipment appropriate to the site.
 - 5. Restoration of site to pre-construction conditions.
 - B. Any splices necessary to reach specified capacity are not included in this bid item and will be measured and paid for as additional work
 - C. Payment for Install Steel Pipe Piles, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2458.1 which payment will constitute full compensation for all WORK described in Section 02458 – Steel Pipe Piles, as shown on the Drawings and as directed by the ENGINEER.
- 2.25. 12-INCH PIPE CULVERT (PAY ITEM NO. 2501.1) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Pipe Culvert, including all coupling bands, bends and other items necessary for the proper joining of the culvert pipe sections, will be measured by the staked length in linear feet.
 - B. Pipes for storm drains shall be measured by the staked length, from center to center of structures or to ends of pipe if no structure is present. No deduction shall be made for footage through inlets, catch basins or manholes.
 - C. Branch connections, coupling adapters and bends will be included in the linear foot measurement for conduit.

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- D. Trench excavation, bedding, backfill and imported backfill will not be measured for payment, but will be considered incidental to other WORK.
 - E. Connection to existing oil water separator CB-1 shall be incidental to this Pay Item.
 - F. Payment for 12-Inch Pipe Culvert will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2501.1, which 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.
- 2.26. 6-INCH UNDERDRAIN (PAY ITEM NO. 2501.2) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Underdrain pipe, including all coupling bands, bends and other items necessary for the proper joining of the pipe sections, will be measured by the staked length in linear feet.
 - B. Pipe perforations, 2-inch shot rock, filter cloth, end caps and cleanouts will not be measured for payment, but will be considered incidental to the WORK.
 - C. Trench excavation and backfill will not be measured for payment, but will be considered incidental to the WORK.
 - D. Payment for 6-Inch Underdrain will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2501.2, which 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.
- 2.27. STORM DRAIN MANHOLE, TYPE I (PAY ITEM NO. 2502.1) PRICE BASED ON QUANTITY, EACH
- A. Storm Drain Manholes will be measured per each, complete in place, including transition slab with asphalt pavement overlay, if required, and all earthwork, frames and covers.
 - B. Payment for Storm Drain Manhole, Type I, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2502.1, which payment will constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets and Catch Basins, as shown on the Drawings, and as directed by the ENGINEER.
- 2.28. CATCH BASIN, TYPE III (PAY ITEM NO. 2502.2) PRICE BASED ON QUANTITY, EACH
- A. Catch Basins will be measured per each, complete in place, including all earthwork, frames and grates or covers.
 - B. Payment for Catch Basin, Type III will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2502.2 which payment will constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets and Catch Basins, as shown on the Drawings and as directed by the ENGINEER.

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- 2.29. TRENCH DRAIN (PAY ITEM NO. 2502.3) PRICE BASED ON QUANTITY, LINEAR FOOT
- A. Trench Drain will be measured for payment based upon the staked length in linear feet.
 - B. The trench drain WORK will include all earthwork, concrete, reinforcement, drain channel, frame and grate.
 - C. The 4-Inch PVC pipe to connect TD-1 and TD-2, as well as the three 4-Inch PVC outfalls associated with TD-1, TD-2, TD-3, and TD-4 will be considered incidental to the WORK.
 - D. Payment for Trench Drain will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2502.3, which payment will constitute full compensation for all WORK described in Section 02502 – Storm Sewer Manholes, Inlets and Catch Basins, Section 03301 Structural Concrete, as shown on the Drawings and as directed by the ENGINEER
- 2.30. MASONRY UNIT PAVING, GRANITE PAVER (PAY ITEM NO. 2515.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Granite Paver will be measured for payment based upon a square yard unit delivered and installed. Measurement for payment for granite paver will be based upon the completion of the entire WORK, complete in place, all in accordance with the requirements of the Contract Documents
 - B. Work shall include furnishing and installing granite pavers as shown on the Drawings and specified herein, including but not limited to, bedding sand, joint sand, compaction, cutting pavers, in accordance with the contract documents and all necessary and other appurtenances necessary for the complete installation of the granite paver.
 - C. Payment for granite paver will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2515.1, which payment will constitute full compensation for all WORK described in Section 02515 – Masonry Unit Paving, as shown on the Drawings and as directed by the ENGINEER.
- 2.31. MASONRY UNIT PAVING, BRICK PAVER (PAY ITEM NO. 2515.2) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Brick Paver will be measured for payment based upon a square yard unit delivered and installed. Measurement for payment for brick paver will be based upon the completion of the entire WORK, complete in place, all in accordance with the requirements of the Contract Documents
 - B. Work shall include furnishing and installing brick pavers as shown on the Drawings and specified herein, including but not limited to, bedding sand, , joint sand, compaction, cutting pavers, in accordance with the contract documents and all necessary and other appurtenances necessary for the complete installation of the brick paver.
 - C. Payment for brick paver will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2515.2, which payment will constitute full compensation for all WORK described in Section 02515 – Masonry Unit Paving, as shown on the Drawings and as directed by the ENGINEER.

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- 2.32. FIRE HYDRANT ASSEMBLY (PAY ITEM NO. 2603.1) PRICE BASED ON QUANTITY, EACH
- A. Measurement for payment of Fire Hydrant Assembly will be the actual number of fire hydrant assemblies satisfactorily installed, complete in place.
 - B. A Fire Hydrant Assembly includes the fire hydrant, the tee or required fitting at the mainline water pipe, barrel extension (if required), thrust block, six-inch gate valve, valve box, joint restraints, continuity wires, thaw wires, warning tapes, and any other required fittings, including pipe, to connect the hydrant leg from the mainline water pipe to the fire hydrant or from the stubbed water pipe to the fire hydrant as shown on the Drawings.
 - C. Trench excavation and backfill shall be considered incidental to other WORK under the contract.
 - D. Decommissioning of the existing fire hydrant on West Eighth Street shall be considered incidental to this Pay Item. WORK includes, but is not limited to removal and disposal of existing hydrant and gate valve, and capping of existing service leg.
 - E. Payment for Fire Hydrant Assembly will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2603.1, which payment will constitute full compensation for all WORK described in Section 02603 – Fire Hydrants, as shown on the Drawings and as directed by the ENGINEER.
- 2.33. 1-INCH WATER SERVICES (PAY ITEM NO. 2605.1) PRICE BASED ON LUMP SUM PAY UNIT
- A. Measurement for payment 1-Inch Water services will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. WORK will include connection to the existing fire hydrant leg on west ninth street, all curb stops, service boxes, corporation stops, stop and waste valves, yard hydrants, thaw wires, service saddles, fittings, warning tape, service pipe, and all WORK necessary to install the service to the locations as shown on the Drawings.
 - C. Payment for 1-Inch Water Services will be made at the amount shown in the Bid Schedule under Pay Item No. 2605.1, which payment will constitute full compensation for all WORK described in Section 02605 – Water Services, as shown on the Drawings and as directed by the ENGINEER.
- 2.34. 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 Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. Payment for Construction Surveying will be made at the amount shown in the Bid Schedule under Pay Item No. 2702.1, which payment will constitute full compensation for all WORK described in Section 02702 – Construction Surveying, as shown on the Drawings and as directed by the ENGINEER.

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- 2.35. LAWN SEED MIX (PAY ITEM NO. 2710.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Lawn seed mix shall be based on the unit square yards, complete in place and accepted. The work shall include the delivery, preparation, installation and maintenance in accordance with the contract documents.
 - B. Payment of Lawn seed mix will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2710.1, which payment will constitute full compensation for all WORK described in Section 02710 – Seeding, as shown on the Drawings and as directed by the ENGINEER.
- 2.36. LOW MARSH SEED MIX (PAY ITEM NO. 2710.2) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Low Marsh seed mix shall be based on the unit square yards, complete in place and accepted. The work shall include the delivery, preparation, installation and maintenance in accordance with the contract documents.
 - B. Payment of Low Marsh seed mix, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2710.2, which payment will constitute full compensation for all WORK described in Section 02710 – Seeding, as shown on the Drawings and as directed by the ENGINEER.
- 2.37. LOWER LOW MARSH SEED MIX (PAY ITEM NO. 2710.3) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Lower Low Marsh seed mix shall be based on the unit square yards, complete in place and accepted. The work shall include the delivery, preparation, installation and maintenance in accordance with the contract documents.
 - B. Payment of Lower Low Marsh seed mix, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2710.2, which payment will constitute full compensation for all WORK described in Section 02710 – Seeding, as shown on the Drawings and as directed by the ENGINEER.
- 2.38. HIGH MARSH SEED MIX (PAY ITEM NO. 2710.4) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of High Marsh seed mix shall be based on the unit square yards, complete in place and accepted. The work shall include the delivery, preparation, installation and maintenance in accordance with the contract documents.
 - B. Payment of High Marsh seed mix will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2710.3, which payment will constitute full compensation for all WORK described in Section 02710 – Seeding, as shown on the Drawings and as directed by the ENGINEER.
- 2.39. RIPARIAN SEED MIX (PAY ITEM NO. 2710.5) PRICE BASED ON QUANTITY, SQUARE FEET
- A. Measurement of Riparian seed mix shall be based on the unit square feet, complete in place and accepted. The work shall include the delivery, preparation, installation and maintenance of up to 500 SQUARE FEET of Riparian seed mix in accordance with the contract documents.

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- B. Payment of Riparian seed mix will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2710.5, which payment will constitute full compensation for all WORK described in Section 02710 – Seeding, as shown on the Drawings and as directed by the ENGINEER.
- 2.40. TOPSOIL (PAY ITEM NO. 2711.1) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement of Topsoil shall be based on the unit cubic yards. The work shall include the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Topsoil will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.1, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.41. PLANTING SOIL (PAY ITEM NO. 2711.2) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement of planting soil shall be based on the unit cubic yards. The work shall include the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of planting soil will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.1, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.42. BARK MULCH (PAY ITEM NO. 2711.3) PRICE BASED ON QUANTITY, CUBIC YARD
- A. Measurement of bark mulch shall be based on the unit cubic yards. The work shall include the delivery, preparation, installation and maintenance in accordance with the contract documents.
 - B. Payment of bark mulch will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.1, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.43. PLANTING, CONIFEROUS TREE 5'-8' CONTAINER (PAY ITEM NO. 2711.4) PRICE BASED ON QUANTITY, EACH
- A. Measurement of coniferous tree 5'-8' container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of coniferous tree will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.1, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.

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- 2.44. PLANTING, CONIFEROUS TREE 1 GAL. CONTAINER (PAY ITEM NO. 2711.5) PRICE BASED ON QUANTITY, EACH
- A. Measurement of coniferous tree 1 gal. container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of coniferous tree will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.5, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.45. PLANTING, DECIDUOUS TREE 3" CALIPER (PAY ITEM NO. 2711.6) PRICE BASED ON QUANTITY, EACH
- A. Measurement of deciduous tree 3" caliper, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of deciduous tree 3" caliper will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.6, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.46. PLANTING, DECIDUOUS TREE 1.5" CALIPER (PAY ITEM NO. 2711.7) PRICE BASED ON QUANTITY, EACH
- A. Measurement of deciduous tree 1.5" caliper, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of deciduous tree 1.5" caliper will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.7, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.47. PLANTING, DECIDUOUS TREE 4'-5' CONTAINER (PAY ITEM NO. 2711.8) PRICE BASED ON QUANTITY, EACH
- A. Measurement of deciduous tree 4'-5' container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of deciduous tree 1.5" caliper will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.8, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.

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- 2.48. PLANTING, DECIDUOUS TREE 5 GAL. CONTAINER (PAY ITEM NO. 2711.9) PRICE BASED ON QUANTITY, EACH
- A. Measurement of deciduous tree 5 gal. container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of deciduous tree 5 gal. container will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.9, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.49. PLANTING, PLANT 2 GAL. CONTAINER (PAY ITEM NO. 2711.10) PRICE BASED ON QUANTITY, EACH
- A. Measurement of plant 2 gal. container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of plant 2 gal. container will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.10, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.50. PLANTING, PLANT 1 GAL. CONTAINER (PAY ITEM NO. 2711.11) PRICE BASED ON QUANTITY, EACH
- A. Measurement of plant 1 gal. container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of deciduous tree 1 gal. container will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.11, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.51. PLANTING, PLANT 4” POT. CONTAINER (PAY ITEM NO. 2711.12) PRICE BASED ON QUANTITY, EACH
- A. Measurement of plant 4” pot. container, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of herbaceous 4” pot. container will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.12, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.

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- 2.52. PLANTING, PLANT 10" PLUG (PAY ITEM NO. 2711.13) PRICE BASED ON QUANTITY, EACH
- A. Measurement of plant 10" plug, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of 10" plug will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.13, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.53. PLANTING, BULBS (PAY ITEM NO. 2711.14) PRICE BASED ON QUANTITY, EACH
- A. Measurement of bulbs, shall be per each. The work shall include the delivery, preparation, installation and maintenance including but not limited to all amendments, fertilizer, and mycorrhizae in accordance with the contract documents.
 - B. Payment of bulbs will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.14, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.54. PLANTING, LIVESTAKES (PAY ITEM NO. 2711.15) PRICE BASED ON QUANTITY, EACH
- A. Measurement of livestakes, shall be per each. The work shall include the preparation, installation and maintenance of livestakes and pull up plants identified in the contract documents including but not limited to all amendments, fertilizer, and mycorrhizae, in accordance with the contract documents.
 - B. Payment of livestakes will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.15, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.55. HABITAT SNAG (PAY ITEM NO. 2711.16) PRICE BASED ON QUANTITY, EACH
- A. Measurement of habitat snag, shall be per each.
 - B. Work shall include furnishing and installing habitat snag as shown on the Drawings in accordance with the contract documents and shall include all necessary materials, and appurtenances necessary for the complete installation of the habitat snag.
 - C. Payment of habitat snag will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.16, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.56. HABITAT LOG (PAY ITEM NO. 2711.17) PRICE BASED ON QUANTITY, EACH
- A. Measurement of habitat log, shall be per each.

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- B. Work shall include furnishing and installing habitat log as shown on the Drawings in accordance with the contract documents and shall include all necessary materials, and appurtenances necessary for the complete installation of the habitat snag.
 - C. Payment of habitat log will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.17, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.57. HABITAT LOG/ROOTWAD (PAY ITEM NO. 2711.18) PRICE BASED ON QUANTITY, EACH
- A. Measurement of habitat log/rootwad, shall be per each.
 - B. Work shall include furnishing and installing habitat log/rootwads as shown on the Drawings in accordance with the contract documents and shall include all necessary materials, and appurtenances necessary for the complete installation of the habitat snag.
 - C. Payment of habitat log/rootwad will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.18, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.58. ANCHORED HABITAT LOG (PAY ITEM NO. 2711.19) PRICE BASED ON QUANTITY, EACH
- A. Measurement of anchored habitat log, shall be per each.
 - B. Work shall include furnishing and installing anchored habitat logs as shown on the Drawings and specified herein including but not limited to logs, boulder anchors, cables, bolts and all appurtenances necessary for the complete installation of the anchored habitat log.
 - C. Payment of anchored habitat log will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.19, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.59. ANCHORED HABITAT ROOT WAD (PAY ITEM NO. 2711.20) PRICE BASED ON QUANTITY, EACH
- A. Measurement of anchored habitat root wad, shall be per each.
 - B. Work shall include furnishing and installing anchored habitat root wad as shown on the Drawings and specified herein including but not limited to logs, boulder anchors, cables, bolts and all appurtenances necessary for the complete installation of the anchored habitat rootwad.
 - C. Payment of anchored habitat root wad will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.20, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.

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- 2.60. TRANSPLANT NATIVE HERBACEOUS SPECIES (PAY ITEM NO. 2711.21) PRICE BASED ON QUANTITY, EACH
- A. Measurement of transplant of native herbaceous species, shall be per each. The work shall include all materials and labor to sensitively harvest, store and transplant select native species up to 25 plants as directed by the engineer, in accordance with the contract documents.
 - B. Payment of transplant native herbaceous species will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.21, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.61. TRANSPLANT ALKALI GRASS (PAY ITEM NO. 2711.22) PRICE BASED ON QUANTITY, SQUARE FOOT
- A. Measurement of transplant alkali grass, shall be per square foot. The work shall include all materials and labor to sensitively harvest, and transplant select alkali grass, in accordance with the contract documents. The contractor shall note the critical early timing of this pay item.
 - B. Payment of transplant alkali grass will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.22, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.62. LANDSCAPE BOULDERS (PAY ITEM NO. 2711.23) PRICE BASED ON QUANTITY, TON
- A. Measurement of landscape boulders, shall be per ton. Work shall include furnishing and installing landscape boulders as shown on the Drawings and specified herein including all labor, materials and all appurtenances necessary for the complete installation of the landscape boulders.
 - B. Payment of landscape boulders will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.23, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.63. TREE GRATE (PAY ITEM NO. 2711.24) PRICE BASED ON QUANTITY, EACH
- A. Measurement of tree grate, shall be per each. Work shall include furnishing and installing tree grates as shown on the Drawings and specified herein and shall include all necessary materials, hardware, fasteners and appurtenances necessary for the complete installation of the tree grate.
 - B. Payment of tree grate will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.24, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.

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- 2.64. JUTE MESH (PAY ITEM NO. 2711.25) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of jute mesh, shall be per square yard (SY). The work shall include all materials and labor for delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of jute mesh will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2711.25, which payment will constitute full compensation for all WORK described in Section 02711 – Landscape Planting, as shown on the Drawings and as directed by the ENGINEER.
- 2.65. STABILIZATION FABRIC (PAY ITEM NO. 2714.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Stabilization Fabric will be based on the actual square yards, excluding overlaps, complete in place and accepted.
 - B. Stabilization Fabric is a contingency item and shall be used only as directed by the ENGINEER.
 - C. Payment of Stabilization Fabric will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2714.1, which payment will constitute full compensation for all WORK described in Section 02714 – Filter Cloth, as shown on the Drawings and as directed by the ENGINEER.
- 2.66. GEOGRID (PAY ITEM NO. 2714.2) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Geogrid will be based on the actual square yards, excluding overlaps, complete in place and accepted.
 - B. Payment of Geogrid will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2714.2, which payment will constitute full compensation for all WORK described in Section 02714 – Filter Cloth, as shown on the Drawings and as directed by the ENGINEER.
- 2.67. STORM CULVERT REMOVAL (PAY ITEM NO. 2716.1) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Storm Culvert Removal will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this Pay Item includes the removal of storm culvert within Bridge Park as shown on the Drawings.
 - C. Payment for Painted Traffic Markings will be made at the amount shown in the Bid Schedule under Pay Item No. 2716.1, which payment will constitute full compensation for all WORK described in Section 02716 – Remove and Dispose of Culvert Pipe, as shown on the Drawings and as directed by the ENGINEER.

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- 2.68. STORM STRUCTURE REMOVAL (PAY ITEM NO. 2717.1) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Storm Structure Removal will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - D. WORK under this Pay Item includes the removal of storm structures within Bridge Park as shown on the Drawings.
 - E. Payment for Painted Traffic Markings will be made at the amount shown in the Bid Schedule under Pay Item No. 2720.1, which payment will constitute full compensation for all WORK described in Section 02720 – Painted Traffic Markings, as shown on the Drawings and as directed by the ENGINEER.
- 2.69. PROJECT SIGN ASSEMBLY (PAY ITEM NO. 2718.1) PRICE BASED ON LUMP SUM PAY UNIT
- A. Measurement for payment for Project Sign Assembly will be based on the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. The sign panel will be provided by the OWNER. All other required materials shall be provided by the CONTRACTOR.
 - C. Payment for Project Sign Assembly will be made at the amount shown in the Bid Schedule under Pay Item No. 2718.1, which payment will constitute full compensation for all WORK described in Section 02718 – Sign Assembly, as shown on the Drawings and as directed by the ENGINEER.
- 2.70. PAINTED TRAFFIC MARKINGS (PAY ITEM NO. 2720.1) PRICE BASED ON LUMP SUM
- A. Measurement for payment for Painted Traffic Markings will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. WORK under this Pay Item includes the painted traffic markings as shown on the Drawings.
 - C. Payment for Painted Traffic Markings will be made at the amount shown in the Bid Schedule under Pay Item No. 2720.1, which payment will constitute full compensation for all WORK described in Section 02720 – Painted Traffic Markings, as shown on the Drawings and as directed by the ENGINEER.
- 2.71. A.C. PAVEMENT, TYPE II-A, CLASS B (PAY ITEM NO. 2801.1) PRICE BASED ON QUANTITY, TON
- 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 design mat 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 or minus one-eighth inch from the design mat thickness. All asphalt concrete placed outside the tolerance allowed will be corrected by the CONTRACTOR at no cost to the OWNER.

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- 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 under Pay Item No. 2801.1.
 - 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 for A.C. Pavement, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2801.1, which 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.
 - H. 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 02801 – Asphalt Concrete Pavement, Part 3 – Execution, Article 3.13, Acceptance Sampling and Testing, Paragraph K.
- 2.72. REMOVE EXISTING ASPHALT SURFACING (PAY ITEM NO. 2806.1) PRICE BASED ON QUANTITY, SQUARE YARDS
- 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. 2806.1.
 - 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, which payment will constitute full compensation for all WORK described in Section 02806 – Remove Existing Asphalt Surfacing, as shown on the Drawings and as directed by the ENGINEER.
- 2.73. UNDERSEA GARDEN (PAY ITEM NO. 2860.1) PRICE BASED ON QUANTITY, LUMP SUM
- A. Measurement of undersea garden, shall be a lump sum. See the drawings for the area defined as Undersea Garden and spec. section 2860. Work for the Undersea Garden shall include furnishing and installing all items shown on the drawings and specified herein including but not limited to: the rock fish element, the sea star element, the crab on stone element, the moon snail element, the killer whale fin element, the sea anemone element, the clam element, the metal crab art, associated concrete footings of the Undersea Garden elements and all necessary

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fasteners, bolts and other appurtenances necessary for the complete installation of the undersea garden elements.

- B. The furnishing and installation of landscape boulders, pea gravel, cobble with pea gravel surfacing, luminescent glass stones (type 1 and type 2) tumbled glass surfacing in the Undersea Garden area shall also be included in the lump sum measurement of the Undersea Garden item. The work shall include all materials and labor for the delivery, preparation and installation in accordance with the contract documents.
 - C. As part of the lump sum bid item for undersea garden, the delivery, installation and preparation of concrete footings and anchors of the owner provided salvaged propellers and wharf bollards shall be included in the measurement for the undersea garden. Up to 3 salvaged propellers and up to 5 wharf bollards shall be included in this lump sum item.
 - D. Payment of undersea garden will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2860.1, which payment will constitute full compensation for all WORK described in Section 02860 – Undersea Garden, as shown on the Drawings and as directed by the ENGINEER.
- 2.74. UNDERSEA GARDEN, SALVAGED BOAT INSTALLATION (PAY ITEM NO. 2860.2) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Salvaged Boat installation, shall be 3 per each. The salvaged boat installation work shall include installing all materials for the complete installation of the owner provided salvaged boat including the concrete footing, anchoring associated with the installation and delivery of the Salvaged Boat in accordance with the contract documents.
 - B. Payment of Salvaged Boat installation will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2860.2, which payment will constitute full compensation for all WORK described in Section 02860 – Undersea Garden, as shown on the Drawings and as directed by the ENGINEER.
- 2.75. UNDERSEA GARDEN, SKIFF INSTALLATION (PAY ITEM NO. 2860.3) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Skiff Installation, shall be per each. The Skiff Installation work shall include installing all materials for the complete installation of the owner provided salvaged skiff including the concrete footing, anchoring associated with the installation and delivery of the salvaged boat in accordance with the contract documents.
 - B. Payment for Skiff Installation will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2860.3, which payment will constitute full compensation for all WORK described in Section 02860 – Undersea Garden, as shown on the Drawings and as directed by the ENGINEER.
- 2.76. SITE FURNISHINGS, BENCH TYPE A (PAY ITEM NO. 2870.1) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Bench Type A, shall be per each. The Bench Type A work shall include all materials and labor for the delivery, preparation and installation of the

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bench including the concrete footing and anchoring associated with the installation in accordance with the contract documents.

- B. Payment of Bench Type A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.1, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.77. SITE FURNISHINGS, BENCH TYPE B (PAY ITEM NO. 2870.2) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Bench Type B, shall be per each. The Bench Type B work shall include all materials and labor for the delivery, preparation and installation of the bench including the concrete footing and anchoring associated with the installation in accordance with the contract documents.
 - B. Payment of Bench Type B will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.2, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.78. SITE FURNISHINGS, BENCH TYPE C (PAY ITEM NO. 2870.3) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Bench Type C, shall be per each. The bench Type C work shall include all materials and labor for the delivery, preparation and installation of the bench including the concrete footing and anchoring associated with the installation in accordance with the contract documents.
 - B. Payment of Bench Type C will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.3, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.79. SITE FURNISHINGS, PICNIC TABLE TYPE A (PAY ITEM NO. 2870.4) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Table Type A, shall be per each. The Table Type A work shall include all materials and labor for the delivery, preparation and installation of the table in accordance with the contract documents.
 - B. Payment of Table Type A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.4, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.80. SITE FURNISHINGS, PICNIC TABLE TYPE B (PAY ITEM NO. 2870.5) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Table Type B, shall be per each. The Table Type B work shall include all materials and labor for the delivery, preparation and installation of the table in accordance with the contract documents.
 - B. Payment of Table Type B will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.5, which payment will constitute full

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compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.

- 2.81. SITE FURNISHINGS, PICNIC TABLE TYPE C (PAY ITEM NO. 2870.6) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Table Type C, shall be per each. The Table Type C work shall include all materials and labor for the delivery, preparation and installation of the table in accordance with the contract documents.
 - B. Payment of Table Type C will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.6, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.82. SITE FURNISHINGS, TABLE TYPE A (PAY ITEM NO. 2870.7) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Chair Type A, shall be per each. The Table Type A work shall include all materials and labor for the delivery, preparation and installation of the chair type A in accordance with the contract documents.
 - B. Payment of Chair Table A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.7, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.83. SITE FURNISHINGS, CHAIR TYPE A (PAY ITEM NO. 2870.8) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Chair Type A, shall be per each. The Chair Type A work shall include all materials and labor for the delivery, preparation and installation of the chair type A in accordance with the contract documents.
 - B. Payment of Chair Type A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.8, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.84. SITE FURNISHINGS, TRASH RECEPTACLE TYPE A (PAY ITEM NO. 2870.9) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Trash Receptacle Type A, shall be per each. The work for Trash Receptacle Type A shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Trash Receptacle Type A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.9, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.85. SITE FURNISHINGS, BIKE RACK TYPE A (PAY ITEM NO. 2870.10) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Bike Rack Type A, shall be per each. The work for Bike Rack Type A shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.

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- B. Payment of Bike Rack Type A will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.10, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.86. SITE FURNISHINGS, BIKE RACK TYPE B (PAY ITEM NO. 2870.11) PRICE BASED ON QUANTITY, EACH
 - A. Measurement of Bike Rack Type B, shall be per each. The work for Bike Rack Type B shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Bike Rack Type B will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.11, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.87. SITE FURNISHINGS, REMOVABLE BOLLARD (PAY ITEM NO. 2870.12) PRICE BASED ON QUANTITY, EACH
 - A. Measurement of Removable Bollard, shall be per each. The work for Removable Bollard shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Removable Bollard will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.12, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.88. SITE FURNISHINGS, BOLLARD (PAY ITEM NO. 2870.13) PRICE BASED ON QUANTITY, EACH
 - A. Measurement of Bollard, shall be per each. The work for Bollard shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Bollard will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.13, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.89. SITE FURNISHINGS, PARK AND CAMP GRILL (PAY ITEM NO. 2870.14) PRICE BASED ON QUANTITY, EACH
 - A. Measurement of Park and Camp Grill, shall be per each. The work for Park and Camp Grill shall include all materials, hardware, and labor for the delivery, preparation and installation in accordance with the contract documents.
 - B. Payment of Park and Camp Grill will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.14, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.

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- 2.90. SITE FURNISHINGS, DRINKING FOUNTAIN (PAY ITEM NO. 2870.15) PRICE BASED ON QUANTITY, EACH
- A. Measurement of drinking fountain, shall be per each. The work for drinking fountain shall include, but not limited to, all materials, hardware, pipe connections and labor for the delivery, preparation and installation of the drinking fountain in accordance with the contract documents.
 - B. Payment of drinking fountain will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.15, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.
- 2.91. SITE FURNISHINGS, WHALE TAIL BENCH (PAY ITEM NO. 2870.16) PRICE BASED ON QUANTITY, EACH
- A. Measurement of Whale Tail Bench, shall be per each. The work for Whale Tail Bench shall include furnishing and installing all materials, concrete footing, hardware, fasteners, bolts and all necessary appurtenances as shown on the drawings in accordance with the contract documents.
 - B. Payment of Whale Tail Bench will be made at the Unit Price named in the Bid Schedule under Pay Item No. 2870.16, which payment will constitute full compensation for all WORK described in Section 02870 – Site Furnishings, as shown on the Drawings and as directed by the ENGINEER.

PART 3 – DIVISION THREE PAY ITEMS

- 3.1. CONCRETE FOUNDATION FOR THE WHALE SCULPTURE (PAY ITEM NO. 3300.1) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Concrete Foundation for the Whale Sculpture will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. The WORK under this Item includes all concrete and reinforcing bars as shown on the Drawings relating to the Whale Sculpture foundation and vault below the Whale Sculpture, all inclusive of required excavation, embeds, blockouts, grating, grating support, waterstops, expansion joints, construction joints, and all typical expenditures related to the WORK.
 - C. Payment for Concrete Foundation for the Whale Sculpture will be made at the amount shown in the Bid Schedule under Pay Item No. 3300.1, which payment will constitute full compensation for all WORK described in Section 03300 – Cast-in-place concrete, Section 05120 – Structural Steel Framing, Section 05500 – Metal Fabrications as shown on the Drawings and as directed by the ENGINEER.
- 3.2. CONCRETE POOL AND DRAIN CHANNELS FOR THE WHALE SCULPTURE (PAY ITEM NO. 3300.2) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Concrete Pool and Drain Channels for the Whale Sculpture will be based upon the completion of the entire WORK as a Lump Sum

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Pay Unit, complete, all in accordance with the requirements of the Contract Documents.

- B. The WORK under this Item includes all concrete and reinforcing bars as shown on the Drawings relating to the Concrete Pool and Drain Channels at the Whale Sculpture, all inclusive of required excavation, embeds, blockouts, expansion joints, construction joints, waterstops, and all typical expenditures related to the WORK.
 - C. Payment for Concrete Pool and Drain Channels for the Whale Sculpture will be made at the amount shown in the Bid Schedule under Pay Item No. 3300.2, which payment will constitute full compensation for all WORK described in Section 03300 – Cast-in-place concrete as shown on the Drawings and as directed by the ENGINEER.
- 3.3. CAST IN PLACE CONCRETE, SEATWALLS (PAY ITEM NO. 3300.3) PRICE BASED ON QUANTITY, LUMP SUM
- A. Measurement of Seatwalls, shall be lump sum. Work shall include furnishing and installing all Seatwalls shown on the Drawings and specified herein, including but not limited to, concrete, concrete forms, rebar, tubular steel, wood members, and all necessary fasteners, bolts, and other appurtenances necessary for the complete installation of the Seatwalls.
 - B. Payment of Seatwalls will be made at the amount shown in the Bid Schedule under Pay Item No. 3300.3, which payment will constitute full compensation for all WORK described in Section 03300 – Cast in Place Concrete, Section 05120 – Structural Steel Framing, Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry as shown on the Drawings and as directed by the ENGINEER.
- 3.4. CAST IN PLACE CONCRETE, CONCRETE PAVING HEADER (PAY ITEM NO. 3300.4) PRICE BASED ON QUANTITY, LUMP SUM
- A. Measurement of Concrete Paving Header, shall be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents. Work shall include furnishing and installing all Concrete Paving Headers shown on the Drawings and specified herein, including but not limited to, concrete, concrete forms, rebar, and all necessary fasteners, bolts, and other appurtenances necessary for the complete installation of the concrete paving header.
 - B. Payment of Concrete Paving Header will be made at the amount shown in the Bid Schedule under Pay Item No. 3300.4, which payment will constitute full compensation for all WORK described in Section 03300 – Cast in Place Concrete, as shown on the Drawings and as directed by the ENGINEER.
- 3.5. CONCRETE SIDEWALK 4-INCHES THICK (PAY ITEM NO. 3303.1) PRICE BASED ON QUANTITY, SQUARE YARD
- A. Measurement of Concrete Sidewalk 4-Inches Thick will be based on the actual square yards complete in place and accepted.
 - B. Area will include all ramps and landings associated with ADA detectable tile.

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- C. Payment for Concrete Sidewalk 4-Inches Thick will be made at the Unit Price named in the Bid Schedule under Pay Item No. 3303.1, which payment will constitute full compensation for all WORK described in Section 03303 – Sidewalk, Curb and Gutter, as shown on the Drawings and as directed by the ENGINEER.
- 3.6. DETECTABLE TILE (PAY ITEM NO. 3303.2) PRICE BASED ON QUANTITY, SQUARE FOOT
 - A. Measurement of Detectable Tile will be based on the square foot, complete in place and accepted.
 - B. The measurements will be made to the outside dimensions of the detectable tiles.
 - C. The concrete beneath and surrounding the tile detailed on the Drawings will be measured for payment under Pay Item No. 3303.1. No deduction in concrete sidewalk area will be made for the detectable warning tile, and associated ADA ramps and landings.
 - D. Payment for Detectable Tile will be made at the Unit Price named in the Bid Schedule under Pay Item No. 3303.2, which payment will constitute full compensation for all WORK described in Section 03303 – Sidewalk, Curb and Gutter, as shown on the Drawings and as directed by the ENGINEER.
- 3.7. CURB AND GUTTER, TYPE I (PAY ITEM NO. 3303.3) PRICE BASED ON QUANTITY, LINEAR FOOT
 - A. Curb and Gutter, Type I, will be measured for payment per linear foot actually installed, complete in place as shown on the Contract Documents. Measurements will be made along the face of the curb and will be continuous across catch basins.
 - B. Type III Valley gutter and Spill curb and gutter will also be measured for payment under this Pay Item.
 - C. Payment for Curb and Gutter, Type I, will be made at the Unit Price named in the Bid Schedule under Pay Item No. 3303.3, which payment will constitute full compensation for all work described in Section 03303 – Sidewalk, Curb and Gutter, as shown on the Drawings, and as directed by the ENGINEER.

PART 5 – DIVISION FIVE PAY ITEMS

- 5.1. STRUCTURAL STEEL FRAMING, ELEVATED DECK (PAY ITEM NO. 5120.1) PRICE BASED ON LUMP SUM
 - A. Measurement for Payment for Structural Steel Framing for the Elevated Deck will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. The WORK under this Item includes all steel framing as shown on the Drawings relating to the Elevated Deck, all inclusive of required steel beams, pile caps, steel stairs, all connections including field welding, nailer boards and their connections, ledger beams and their connections, steel stairs assembly, fiberglass stair assembly, and all typical expenditures related to the WORK.
 - C. Payment for Structural Steel Framing at the Elevated Deck will be made at the amount shown in the Bid Schedule under Pay Item No. 5120.1, which payment

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will constitute full compensation for all WORK described in Section 05120 – Structural Steel Framing, Section 05500 – Metal Fabrications, Section 05511 – Metal Grating Stair Treads, Section 06201 – Exterior Finish Carpentry, Section 06610 – Fiberglass Reinforced Plastic Stairs as shown on the Drawings and as directed by the ENGINEER.

5.2. GUARDRAIL TYPE 1 (PAY ITEM NO. 5500.1) PRICE BASED ON LINEAL FOOT

- A. Measurement for Payment for Guard Rail Type 1 will be based per linear foot actually installed, complete in place as shown on the Contract Documents. Measurements will be made along the face of the Seawalk Deck edges all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all steel and wood assemblies related to the guardrail as shown on the Drawings, all inclusive of required galv steel posts, plates, stainless steel railings, wood top rail and all connections and all typical expenditures related to the WORK.
- C. Payment for Guardrail Type 1 will be made at the Unit Price named in the Bid Schedule under Pay Item No. 5500.1, which payment will constitute full compensation for all related work described in Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry, as shown on the Drawings and as directed by the ENGINEER.

5.3. GUARDRAIL TYPE 2 (PAY ITEM NO. 5500.2) PRICE BASED ON LINEAL FOOT

- A. Measurement for Payment for Guard Rail Type 2 will be based per linear foot actually installed, complete in place as shown on the Contract Documents. Measurements will be made along the face of the Seawalk Deck edges all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all steel and wood assemblies related to the guardrail as shown on the Drawings, all inclusive of required galv steel posts, plates, stainless steel railings and top rail and all connections and all typical expenditures related to the WORK.
- C. Payment for Guardrail Type 2 will be made at the Unit Price named in the Bid Schedule under Pay Item No. 5500.2, which payment will constitute full compensation for all related work described in Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry, as shown on the Drawings and as directed by the ENGINEER.

5.4. GUARDRAIL TYPE 3 (PAY ITEM NO. 5500.3) PRICE BASED ON LINEAL FOOT

- A. Measurement for Payment for Guard Rail Type 3 will be based per linear foot actually installed, complete in place as shown on the Contract Documents. Measurements will be made along the face of the Seawalk Deck edges all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all steel and wood assemblies related to the guardrail as shown on the Drawings, all inclusive of required galv steel posts, plates, wood infill and top rail and all connections and all typical expenditures related to the WORK.
- C. Payment for Guardrail Type 3 will be made at the Unit Price named in the Bid Schedule under Pay Item No. 5500.3, which payment will constitute full

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compensation for all related work described in Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry, as shown on the Drawings and as directed by the ENGINEER.

5.5. GUARDRAIL TYPE 4 (PAY ITEM NO. 5500.4) PRICE BASED ON LINEAL FOOT

- A. Measurement for Payment for Guard Rail Type 4 will be based per linear foot actually installed, complete in place as shown on the Contract Documents. Measurements will be made along the face of the Seawalk Deck edges all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all steel and wood assemblies related to the guardrail as shown on the Drawings, all inclusive of required galv steel posts, plates, wood infill and top rail and all connections and all typical expenditures related to the WORK.
- C. Payment for Guardrail Type 4 will be made at the Unit Price named in the Bid Schedule under Pay Item No. 5500.4, which payment will constitute full compensation for all related WORK described in Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry, as shown on the Drawings and as directed by the ENGINEER.

5.6. RESTROOM SCREEN WALL (PAY ITEM NO. 5500.5) PRICE BASED ON LUMP SUM

- A. Measurement for Payment for Restroom Screen Wall will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all steel and wood assemblies related to the screen wall as shown on the Drawings, all inclusive of required galv steel posts, plates, wood infill and top rail and all connections and all typical expenditures related to the WORK.
- C. Payment for Restroom Screen Wall will be made at the amount shown in the Bid Schedule under Pay Item No. 5500.5, which payment will constitute full compensation for all related WORK described in Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry, as shown on the Drawings and as directed by the ENGINEER.

5.7. PICNIC SHELTER (PAY ITEM NO. 5500.6) PRICE BASED ON LUMP SUM

- A. Measurement for Payment for Metal Fabrications, Picnic Shelter will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all items as shown on the Drawings relating to the Picnic Shelter, all inclusive of required excavations and site work, concrete footings, concrete pedestals, concrete walls, concrete embed items, concrete topped metal deck, masonry walls, steel framing, glulam beams, solid sawn joists, tongue-and-groove decking, plywood sheathing, Roofing and Flashing, electrical and lighting fixtures, water supply and hose bibb, and all connections related to the aforementioned WORK, and all typical expenditures related to the WORK.

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- C. Payment for Metal Fabrications, Picnic Shelter will be made at the amount shown in the Bid Schedule under Pay Item No. 5500.6, which payment will constitute full compensation for all WORK described in Section 03300 – Cast-in-Place concrete, Section 04200 – Unit Masonry, Section 05120 – Structural Steel Framing, Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry as shown on the Drawings and as directed by the ENGINEER.
- 5.8. BUS SHELTER (PAY ITEM NO. 5500.7) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Metal Fabrications, Bus Shelter will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. The WORK under this Item includes all items as shown on the Drawings relating to the Bus Shelter, all inclusive of required excavations and site work, concrete footings, concrete pedestals, concrete walls, concrete embed items, masonry walls, steel framing, glulam beams, solid sawn joists, tongue-and-groove decking, plywood sheathing, roofing and flashing, electrical and lighting fixtures, all connections related to the aforementioned WORK, and all typical expenditures related to the WORK.
 - C. Payment for Metal Fabrications, Bus Shelter will be made at the amount shown in the Bid Schedule under Pay Item No. 5500.7, which payment will constitute full compensation for all WORK described in Section 03300 – Cast-in-Place concrete, Section 04200 – Unit Masonry, Section 05120 – Structural Steel Framing, Section 05500 – Metal Fabrications, Section 06201 – Exterior Finish Carpentry as shown on the Drawings and as directed by the ENGINEER.

PART 6 – DIVISION SIX PAY ITEMS

- 6.1. BOAT DECK FURNISHINGS (PAY ITEM NO. 6201.1) PRICE BASED ON LUMP SUM
- A. Measurement for Payment for Boat Deck Furnishings will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
 - B. The WORK under this Item includes all items as shown on the Drawings relating to site built wood benches and decks built above the Seawalk decking at the boat, all inclusive of connections, framing and sealing, and all typical expenditures related to the WORK.
 - C. Payment for Boat Deck Furnishings will be made at the amount shown in the Bid Schedule under Pay Item No. 6201.1, which payment will constitute full compensation for all related WORK described in Section 06201 – Exterior Finish Carpentry as shown on the Drawings and as directed by the ENGINEER.
- 6.2. PINE RAIL BARRIER FENCE (PAY ITEM NO. 6201.2) PRICE BASED ON QUANTITY, LINEAL FOOT
- A. Measurement of pine rail barrier fence, shall be lineal foot. Work shall include furnishing and installing all pine rail barrier fence shown on the Drawings and specified herein, including but not limited to, wood members, concrete footings, and all necessary fasteners, bolts, and other appurtenances necessary for the complete installation of the pine rail barrier fence.

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- B. Payment of pine rail barrier fence will be made at the amount shown in the Bid Schedule under Pay Item No. 6201.2, which payment will constitute full compensation for all WORK described in Section 06201 – Exterior Finish Carpentry as shown on the Drawings and as directed by the ENGINEER.

PART 13 – DIVISION THIRTEEN PAY ITEMS

13.1. TENSIONED FABRIC STRUCTURE AT BOAT DECK (PAY ITEM NO. 13312.1) PRICE BASED ON LUMP SUM

- A. Measurement for Payment for Tensioned Fabric Structure at Boat Deck will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all items as shown on the Drawings relating to the tensioned fabric structure at the boat, including posts, fiberglass post cladding at sloped post section, tensioning wires, fabric, connection to deck, and foundation where supported at grade, and installation, all inclusive of all typical expenditures related to the WORK.
- C. Payment for Tensioned Fabric Structure at Boat Deck will be made at the amount shown in the Bid Schedule under Pay Item No. 13312.1, which payment will constitute full compensation for all related WORK described in Section 13312 – Tensioned Fabric Structure and as shown on the Drawings and as directed by the ENGINEER.

PART 15 – DIVISION FIFTEEN PAY ITEMS

15.1. WATER FEATURE PIPING FOR THE WHALE SCULPTURE (PAY ITEM NO. 15000.1) PRICE BASED ON LUMP SUM

- A. Measurement for Payment for Water Feature Piping the Whale Sculpture will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete, all in accordance with the requirements of the Contract Documents.
- B. The WORK under this Item includes all piping and related work necessary to supply water to and remove water from the proposed water feature for the whale sculpture to the precast concrete vault. This work consists mainly of the piping under and around the whale pool and drain channels and the underground piping across the site to the location of the future pump and filtration building. This pay item shall also include all required excavation, bedding, backfill, coordination with concrete work, blockouts, coordination with the water feature supplier, and all other work necessary to complete the systems shown on the Drawings.
- C. Payment for Water Feature Piping for the Whale Sculpture will be made at the amount shown in the Bid Schedule under Pay Item No. 15000.1, which payment will constitute full compensation for all WORK described in applicable sections of the Specifications and as shown on the Drawings and as directed by the ENGINEER.

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PART 16 – DIVISION SIXTEEN PAY ITEMS

16.1. ELECTRICAL SERVICE, DISTRIBUTION, AND LIGHTING (PAY ITEM NO. 16000.1) PRICE BASED ON LUMP SUM

- A. Measurement for payment of the Electrical Service, distribution, and control equipment installation; and the lighting and lighting system controls installation will be based upon the completion of the entire WORK as a Lump Sum Pay Unit, complete as shown on the Drawings, all in accordance with the requirements of the Contract Documents.
- B. Work under the Pay item will include:
 - 1. Coordination of the electrical service with AEL&P.
 - 2. Provision of a switchboard with service and distribution equipment, and with lighting controls.
 - 3. Provision of lighting with circuits along the Seawalk, in the park, in the picnic shelter, in the bus shelter, and for the parking area.
 - 4. Supply of banner poles. Installation of banner poles to be paid incidental to Pay Item 2398.1 Pier Timberwork, Elevated Deck.
 - 5. Provision of power circuits to the Whale statue pump station.
- C. Work not included under this Pay Item will be the modifications to the electrical utility and installation of service to the switchboard.
- D. Payment for electrical Service, distribution, lighting, and controls will be made at the amount shown in the Bid Schedule under Pay Item No. 16000.1 which payment will constitute full compensation for all Work as illustrated in the Electrical Drawings and as directed by the ENGINEER.

END OF SECTION

Add the following section:

SECTION 01045 – CUTTING AND PATCHING

PART 1 – GENERAL

1.1. DEFINITION

- A. “Cutting and Patching” is defined to include the cutting and patching of nominally completed and previously existing concrete, steel, wood and miscellaneous metal structures; piping and pavement, in order to accommodate the coordination of WORK, or the installation of other facilities or structures or to uncover other facilities and structures for access or inspection, or to obtain samples for testing, or for similar purposes.
- B. “Cutting and Patching” also includes the demolition and removal of structures or portions of structures necessary to complete the WORK. Removal shall include the transportation and disposal of all removed material to appropriate disposal site(s) that conform to all applicable laws and regulations. Unless specific disposal site(s) are indicated on the Drawings, the CONTRACTOR shall be responsible for determining, locating and obtaining access and applicable permits for use of any proposed sites, at no cost to the OWNER.

SPECIAL PROVISIONS

- C. “Cutting and Patching” also includes the relocation of existing handrails where shown on the Drawings, including any additional bolts and fasteners and components that may be required for the installation.

1.2. REQUIREMENTS OF STRUCTURAL WORK

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

1.3. OPERATIONAL AND SAFETY LIMITATIONS

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

1.4. VISUAL REQUIREMENTS

- A. The CONTRACTOR shall not cut and patch WORK which is exposed on the exterior or exposed in occupied spaces, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut and patch WORK, both as judged solely by the ENGINEER. The CONTRACTOR shall remove and replace WORK judged by the ENGINEER to have been cut and patched in a visually unsatisfactory manner.

1.5. APPROVALS

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

SPECIAL PROVISIONS

PART 2 – PRODUCTS

2.1. MATERIALS USED IN CUTTING AND PATCHING

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

PART 3 – EXECUTION

3.1. PREPARATION

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

3.2. INSTALLATION

- A. The CONTRACTOR shall employ skilled tradespeople to perform cutting and patching. Except as otherwise indicated, the CONTRACTOR shall proceed with cutting and patching at the earliest feasible time and perform the WORK promptly.
- B. The CONTRACTOR shall use methods least likely to damage WORK to be retained and WORK adjoining.
 - 1. In general, where physical cutting action is required, the CONTRACTOR shall cut WORK with sawing and grinding tools, not with hammering and chopping tools. Openings through concrete work shall be core-drilled.
 - 2. Comply with the requirements of Technical Specifications wherever applicable.
 - 3. Comply with the requirements of applicable sections of Division 2 where cutting and patching requires excavation and backfill.
- C. The CONTRACTOR shall patch with seams which are as invisible as possible and comply with specified tolerances for the WORK.
- D. The CONTRACTOR shall restore exposed seams of patched area; and, where necessary, extend finish restoration onto retained WORK adjoining, in a manner which will eliminate evidence of patching.

END OF SECTION

SPECIAL PROVISIONS

SECTION 01550 – SITE ACCESS AND STORAGE

PART 1 – GENERAL

ARTICLE 1.3, MAINTENANCE OF TRAFFIC

Revise paragraph M. to read:

- M. Special pedestrian detours are often necessary in areas adjacent to new construction due to demolition of existing sidewalks and other structures. The CONTRACTOR shall provide smooth, graded pathways free of mud, muck, and other materials that will be objectionable to people in street shoes. The pathways shall be a minimum of 36-inches-wide, and shall be clearly marked with staking, warning ribbons, or other methods to guide pedestrians through the construction areas. Orange plastic fencing with metal posts shall be used for pedestrian control.

Add the following Section:

SECTION 01570 – EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1. THE REQUIREMENT

- A. The CONTRACTOR shall provide for erosion control during construction in accordance with the requirements of the Alaska Department of Environmental Conservation (ADEC). All discharge of pollutants and sedimentation from on-site drainage shall be caught on-site.
- B. Erosion Control includes preparation and maintenance of a Storm Water Pollution Prevention Plan (SWPPP), control of erosion, sedimentation and discharge of pollutants, in accordance with the ADEC Construction General Permit (CGP).
- C. The WORK under this section includes providing all labor, materials, tools and equipment necessary to construct and maintain temporary erosion control works; including but not limited to, wattles, silt fences, silt containment booms, settling ponds, check dams, ditches, etc.

PART 2 – PRODUCTS

2.1. MATERIALS

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

PART 3 – EXECUTION

3.1. GENERAL

- A. The CONTRACTOR is responsible to prepare, submit and maintain a SWPPP, as required by the CGP, in accordance with their construction methodologies and sequences.

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1. For projects disturbing greater than 1 Acre, this requirement shall include submission of a Notice of Intent (NOI) to ADEC prior to beginning of WORK. Copies of the NOI and SWPPP shall also be submitted to the ENGINEER within 5 days of submittal to ADEC.
 2. For projects disturbing less than 1 acre, the SWPPP shall be submitted to the ENGINEER prior to the beginning of WORK; submittal to ADEC and an NOI are not required.
- B. WORK at the Project site will not be permitted until the above documents are submitted to the ENGINEER and acceptance of this plan has been obtained from the governing agency or agencies (if required by the CGP).
- C. The CONTRACTOR shall install temporary erosion control structures and devices as required by their SWPPP, prepared in accordance with the ADEC CGP. They shall be maintained in effective operating condition at all times. Prior to completion of work, the CONTRACTOR shall clean and remove all silt and debris from the settling pond and check dams.
- D. Temporary erosion control structures shall remain in place until the project is completed and replaced by permanent erosion control WORK, protected by final stabilization or until the ENGINEER approves their removal.
- E. The CONTRACTOR shall be responsible for meeting the requirements of all permits (including permits naming the OWNER, or other parties); therefore, shall be responsible for the quality of the run-off water from the Project site and for any fines and/or penalties resulting from the construction operation.
- F. The CONTRACTOR shall submit NOT (Notice of Termination) at completion of the WORK and removal of all SWPPP items.

END OF SECTION

SPECIAL PROVISIONS

SECTION 01700 – PROJECT CLOSE-OUT

PART 1 – GENERAL

ARTICLE 1.3, FINAL SUBMITTALS

A. Paragraph A.

Replace the following sub-paragraph:

8. Items 6 and 7 above shall be delivered to Greg Smith, Engineering Contracts Administrator.

Add the following paragraph:

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

Add the following Article:

1.5. PROJECT SIGN ASSEMBLY REMOVAL

- B. The Project sign assembly shall be removed and the Project sign panel delivered to the CBJ Project Manager, as directed by the ENGINEER.
- C. No progress payments will be processed by the OWNER after the CONTRACTOR has been directed by the ENGINEER to remove and deliver the Project sign panel to the CBJ, until the Project sign panel has been received by the CBJ.

Replace the COMPLIANCE CERTIFICATE AND RELEASE FORM with the form located at the end of this section.

SPECIAL PROVISIONS

COMPLIANCE CERTIFICATE AND RELEASE FORM

PROJECT: DOWNTOWN SEAWALK – BRIDGE TO GOLD CREEK

CONTRACT NO: E16-011

The CONTRACTOR must complete and submit this to the Engineering Contracts Administrator with respect to the entire contract.

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

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

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

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

Firm Name Capacity: CONTRACTOR

Signed Printed Name and Title Date

Return completed form to: Greg Smith, Engineering Contract Administrator, City and Borough of Juneau, 155 South Seward Street, Juneau, AK 99801. Call (907) 586-0873 if we can be of further assistance or if you have any questions.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 01704 – FINAL CLEAN-UP AND SITE RESTORATION

PART 1 – GENERAL

1.1. DESCRIPTION

- 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. The CONTRACTOR shall be responsible for removal of dirt, mud, rocks and other debris from CBJ and State Right-of-Ways. It is the intent that the traveled public way be kept as clean as practical to minimize dust and to avoid unsafe traffic conditions.

END OF SECTION

SECTION 02202 – EXCAVATION AND EMBANKMENT

PART 2 – PRODUCTS

Add the following Articles:

2.8. 2-INCH MINUS SHOT ROCK

- A. 2-Inch Minus Shot Rock shall contain no mulch, frozen material, roots, sod or other deleterious matter.
- B. The shot rock shall have a plasticity index not greater than 6, as determined by AASHTO T 90. It shall consist of not more than 3% by weight of particles that pass the No. 200 sieve, as determined by ATM T-7.
- C. At least 50% by weight of the particles retained on the 3/8-inch sieve shall have at least two fractured faces as determined by ATM T-4.
- D. At least 80% by weight of particles shall be retained on the 1-inch sieve.

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- E. Elongation Specifications:
The length of the crushed stone backfill shall not be more than twice the designated screen dimensions.
- F. Sodium Sulfate Loss:
Aggregate shall pass the percent sodium sulfate loss per AASHTO T 104 with 9% maximum.
- G. LA Abrasion:
Percent of wear per AASHTO T 96 shall be 45% maximum.
- H. 2-Inch Shot Rock for this project shall have a maximum Nordic Abrasion value of 18. Test procedure for Nordic Abrasion is Alaska Test Method 312. This is available at the CBJ Engineering Department and State of Alaska Department of Transportation and Public Facilities Southwest Region Materials Laboratory.

2.9. 8-INCH MINUS SHOT ROCK BORROW

- A. 8-Inch Minus Shot Rock Borrow shall consist of 8-inch minus shot rock and shall contain no mulch, frozen material, roots, sod or other deleterious matter. The shot rock borrow shall be evenly graded, with at least 20% by weight retained on the 6-inch screen.
- B. Shot Rock Borrow shall have a plasticity index not greater than 6, as determined by AASHTO T90. It shall consist of not more than 6% by weight of particles that pass the No. 200 sieve as determined by ATM T-7. The percent of minus No. 200 material will be determined on minus 3-inch material.
- C. At least 50% by weight of the particles retained on the 3/8-inch sieve shall have at least two fractured faces as determined by ATM T-4.
- D. Elongation Specification:
The length of the crushed stone backfill shall not be more than twice the designated screen dimensions.
- E. Sodium Sulfate Loss:
Aggregate shall pass the percent sodium sulfate loss per AASHTO T 104 with 9% maximum.
- F. LA Abrasion:
Percent of wear per AASHTO T 96 shall be 45% maximum.
- G. 8-Inch Shot Rock Borrow for this project shall have a maximum Nordic Abrasion value of 18. Test procedure for Nordic Abrasion is Alaska Test Method 312. This is available at the CBJ Engineering Department and State of Alaska Department of Transportation and Public Facilities Southeast Region Materials Laboratory.
- H. The 8-Inch Minus Shot Rock Filter layer beneath the class IV riprap shall meet all of the requirements for 8-Inch Minus Shot Rock listed above, but will also retain between 50% and 90% by weight on the 4-inch screen.

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2.10. 18-INCH MINUS SHOT ROCK BORROW

- A. 18-Inch Minus Shot Rock Borrow shall consist of 18-inch minus shot rock and shall contain no mulch, frozen material, roots, sod or other deleterious matter. The shot rock borrow shall be evenly graded, with at least 20% by weight retained on the 12-inch screen.
- B. Shot Rock Borrow shall have a plasticity index not greater than 6, as determined by AASHTO T90. It shall consist of not more than 6% by weight of particles that pass the No. 200 sieve as determined by ATM T-7. The percent of minus No. 200 material will be determined on minus 3-inch material.
- C. At least 50% by weight of the particles retained on the 3/8-inch sieve shall have at least two fractured faces as determined by ATM T-4.
- D. Elongation Specification:
The length of the crushed stone backfill shall not be more than twice the designated screen dimensions.
- E. Sodium Sulfate Loss:
Aggregate shall pass the percent sodium sulfate loss per AASHTO T 104 with 9% maximum.
- F. LA Abrasion:
Percent of wear per AASHTO T 96 shall be 45% maximum.
- G. 18-Inch Shot Rock Borrow for this project shall have a maximum Nordic Abrasion value of 18. Test procedure for Nordic Abrasion is Alaska Test Method 312. This is available at the CBJ Engineering Department and State of Alaska Department of Transportation and Public Facilities Southeast Region Materials Laboratory.

2.11 USABLE MATERIAL FROM EXCAVATION.

- A. Usable material from excavation shall meet the requirements for Embankment.

PART 3 – EXECUTION

ARTICLE 3.4 EMBANKMENT CONSTRUCTED FROM ROCK FRAGMENTS

Add the following paragraphs:

- C. Shot Rock Borrow may be placed within the embankment in a single lift where 24-inches or less. Embankments over 24-inches shall be placed in lifts not exceeding 24-inches.
- D. All rock embankment surfaces shall be rolled full width with as many passes of a vibratory roller as required to obtain a solid mass of interlocking rock fragments, prior to placement of subsequent layers of material.
- E. Where base course is to be placed on top of the shot rock borrow, the surface of the shot rock borrow shall be sealed with fines from the shot rock material, or shall have imported clean sand or other non-frost-susceptible material used to seal the surface, as approved by the ENGINEER, before placement of base

SPECIAL PROVISIONS

course. This work will be considered incidental to other WORK under the contract.

Add the following Articles:

3.6. 2-INCH MINUS SHOT ROCK WITH BASE COURSE

- A. 2-Inch Minus Shot Rock shall be placed to the depths as shown or described on the Drawings, and compacted to a firm, interlocking mass prior to placing any D-1 base course.
- B. Base Course, Grading D-1 shall not be placed over the 2-Inch Minus Shot Rock until approved by the ENGINEER. The D-1 Base Course shall be placed in a layer of one to two inches thick and compacted as directed by the ENGINEER.

3.7. INDIVIDUAL MINING PLANS

- A. If the CONTRACTOR decides to use material from the CBJ/State Lemon Creek Borrow Pit or Stabler's Point Rock Quarry, the CONTRACTOR shall provide an Individual Mining Plan that conforms to the requirements of Section 00700 – General Conditions, Article 4.6.
- B. The Individual Mining Plan shall be developed using the survey information provided by the OWNER, or the CONTRACTOR may provide an independent survey with two-foot contours of the Pit and Quarry property. The survey shall provide sufficient survey information to calculate quantities, shown drainage features and property boundaries. If the CONTRACTOR uses the OWNER furnished survey information, the Individual Mining Plans shall be done in CAD.

END OF SECTION

SECTION 02203 – TRENCHING

PART 2 – MATERIALS

ARTICLE 2.2 BEDDING

Add paragraph D as follows:

- D. Flowable Fill Bedding shall be a sand cement mixture capable of flowing around the installed piping fully filling all voids and curing to a strength equal to or greater than the surrounding undisturbed or compacted soils. Flowable Fill Bedding shall have a cured strength of 100 psi to 200 psi and be able to be removed by mechanical equipment after curing. The Contractor shall submit a mix design that lists the sand, cement and water content as well as all proposed admixtures and air entrainment.

PART 1 – EXECUTION

ARTICLE 3.2 BEDDING

Add paragraph E as follows:

- E. Flowable Fill Bedding:
 - 1. Flowable Fill Bedding shall be installed in a firm, stable trench of undisturbed soil, or of compacted import where over excavation has

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occurred. Piping shall be firmly braced and anchored before the bedding is placed. Duct spacers shall be used to maintain pipe spacing and the pipes shall be anchored and/or filled to prevent floating. The trench shall be adequately formed or contained to prevent the bedding from flowing to other portions of the site. The Contractor shall provide the Engineer with 24 hours before placing the bedding and allow adequate access and time for inspection.

2. After placement of the bedding, the Contractor shall not load the bedding until it has cured to a compressive strength equal to or greater than compacted soil. Compressive strength of the bedding shall be a minimum of 100 psi before backfill is placed on the bedding and compacted. Compressive strength shall be determined by either ASTM C 403 or ASTM D 6024

END OF SECTION

SECTION 02204 – BASE COURSE

PART 2 – PRODUCTS

ARTICLE 2.1 MATERIALS

Add the following paragraph:

- E. 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.

END OF SECTION

SECTION 02205 – RIPRAP

PART 2 – PRODUCTS

ARTICLE 2.1 MATERIALS

Add the following to paragraph A.:

Class IV

No more than 10% of the stones by total weight shall weigh more than 1,400 pounds per piece, and no more than 15% of the stones by total weight shall weigh less than 25 pounds per piece. The stones shall be evenly graded and a minimum of 50% by weight of the stones shall weigh 700 pounds or more per piece.

END OF SECTION

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Add the following Section:

SECTION 02370 – SHORE RESTORATION

PART 1 - GENERAL

1.1. DESCRIPTION

- A. This section covers shore restoration work constructed on top of Shot Rock embankment and existing shoreline. The work includes furnishing labor, equipment and materials necessary to place shore restoration elements. Materials for shore restoration shall be supplied to the site and installed per the Drawings and as specified. Shore restoration materials are placed above a Shore Base Layer constructed of Shot Rock.
- B. All arrangements must be made prior to start of construction for rights-of-way, for adequate investigation and exploration, utility locations, and for selection, development, and operations to supply materials for this contract of the weights, sizes, shape, and quality specified herein. Inspection for acceptance of individual materials will be at the construction site.

1.2. RELATED DOCUMENTS

- A. The provisions and intent of the Contract, including the General Conditions, Supplementary General Conditions, General Requirements and other Special Provisions apply to this work as if specified in this section.

1.3. APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
 - 1. American Society for Testing and Materials (ASTM)
 - a. C88—Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - b. C127—Specific Gravity and Absorption of Coarse Aggregates
 - c. C131—Resistance to Degradation of Small Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - d. C136—Sieve Analysis of Fine and Coarse Aggregates
 - e. C144—Aggregate for Masonry Mortar
 - f. D422—Particle-Size Analysis of Soils
 - g. C535—Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - h. D2488-09a—Standard Practice for Identification of Soils (Visual-Manual Method)
 - i. D2938—Unconfined Compressive Strength of Intact Rock Core Specimens.
 - j. D4992—Evaluation of Rock to be used for Erosion Control
 - 2. Alaska Department of Transportation and Public Facilities (DOTPF)
 - a. DOTPF—Standard Specifications for Highway Construction, 2015 Edition

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3. U.S. Army Corps of Engineers Handbook for Concrete and Cement (CRD-C)
 - a. CRD-C 148-69—Method of Testing Stone for Expansive Breakdown on Soaking in Ethylene Glycol
 - b. CRD-C 144-92—Resistance of Rock to Freezing and Thawing

1.4. DEFINITIONS

- A. Cobbles: Naturally rounded stone material. Construction requires grading.
- B. Boulders: Naturally rounded or subrounded large stone material with gradation specified herein. Construction requires special placement and grading.
- C. Gravel: Naturally rounded stone material. Construction requires grading.
- D. Particle Angularity: Angularity of particle can be described as angular, subangular, subrounded, or rounded in accordance with standard criteria (ASTM D2488).
- E. Subrounded: Particles have nearly plane sides but have well-rounded corners and edges.
- F. Rounded: Particles have smoothly curved sides and no edges.

1.5. SUBMITTALS

- A. The following items shall be submitted to the Engineer for review in accordance with Section 00700 – General Conditions:
 1. All pertinent source and test records (for example, material quality testing results, gradation, and shape) from the material source shall be submitted to the Engineer for review. Documentation shall include the following:
 - a. Name and location of material source, and name and telephone number of supplier.
 - b. Laboratory test results for test procedures listed in Part 2 of this Technical Specification.
 - c. Such test records will be evaluated to help determine if materials from that source can meet quality standards as hereinafter specified.
 2. Weigh Scale Certification. Prior to the use of any scale under this contract, the Contractor shall submit details on the location and construction of the scale and a copy of the certification of the scale's accuracy from the local weights and measures regulating agency.
 3. Barge Displacement Certification. Each barge displacement table submitted shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service and who has been approved by the Engineer. Each table submitted shall show the name and/or number of the barge, barge dimensions, barge Engineer, name of the fabricator, certification, and date of certification of the person or firm preparing the table.
 4. Weekly Activities Report: The Contractor shall provide a daily record of construction activities and shall include the following:

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- a. Report shall document the percent of project completion, limits of shore material placement, and adverse weather conditions or other problems that cause problems for each day in which there are scheduled onsite work activities.
 - b. The report shall be submitted to the Engineer at the end of each week.
5. Shipment Log Sheets. On the work day following shipment of shore material listed under unit pricing, the Contractor shall submit a copy of the log of all shipments from the material source(s). The log sheets shall include information regarding placement or stockpiling of the shipments, and what shipments were sampled. The Daily Log sheet and its format shall be approved by the Engineer prior to the shipment of any stone, cobble, gravel, or sand materials.
6. Weigh Bills. For materials accounted under unit pricing certified weigh bills shall be provided to the Engineer at the time the weighed material is delivered. Certified weigh bills for each load of shore materials delivered to the project site under unit pricing shall include certification of weight, the time of weighing, time of delivery, and serial number and description of delivery truck or barge.
7. Material Testing Results during Construction
8. Shore Construction Plan. Shore construction plan is part of the Site Work Plan that includes the means of transporting and stockpiling materials, proposed construction methods, sequences of work and coordination items.
9. Progress Survey Data

1.6. JOB CONDITIONS

- A. Character of subgrade material at Project Site: Information on existing physical conditions at the project site is available as specified in Paragraph 4.2 of the General Conditions and Paragraph SGC 4.2 of the Supplemental General Conditions. See Geotechnical Report for additional information.
- B. Construction surveys during construction are the responsibility of the Contractor.
- C. Job conditions are anticipated to be challenging with work in intertidal zones with potentially soft substrates, changing water levels, and exposure to waves.

PART 2 – PRODUCTS

2.1. MATERIAL SOURCES

- A. The Contractor is responsible for obtaining a source for all of the materials that are not available from usable excavated material in accordance with these Specifications. The name and location of the material source the Contractor proposes for supplier of the Products shall be submitted to the Engineer within five (5) days after Contractor receives the Notice to Proceed. The Engineer will evaluate these sources as potential suppliers and determine if they are qualified for consideration under these Specifications. Evaluation will be conducted based on a review of test results and review of source material at the proposed source location. If the primary source is determined to be unqualified, subsequent sources shall also be evaluated at the Contractor's expense. The Contractor shall select materials from an existing commercial source for which all operating

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permits have been obtained prior to bid opening. The Contractor shall confirm availability of an adequate and acceptable material source based on quantity, quality, production rate, and particle shape and gradation standpoints prior to submitting their bid.

2.2. MATERIAL SOURCE QUALITY TESTING AND ACCEPTANCE

A. General

1. The acceptability of materials for shore restoration to be provided by the Contractor will be determined by laboratory tests and material certification results provided by the Contractor and by Engineer field review of proposed source. All costs of tests shall be borne by the Contractor and shall be incidental to placing materials. The Contractor shall submit existing laboratory test documentation to the Engineer immediately afterward and within five (5) business days following Contractor's receipt of Notice to Proceed.
2. The Contractor shall submit test results (physical tests), as listed in Paragraph 2.5, from a laboratory that has been validated by the Engineer, in accordance with the tests specified herein and which are representative of the materials to be used on the project. Existing testing records submitted to the Engineer shall not be older than 12 months prior to the date of Notice to Proceed.
3. When satisfactory test records are not available, the proposed materials shall be subjected to all such tests as are necessary to determine that the materials are durable and suitable for use in the work. These new tests shall be conducted in accordance with requirements outlined in Paragraph 2. 5.
4. Should the Contractor's documentation not include previous satisfactory laboratory test results, material certification documentation, or fail to satisfy the Engineer, samples of all types of materials not having satisfactory documentation that are proposed for use in construction shall be selected in the presence of the Engineer and delivered to the testing lab for testing. These samples shall be delivered to the testing lab within five (5) business days after receipt of notification of insufficient or unsatisfactory lab tests.
5. In the event any material in the sample fails to pass the required tests, subsequent tests for that material type shall also be conducted at the Contractor's expense. Samples shall be delivered to the testing lab within five (5) business days after receipt of notification of insufficient or unsatisfactory lab tests. No contract extension will be granted for specified submittal and testing time or because materials fail to meet the specification requirements.
6. Materials failing to meet the specified requirements or as determined by the Engineer to be in non-conformance during onsite inspections shall be removed from the project site at the Contractor's expense.
7. No materials shall be placed until those materials have been reviewed for use in construction by the Engineer at the delivery or approved stockpile site.
8. Testing of physical properties will be required throughout the duration of the contract in which the Contractor supplies shore materials as outlined in Paragraph 2.4.

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2.3. MATERIAL QUALITY

- A. All Gravel, Cobbles, and Boulders used for any Product described hereinafter shall be clean materials that are dense, hard, sound, close grained, durable, naturally occurring rock products, shall not slake or deteriorate on exposure to the action of water or atmosphere, and shall be free from overburden material and have no man-made or environmental contaminants. Materials shall be processed to remove clay, loam, alkali, organic matter, or other deleterious matter prior to delivery to the project site

2.4. PROJECT SITE SAMPLING FOR CONTRACTOR SUPPLIED MATERIALS

- A. The Contractor shall be responsible for the collection and testing of shore material samples taken at the material delivery site (barge loading site, prior to loading, if delivered by barge; project site if delivered by truck) during construction.
- B. Samples shall not be taken from the exposed, exterior of the material pile. Samples shall be taken from a location below the surface of the material pile.
- C. Gradation test samples for Boulders, Gravel and Cobbles shall be taken only for initial material acceptance.
- D. The Contractor shall notify the Engineer at least 24 hours prior to collection of all samples taken for testing.

2.5. TESTING OF CONTRACTOR SUPPLIED BOULDER, COBBLE AND GRAVEL MATERIALS

- A. The amount of deleterious substances in the material shall not exceed the following values: 1. Particles of specific gravity less than 1.95 shall not exceed 1.0 percent by weight.
- B. Organic matter, by colorimetric test, shall not be darker than the reference standard color (organic plate No. 3) AASHTO T 21 unless other tests prove a darker color to be harmless.
- C. All materials specified in this section shall have the following testing work completed.

1. Physical Testing

- a. Testing Requirements: The material supplier shall provide certification or laboratory test results for the proposed material in accordance with test methods AASHTO T111 and WAQTC FOP for TM1. If laboratory test results are not available for the proposed material, gradation shall be determined according to measurement procedure described below. The Contractor shall select, in the presence of the Engineer, a representative quantity of material at least 200 pounds in weight. The measurement procedure consists of dumping the selected quantity on a flat surface and sorting and measuring the individual particles contained in the load. Sorting of particles into separate piles shall be according to length category of the particle's intermediate axis. The weight of each sorted pile of cobble material will be reported in the form of cumulative weight of the material smaller

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than size categories listed for the respective materials contained in Part 2.

- D. Boulder material quality test results will be evaluated with testing results in accordance with the following:

1. Physical Testing

- a. Costs of tests shall be borne by the Contractor and shall be incidental to placing materials. All tests shall be conducted by an independent laboratory acceptable to the Engineer. The Contractor shall notify the Engineer of the results of laboratory tests. Satisfactory Contractor documentation of laboratory test results on stone sample will not constitute approval of all rock in the quarry and will not in any way change the Contractor's responsibility for obtaining, developing, and maintaining a satisfactory source of stones. Throughout the duration of this contract, the Engineer may sample and test stones delivered to the construction site and proposed for use in the construction. Samples of stone shall consist of 5 to 10 pieces with a total weight of not less than 200 pounds with an average weight of 10 pounds per piece for each rock type proposed for use as revetment stone. No single piece shall weigh more than 100 pounds. The presence of the Engineer during selection of samples of stones will not relieve the Contractor of the responsibility to secure representative samples from the quarry for testing.
- b. The test results reported by the laboratory will be considered as exact results for unit weight, absorption, abrasion, accelerated expansion, or other necessary supplemental tests, regardless of any permissible variance that may be established by test procedures in determining the acceptability of stone furnished under this contract. Test procedures to be utilized and required values are as follows:

Test	Required Value	Test Method
Specific Gravity	>2.65	ASTM C127
Water Absorption	<2.7%	ASTM C127
Sodium Sulfate Soundness	<10% loss (after 5 cycles)	ASTM C88
L.A. Abrasion	<20% loss (after 500 revolutions)	ASTM C535
Unconfined Compressive Strength	>12,000 psi	ASTM D2938

2.6. INSPECTION

- A. Material Source. The borrow source shall be inspected by the Contractor in order to assure that the materials to be delivered to the site will meet the appropriate specifications.

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- B. Project Site. Truckloads or barges of imported material shall be visually inspected by the Contractor upon delivery to the site. Materials shall be inspected for presence of foreign, recycled or reprocessed material. The Engineer may at any and all times perform an independent inspection. Material may be rejected if identified as substandard or test results show it to be substandard. Materials may be segregated for testing based on appearance.

2.7. MATERIAL GRADATION

A. General

1. Contractor proposed material, meeting the specified gradations, may be derived from blending multiple products meeting the specified quality requirements.. A written description of the proposed material shall be submitted at least seven (7) business days prior to the start of construction for approval by the Engineer. The written description shall include name, location, and telephone number of proposed source of materials and the gradation of all source components and description of proposed material manufacturing process. If a blended material is proposed, the source components shall be mixed at the source location. A sample of blended material shall be manufactured and approved by the Engineer at the source location at least 5 calendar days prior to the start of construction.

B. 36" Inch Minus Boulder Gradation

1. Boulders shall be clean, naturally occurring, rounded to subrounded stone material (river run or processed glacial outwash deposits) free from objectionable materials. Each stone shall not have a longest dimension greater than three times its shortest dimension. Boulders shall have such characteristics that it will meet the following requirements for gradation for the in-place condition:

36 Inch Minus Rounded Boulders:

Stone Weight (lbs.)	Percent Smaller by Weight
3,000	100
1,700	85
850	50
350	15
125	5

2. Gradation tests of the stone shall be accomplished at the source. Tests by weight shall be made by the Contractor in the presence of the Engineer. The Contractor shall notify the Engineer not less than three (3) working days in advance of each test for gradation. Gradation shall be tested by

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weighing not less than 30 representative stones. A minimum of one gradation test shall be performed for 1,000 tons of stone and for each product type.

3. The Contractor shall consider breakage during material handling, delivery and installation in order to provide the specified in-place stone gradations

C. Cobble and Gravel Gradation

1. The Gravel and Cobble shall conform to the following size gradation for the in-place condition of the constructed shore:

a. 3-Inch Minus Rounded Gravel

Shall be clean, naturally occurring, rounded to subrounded stone material (river run or processed glacial outwash deposits) free from objectionable materials. Rounded Gravel shall have such characteristics of size and shape that it will meet the following requirements for gradation:

Sieve Size	Percent Passing
3 inch	100
1 ½ inch	80-100
1 ¼ inch	5-80
¾ inch	0-5
All percentages are by weight.	

b. 10-inch Minus Cobble

Shall be clean, naturally occurring, rounded to subrounded stone material (river run or processed glacial outwash deposits) free from objectionable materials. Cobbles shall have such characteristics of size and shape that it will meet the following requirements for gradation:

Sieve Size	Percent Passing
10 inch	100
6 inch	50-90
5 inch	15-50
3 inch	15 (max)
All percentages are by weight.	

- c. Cobbles and gravel shall be rounded stone material with at least 95 percent of the individual particles having shape proportions such that the length of the longest axis is less than 3 times the length of the shortest axis. Cobbles shall have naturally rounded edges. No more than 5 percent of the cobbles shall be fractured or with angular edges.

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2.8. COBBLE, GRAVEL, SOIL MIX

- A. Shall be a well-blended mix of 10" inch minus cobbles, 3" inch minus rounded gravel, and planting soil. 10" minus cobble and 3" minus rounded gravel shall be as specified above. Planting Soil shall be as specified in section 02711 Landscape Planting.

Material	Percentage
10" Minus Cobble	40
3" Minus Rounded Gravel	40
Planting Soil	20

2.9. GRAVEL SOIL MIX

- A. Shall be a blended mix of 3" minus rounded gravel, and planting soil. 3" minus rounded gravel shall be as specified above. Planting soil shall be as specified in section 02711 Landscape Planting.

Material	Percentage
3" Minus Rounded Gravel	40
Planting Soil	60

2.10. SHELL HASH FILL

- A. Shall be locally sourced clam and mussel shells clean dry and crushed. Crushed size shall be 1" minus.
- B. Acceptable shells shall be razor clams, mussels and the like.
- C. Source for shell hash shall be from a local seafood vendor or restaurant. Provide submittal for Engineer approval.

2.11. COMPACTED CLAY

- A. Provide and install blue clay as part of the tide pool installation as shown on the drawings

PART 3 – EXECUTION

3.1. SITE PREPARATION

- A. The area to receive the materials will be inspected by the Engineer, and no material shall be placed thereon until that area has been approved.

3.2. WORK LAYOUT

- A. Project layout shall be in accordance with the applicable requirements of Section 02702 and the Standard Specifications.
- B. An accurate method of horizontal and vertical control shall be established by the Contractor before shore construction begins. The Contractor shall lay out the work using the control points provided on the Drawings.

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3.3. SURVEYS

- A. The Contractor is responsible for all construction surveying as specified in Section 02702 of the Standard Specifications, as amended and supplemented in the contract documents. Survey Conference will be part of the Pre-Construction Conference specified in Section 01000 General Requirements. At the Pre-Construction Conference, the Contractor's chief surveyor shall meet with the Engineer to discuss survey procedures, methods, and equipment to be used for the Contractor's surveys. Additional horizontal or vertical control references, not shown on the drawings and required by the surveyor, will be arranged for providing to the Contractor at this time.

3.4. GENERAL MATERIAL PLACEMENT

- A. Material shall be transported and placed from barges or trucks as shown on the Drawings.
- B. Placing of materials shall be suspended when adverse wave, weather, and water level conditions will not allow proper placement. The contractor will not be paid for any material placed and lost due to adverse weather.
- C. The Contractor shall take care to not damage existing structures or features which are to remain after Shore Restoration is complete. The Contractor shall repair damage that is caused by the Contractor to structures or features which are intended to remain after completing Shore Restoration at the Contractors own expense. The Contractor shall conduct a condition survey of existing structures, which includes photographic records of existing structures, prior to start of construction.
- D. Material shall not be placed outside the respective material placement limits. The Contractor will not be paid for any material placed outside the placement limits as indicated on the Contract Drawings. Material placed outside the lines and grades on the Contract Drawings shall be removed at the direction of the Engineer.
- E. The Contractor shall consider this general description of work when developing the construction schedule and sequence of work.
- F. Compaction of cobble and gravel Shore Restoration material is not required. Compact Cobble Gravel Soil Mix and Gravel Soil Mix by making a minimum of 2 passes with a tracked excavator or grader. Compaction of 36" Minus Boulders requires special placement procedures, as described in this Section.
- G. Materials shall be installed to specified grades and elevations at locations shown on the Drawings.

3.5. SPECIAL PLACEMENT

- A. All materials shall be placed in a manner that minimizes disturbance to the shot rock Base Layer and to the native bottom surface. Take special care not to disturb Alkali Grass and other vegetation to save and protect in accordance with the Contract Drawings.
- B. Stone shall be delivered to the project site for installation by methods that will minimize multiple re-handling of the materials to minimize breakage. Acceptance of stone gradations will be provided by the Engineer based on in-

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place materials. If excessive breakage occurs so that in-place required gradations are not being provided, the installed material may be rejected by the Engineer which require the Contractor to remove and replace the installed materials.

- C. The 36" Minus Rounded Boulders shall be mechanically placed and embedded in the native bottom surface and embedded and interlocked into the shot rock base in such manner that will produce a well-keyed mass of stone with maximum level of stone interlocking. Placement of stone shall start at the toe of the structure and progress up the slope, diagonally across the face of the structure. Placing of stone by methods that will likely cause segregation of various sizes will not be permitted. Stone shall be firmly set and well supported by underlying and adjacent stones to resist displacement and provide a uniform and compact section. All stone shall be placed by clamshell bucket, stone grab, excavator bucket with thumb, or by some other method that will not drop or cast the stone, but shall release the stone in such a manner that they shall be properly interlocked with the underlying or adjacent stones to resist displacement. Rearranging of individual stones may be required to the extent necessary to secure the results specified. Any area in the completed maintenance construction which contains objectionable segregation of stone sizes shall be excavated, removed from the site of the work, and replaced with specified material. Mechanically compact finished areas of placed stone using an excavator bucket or similar technique approved by the Engineer. Stone shall not be placed when the placement area is inundated by water. No other overlying or interstitial material such as gravel, cobble, or soil shall be placed on or within the stone until stone placement is complete and approved by the Engineer. Equipment shall not track across the finished boulder surface.
- D. The installation of material shall be constructed to form a uniform layer having a final thickness (as specified on the Drawings). The finished top profile shall be within the tolerances specified herein. Final acceptance of finished shore surface will be determined from post-construction and progress surveys.
- E. The Contractor shall utilize placement methods that will minimize the potential for re-suspending bottom sediment and excessive mixing of the Shore restoration material with the bottom surface sediment.
- F. Equipment may be used for final shore grading but shall not operate where the constructed surface is inundated by water.
- G. See environmental permits in Section 00852 for other requirements.

3.6. TOLERANCES

- A. Vertical
 - 1. A tolerance of plus 0.3 foot or minus 0.3 foot from the surface plane of the surface shown in the Drawings will be allowed for placement of material. Either extreme of such tolerance shall not be continuous over an area greater than 200 square feet.
 - 2. A tolerance of plus 0.5 foot or minus 0.5 foot from the surface plane of the island or shore surface shown in the Drawings will be allowed for placement of 36" Inch Minus Rounded Boulders. Either extreme of such tolerance shall not be continuous over an area greater than 200 square feet.

SPECIAL PROVISIONS

B. Horizontal

1. The horizontal location tolerance of the material placement, as measured along the crest of constructed shore will be 3 feet laterally in a 300 foot long section of shore as specified on the Drawings.
2. The horizontal location tolerance of the Island, as measured along the contours will be 3 feet laterally in a 50 foot long section of Island as specified on the Drawings

3.7. INSPECTION

- A. Slope lines, grades, and placement of material will be inspected by the Engineer and placed material may be tested for size gradation by the Engineer. The Engineer will perform inspection of the material prior to material placement. However, this inspection does not relieve the Contractor from responsibility of performing the in-place inspection. The Engineer will also review the results of the quality control surveys. The Engineer may conduct independent check surveys which the Contractor shall provide access and time to complete prior to placement of subsequent material types.

3.8. MISPLACED MATERIAL

- A. Should the Contractor, during the execution of the work, lose, dump, throw overboard, sink or misplace any material, dredge, barge, machinery, or appliance, the Contractor shall be solely responsible for its recovery. The Contractor shall give immediate verbal notice, followed by written confirmation, of the description and location of such obstructions to the Engineer and shall mark and buoy such obstructions until they are removed.
- B. In the event that material is placed outside the limits shown on the Contract Drawings, the Contractor shall be responsible for retrieval of the material or procurement of alternate material (of equal volume). The Contractor shall be responsible for costs associated with damage caused by material placement outside of the limits shown on the Contract Drawings, as well as costs associated with the procurement of alternate material as necessary. Alternate material proposed by the Contractor shall be approved by the Engineer prior to placement in the Project.
- C. Should the Contractor refuse, neglect, or delay compliance with this requirement, such obstructions may be removed by the Engineer or its agents, and the cost of such operations may be deducted from any money due the Contractor, or may be recovered from his bond. The liability of the Contractor for the removal of a vessel wrecked or sunk without his fault or negligence shall be limited to that provided in Sections 15, 19, and 20 of the River and Harbor Act of 3 March 1899 (33 U.S.C. 410 et seq.).

3.9. FINAL EXAMINATION

- A. Upon completion of the work, the Engineer will perform a post-construction survey of the areas designated for filling according to this Technical Specification to determine acceptance of the Work. The Contractor shall not demobilize any construction equipment from the site until approval has been given by the Engineer.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 02398 – PIER TIMBERWORK

PART 1 – GENERAL

1.1. SUMMARY

- A. This section includes all lumber, timber and glued-laminated timber construction.

1.2. REFERENCES

- A. American Wood-Preservers' Association (AWPA)
 - 1. AWWA U1: Use Category System: User Specification for Treated Wood
 - 2. AWWA M4: Care of Preservative-Treated Wood Products
 - 3. AWWA M6: Brands Used on Forest Products.
 - 4. AWWA P1/P13: Creosote Solutions.
 - 5. AWWA P5: Waterborne Preservatives
 - 6. West Coast Lumber Inspection Bureau
 - 7. Standard Grading Rules No. 17.
 - 8. Western Wood Products Association
 - 9. Western Lumber Grading Rules '05.
 - 10. American Institute of Timber Construction

1.3. DEFINITIONS

- A. Lumber: Rectangular solid-wood framing members less than 5 inches nominal in one dimension.
- B. Timber: Rectangular solid-wood framing members 5 inches nominal and larger in both dimensions.
- C. Structural Glued-Laminated (Glulam) Timber: An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives with the grain of the laminations approximately parallel longitudinally.

1.4. SUBMITTALS

- A. Product Data: For pier timberwork and accessories. Include installation instructions and data on fabrication and treatment processes.
- B. Shop Drawings: Show layout of structural glulam timber system and full dimensions of each member. Indicate species and laminating combination, adhesive type, and other variables in required WORK.
- C. Certificates of Conformance: Issued by a qualified inspection and testing agency indicating that glulam timbers comply with requirements of AITC A190.1.
- D. Wood-Treatment Certificates: Signed by wood treater certifying that treatment processes comply with requirements.

1.5. QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer per Section 01300 – CONTRACTOR who has completed pier timberwork construction similar in

SPECIAL PROVISIONS

material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

- B. Manufacturer Qualifications: Provide factory-glued structural units produced by an AITC-licensed firm.
- C. Factory mark each piece of structural glulam timber with an AITC Quality Mark. Place mark on surfaces that will not be exposed in completed Work.
- D. Glued-Laminated Timber: Comply with provisions of AITC 111, "Recommended Practice for Protection of Structural Glued Laminated Timber during Transit, Storage, and Erection."

1.6. DELIVERY, STORAGE, AND HANDLING

- A. Schedule of delivery of heavy timber to avoid extended on-site storage and to avoid delaying the Work.
- B. Keep wood materials neatly stacked and protect from damage.
- C. Timber Standard: Comply with AITC 108, "Standard for Heavy Timber Construction."
- D. Glued-Laminated Timber Standard: Comply with AITC A190.1, "Structural Glued Laminated Timber."

PART 2 – PRODUCTS

2.1. WOOD MATERIALS

- A. General: All wood materials shall be surfaced all 4 sides, unless otherwise noted.
- B. Lumber:
 - 1. Species: Douglas Fir-Larch.
 - 2. Grading: No. 1, or better.
 - 3. Grading Rules Agency: WCLIB, or WWPA.
- C. Timber:
 - 1. Species: Douglas Fir-Larch.
 - 2. Grading: No. 1, or better.
 - 3. Grading Rules Agency: WCLIB, or WWPA.
- D. Glued-Laminated Timber:
 - 1. Species: Douglas Fir-Larch.
 - 2. Combination Symbol:
 - a. Simple Spans: 24F-V4
 - b. Continuous and Cantilever Spans: 24F-V8
 - 3. Appearance Grade: Industrial Grade per AITC 110.
 - 4. Grading Rules Agency: AITC 117

2.2. WOOD PRESERVATIVE TREATMENT

- A. General:

SPECIAL PROVISIONS

1. All wood members shall be dressed to finished dimensions before treatment.
 2. All wood members shall be incised before treatment.
 3. Glued-Laminated Timber shall be incised and treated after gluing.
 4. Each piece of treated lumber or timber shall be branded, by the producer, in accordance with AWP A M6.
 5. Best Management Practices (BMP's): All preservative-treated timber shall be produced in compliance with the requirements of "Best Management Practices for the Use of Treated Wood in Aquatic Environments", latest edition as published by the Western Wood Preservers Institute. The CONTRACTOR shall submit certification to this effect for all preservative-treated timber furnished under this contract.
- B. Lumber Exposed to Pedestrian Contact:
1. Species: Douglas Fir-Larch.
 2. Preservative: Ammonical Copper Zinc Arsenate (ACZA).
 3. Preservative Retention: 0.60 pcf.
 4. Preservative Specification: AWP A Standard U1, Use Category UC4B.
- C. Timber Exposed to Pedestrian Contact:
1. Species: Douglas Fir-Larch.
 2. Preservative: Ammonical Copper Zinc Arsenate (ACZA).
 3. Preservative Retention: 0.60 pcf.
 4. Preservative Specification: AWP A Standard U1, Use Category UC4B.
- D. Timber Not Exposed to Pedestrian Contact
1. Species: Douglas Fir-Larch.
 2. Preservative: Ammonical Copper Zinc Arsenate (ACZA).
 3. Preservative Retention: 60 pcf.
 4. Preservative Specification: AWP A Standard U1, Use Category UC4B.
- E. Glued-Laminated Timber
1. Species: Douglas Fir-Larch.
 2. Preservative: Creosote, Creosote Solution.
 3. Preservative Retention: 9 pcf.
 4. Preservative Specification: AWP A Standard U1, Use Category UC4B.

2.3. HARDWARE

- A. Bolts with necessary nuts and washers, timber connectors, drift pins, dowels, nails, screws, spikes, and other fastenings. Bolts and nuts shall conform to ASTM A 307, unless noted otherwise on drawings. Provide bolts with washers under nut. Provide washers under bolt heads. Provide heavy hex bolts and nuts with washers conforming to F 436. Provide timber connectors and other metal fastenings of type and size shown. Hot-dip galvanize all hardware.
- B. Galvanizing: All hardware noted above shall be hot-dip galvanized in accordance with ASTM A 123 or ASTM F 2329, as applicable.

SPECIAL PROVISIONS

PART 3 – EXECUTION

3.1. CONSTRUCTION

- A. Cut, bevel, and face timbers prior to plant preservative treatment. Provide protective equipment for personnel fabricating, field treating, or handling materials treated with creosote or water-borne salts.
 - 1. Framing: Cut and frame lumber and timber so that joints will fit over contact surface. Open joints are unacceptable. Shimming is not allowed. Bore holes for lag screws in two parts. Make lead hole for shank the same diameter as shank. Make lead hole for the threaded portion approximately two-thirds of the shank diameter. Counterbore for countersinking wherever smooth faces are indicated or specified.
 - 2. Decking: Make decking of a single thickness of plank. Unless otherwise indicated, lay plank with heart side down and joint thickness to match existing. Fasten each plank to each supporting member. Provide lag screws at least 4 inches greater than the thickness of plank. Place lag screws at least 2-1/2 inches from edges of the plank. Grade planks as to thickness and lay so that adjacent planks vary less than 1/16 inch.
 - 3. Fastening: Vertical bolts shall have nuts on the lower end. Where bolts are used to fasten timber to timber, timber to concrete, or timber to steel, bolt members together when they are installed and retighten immediately prior to final acceptance of contract. Provide bolts having sufficient additional threading to provide at least 3/8 inch per foot thickness of timber for future retightening.

3.2. FIELD TREATMENT

- A. Timberwork: Field treat cuts, bevels, notches, refacing and abrasions made in the field in treated piles or timbers in accordance with AWPA M4. Trim cuts and abrasions before field treatment. Paint depressions or openings around bolt holes, joints, or gaps including recesses formed by counterboring, with hot creosote oil or preservative treatment specified for lumber and timber; and after bolt or screw is in place, fill with hot pitch or a bitumastic compound.
- B. Galvanized Surfaces: Repair and recoat zinc coating which has been field or shop cut, burned by welding, abraded, or otherwise damaged to such an extent as to expose the base metal. Thoroughly clean the damaged area by wire brushing and remove traces of welding flux and loose or cracked zinc coating prior to painting. Repair galvanizing to comply with ASTM A 780.

END OF SECTION

Add the following Section:

SECTION 02458 – STEEL PIPE PILES

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section includes the furnishing and installation of steel pipe piles.

SPECIAL PROVISIONS

1.2. UNIT PRICES

- A. General: Refer to the Request for Proposal for measurement and payment of piling-related unit prices.
- B. Bid: Base the Bid on number and type of piles indicated from tip to cutoff, plus not more than 10 (ten) feet overlength to allow for driving to actual tip elevations as opposed to the estimated tip elevations shown.
- C. Measurement: Using data obtained during pile driving, ENGINEER will calculate actual total number of piles installed.
 - 1. Cut-off pile pieces shall be retained and used as additional pile splice pieces as needed for the duration of the project. At the end of the project, after all cut-off pieces have been exhausted, if additional pile lengths are needed for pile splices, additional payment for pile lengths and associated splicing in excess of the pile lengths indicated on the drawings will be considered additional work.
 - 2. Unit prices include labor, materials, tools, equipment, and incidentals for furnishing, driving, cutting off, capping, and splicing piles and disposing of cutoffs.
 - 3. No payment will be made for rejected piles, including piles driven out of tolerance, defective piles, or piles damaged during handling or driving.

1.3. SUBMITTALS

- A. Product Data: For each type of pile product, accessory, and paint indicated.
- B. Shop Drawings: Show fabrication and installation details for piles, including driving points and splices.
 - 1. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
- C. Welding certificates.
- D. Coordinate “Quality Assurance” requirements below with qualification requirements in Section 01300 – CONTRACTOR Submittals.
- E. Mill Test Reports: For steel pipe piles and steel castings signed by manufacturer.
- F. Pile-Driving Equipment: Include type, make, maximum rated energy, and rated energy per blow of hammer; weight of striking part of hammer; weight of drive cap; details, type, and structural properties of hammer cushion; and details of follower and associated equipment. Blow counts to obtain design capacity will be determined by the ENGINEER based on the pile hammer submittal.
- G. Pile-Driving Records: Submit within two days of driving each pile.
- H. Pile Butt Survey Records: Submit daily during pile driving operations.
- I. Installation Plan and Qualifications: Submit a work plan as well as qualifications and experience of all personnel who will be involved with the installation of piles thirty (30) days prior to commencing the pile installation work.

SPECIAL PROVISIONS

1. Work plan: Contractor shall submit a complete operational plan for installation of piles. Plans shall include schedule of work, equipment to be used and pile driving method(s).
2. Personnel Qualifications and experience: include the following information for all proposed personnel involved in pile installation work:
 - a. List experience using proposed equipment.
 - b. List experience with projects of similar scope and scale.

1.4. QUALITY ASSURANCE

- A. Installer Qualifications: Personnel experienced in installing driven piles similar in material, design, and extent indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- B. Comply with requirements of the following publications:
- C. AISC's "Specification for Structural Steel Buildings."
- D. Welding Standards: Qualify welding procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel", and AWS D1.8, "Structural Welding Code—Seismic Supplement."
- E. Preinstallation Conference: Conduct conference at Project site to comply with meeting requirements in Section 01010 – Summary of WORK.

1.5. DELIVERY, STORAGE, AND HANDLING

- A. Deliver piles to Project site in such quantities and at such times to ensure continuity of installation. Handle and store piles at Project site to prevent physical damage.
 1. Protect pile coatings and touch up damage to coatings before driving piles.

1.6. PROJECT CONDITIONS

- A. Protect structures, underground utilities, and other construction from damage caused by pile driving.

PART 2 – PRODUCTS

2.1. STEEL PIPE PILES

- A. Steel pipe piles to be furnished by the CONTRACTOR under this contract.
- B. High-Strength, Low-Alloy, Columbium-Vanadium Steel: ASTM A 252, Grade 3, Minimum Yield Strength of 45 KSI and Minimum Ultimate Strength of 66 ksi.

2.2. PILE ACCESSORIES

- A. Driving Shoes shall be furnished with, and welded to, piles.
- B. Driving Shoes: Manufacturer's standard one-piece driving shoe, fabricated from steel castings as follows to provide full bearing around circumference of pile tip. Cast driving shoe with integral tapered cutting wedges.
 1. Carbon-Steel Castings: ASTM A 27/A 27M, Grade 65-35, heat treated.

SPECIAL PROVISIONS

2.3. HOT-DIP GALVANIZED COATINGS

- A. As furnished piling will have a hot-dip galvanized coating conforming to ASTM A 123. Minimum average coating thickness shall not be less than 3.9 mils
- B. Piling sections shall be hot-dip galvanized in lengths as indicated and assembled into a piling length by welding as herein specified.

2.4. FABRICATION

- A. Piles to be furnished by the CONTRACTOR. Piles shall be supplied in fabricated lengths not less than that required by the contract documents. CONTRACTOR shall be responsible for all Work required to deliver these piles to the project site. If CONTRACTOR is unable to supply full length piles to the project site, the CONTRACTOR may splice shorter piles with a Complete-Joint-Penetration weld with the approval of the ENGINEER. CONTRACTOR shall be responsible for all costs associated with splicing piles which are shorter than the contract documents and the specifications require.
- B. Identify piece marks and sections on each piling butt steel pile and maintain markings until driven.
- C. Fabricate full-length piles by splicing lengths of pipe pile together, if necessary. Accurately mill meeting ends of piles and bevel for welding. Maintain axial alignment of pile lengths.
 - 1. Welded Splices: Continuously weld pile according to AWS D1.1 and AWS D1.8 for procedures, appearance and quality of welds, and methods used in correcting welding work. All welds shall be AWS pre-qualified full penetration butt welds.
 - 2. Splice piles during fabrication or field installation.
- D. Fit and weld driving points to tip of pile according to manufacturer's written instructions and AWS D1.1 and AWS D1.8 for procedures, appearance and quality of welds, and methods used in correcting welding work.
- E. Pile-Length Markings: Permanently mark each pile with horizontal lines at 12-inch intervals; mark the distance from pile tip at 60-inch intervals.
- F. Field Welding: Any necessary field welding shall be in accordance with AWS D1.1, AWS D1.8, and as noted herein. All coatings including hot dip galvanizing shall be removed at least 6 inches either side of field weld location prior to welding. After welding coatings shall be reapplied in accordance with Specification Section 05500 – Metal Fabrications.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Site Conditions: Do not start pile-driving operations until site grade excavations have reached elevations shown, or until large rock or other debris that may impede pile driving has been removed.

3.2. DRIVING EQUIPMENT

- A. Vibratory Pile Hammer: Install all piles with the vibratory hammer to a maximum rate of penetration as determined by the ENGINEER. Minimum

SPECIAL PROVISIONS

frequency of hammer shall be specified by the ENGINEER. The vibratory hammer specifications shall be presented to the ENGINEER prior to pile installation.

- B. Impact Pile Hammer: Set all piles to final penetration with impact hammer. Final penetration criteria shall be determined by the ENGINEER. Air-, steam-, or diesel-powered type capable of consistently delivering driving energy to pile. Minimum rated of hammer shall not be less than 40,000 foot-pounds per blow. The impact hammer specifications shall be presented to the ENGINEER prior to pile installation.
- C. Hammer Cushions and Driving Caps: Between hammer and top of pile, provide hammer cushion and steel driving cap recommended by hammer manufacturer for type of pile and verified by Wave Equation Analysis.
- D. Leads: Use fixed or free pile-driver leads that will hold full length of pile firmly in position and in axial alignment with hammer.
- E. Pile Loading and Testing Requirements:
 - 1. Compressive Capacity: Pile Compressive Capacity shall be determined by the ENGINEER based on the pile hammer submittal and the geotechnical report, and/or any compressive tests as required by the ENGINEER.
 - 2. Pile Tensile Capacity shall be determined by pull-out tests on piles indicated, using a test method approved by the ENGINEER.

3.3. DRIVING PILES

- A. General: Continuously drive piles with the Vibratory Pile Hammer to the maximum rate of penetration as determined by the ENGINEER before switching to the Impact Pile Hammer. Continuously drive piles with the Impact Pile Hammer to the final penetration criteria as determined by the ENGINEER. Establish and maintain axial alignment of leads and pile before and during driving.
- B. Heaved Piles: Redrive heaved piles to tip elevation at least as deep as original tip elevation with a driving resistance at least as great as original driving resistance. Pile butt elevation and alignment on all previously driven piles shall be monitored daily until driving is completed.
- C. Driving Tolerances: Drive piles without exceeding the following tolerances, measured at pile heads:
 - 1. Location: 4 inches from location indicated after initial driving, and 6 inches after pile driving is completed.
 - 2. Plumb: Maintain 1 inch in 10 feet from vertical, or a maximum of 4 inches, measured when pile is above ground in leads.
 - 3. Batter Angle: Maximum 1 inch in 10 feet from required angle, measured when pile is above ground in leads.
- D. Withdraw damaged or defective piles and piles that exceed driving tolerances and install new piles within driving tolerances. Fill holes left by withdrawn piles as directed by ENGINEER.
 - 1. Rejected piles may be abandoned and cut off as directed by ENGINEER.

SPECIAL PROVISIONS

- E. Cutting Off: Cut off tops of driven piles as shown and at elevations indicated.
- F. Pile-Driving Records: Maintain accurate driving records for each pile. Include the following data:
 - 1. Project name and number.
 - 2. Name of CONTRACTOR.
 - 3. Pile location in pile group and designation of pile group.
 - 4. Sequence of driving in pile group.
 - 5. Pile dimensions.
 - 6. Ground elevation.
 - 7. Elevation of tips after driving.
 - 8. Final tip and cutoff elevations of piles after driving pile group.
 - 9. Records of re-driving.
 - 10. Elevation of splices.
 - 11. Type, make, model, and rated energy of hammers.
 - 12. Weight and stroke of hammer.
 - 13. Type of pile-driving cap used.
 - 14. Cushion material and thickness.
 - 15. Actual stroke and blow rate of hammer.
 - 16. Pile-driving start and finish times, and total driving time.
 - 17. Time, pile-tip elevation, and reason for interruptions.
 - 18. Number of blows for each 12 inches of penetration, and number of blows per 1 inch for the last 6 inches of driving.
 - 19. Pile deviations from location and plumb.
 - 20. Preboring, jetting, or special procedures used.
 - 21. Unusual occurrences during pile driving.

3.4. FIELD QUALITY CONTROL

- A. Testing and Inspecting: OWNER shall engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- B. Weld Testing: In addition to visual inspection, welds shall be tested and inspected according to AWS D1.1 and AWS D1.8. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Pile Butt Survey: All installed pile butts shall be surveyed for elevation and alignment each day on pile drivers until all piles are driven.

3.5. TOUCHUP PAINTING

- A. Clean field welds, splices, and abraded painted areas and field-apply coatings according to Specification Section 05500 – Metal Fabrications.
 - 1. Apply touchup coatings before driving piles to surfaces that will be immersed or inaccessible after driving.

3.6. DISPOSAL

- A. Cut-off pile pieces shall be retained for use as pile splice pieces for the duration of pile driving.

SPECIAL PROVISIONS

- B. Remove withdrawn piles and cutoff sections of piles from site and legally dispose of them off OWNER's property at the completion of pile driving.

END OF SECTION

SECTION 02501 – STORM SEWER PIPE

PART 2 – PRODUCTS

Add the following Article:

2.9. UNDERGROUND MARKING TAPE

- A. Underground Marking Tape shall be yellow, at least 4-inches wide, 4-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: Storm Sewer Line Buried Below," or similar. The marking tape shall be installed 12-inches above the top of all storm sewer mains and services.

END OF SECTION

SECTION 02502 – STORM SEWER MANHOLES, INLETS AND CATCH BASINS

PART 2 – PRODUCTS

Add the following Article:

2.8. TRENCH DRAINS

- A. Trench drain cover shall be custom ductile iron, 6" Title Wave trench drain cover as manufactured by Urban Accessories ®; (877)487-0488, www.urbanaccessories.com, or approved equal. Ductile iron castings to be of high quality iron; ASTM A536 class 65-45-12 or better.
- B. Trench drain frame shall be constructed of mild steel ASTM A36 angle iron or other shapes as necessary. All visible welds to be ground smooth on outside edges. Frames shall be true to square or diameter and sized within 1/8". Finish shall be natural. Frame shall be constructed as per the Plans and fabricator's shop drawings.
- C. Trough shall be custom trough constructed of cast aluminum per ASTM B26, built to match the custom trench drain frame and cover. Trough shall be constructed as per the Plans and the fabricator's shop drawings.

PART 3 – EXECUTION

ARTICLE 3.1, CONSTRUCTION

Delete paragraph C and replace with the following paragraph C.:

- D. Metal frames shall be set over the cast-in-place concrete support structure with a maximum 1/4-inch thick mortar bed. All other support for the frame and grate assembly shall be made with 3000 PSI minimum concrete cement.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 02515 – MASONRY UNIT PAVING

PART 1 – GENERAL

1.1. DESCRIPTION

- A. Furnish all material, labor, services and related items required to complete masonry unit paving work indicated on drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to: subgrade preparation, base material, masonry unit paving, and edging.

1.2. REFERENCES

- A. This section references the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

- 1. American Society of Testing and Materials (ASTM):

- a. C 33, Specification for Concrete Aggregates.
 - b. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.
 - c. C 140, Sampling and Testing Masonry Units.
 - d. C 144, Standard Specification for Aggregate for Masonry Mortar.
 - e. C 936, Specification for Solid Interlocking Concrete Paving Units.
 - f. C 979, Specification for Pigments for Integrally Colored Concrete.
 - g. D 698, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5-lb (2.49 kg) Rammer and 12 in. (305 mm) drop.
D 1557, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (4.54 kg) Rammer and 18 in. (457 mm) drop.
 - h. D 2940, Graded Aggregate Material for Bases or Subbases for Highways or Airports.

1.3. QUALITY ASSURANCE

- A. Manufacturer: Company specializing in the manufacture of granite or brick pavers for a minimum of three (3) years.
- B. Installation shall be by a contractor and crew with at least one (1) year of experience in placing granite and brick on projects of similar nature or dollar cost.
- C. Installation Contractor shall conform to all local and state licensing and bonding requirements.
- D. Single Source Responsibility: Obtain each color, type, and variety of unit pavers from a single source. Materials shall be available and be consistent in quality, appearance and physical properties without delaying progress of Work.

SPECIAL PROVISIONS

- E. Prior to commencing the work of this Section, verify the accuracy of layout and grading. Verify that all subgrade and base course aggregate conditions are as specified. Notify the Engineer of any discrepancies and coordinate the correction of those discrepancies with other trades as necessary.

1.4. SUBMITTALS

- A. Procedures to be used in the construction under this Section with regard to the division of labor and the responsibilities of the Contractor and all sub-contractors involved Submit product drawings and data.
- B. Qualification data for firms and persons specified in “Quality Assurance” paragraph to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of landscape architects and engineers.
- C. Submit full size sample sets of paving units to indicate color and shape selections. Color will be selected by Engineer from manufacturer’s available colors.
- D. Submit sieve analysis for grading of bedding and joint sand.
- E. Submit test results from an independent testing laboratory for compliance of paving unit requirements to ASTM C 936.
- F. Indicate layout, pattern, and relationship of paving joints to fixtures and project formed details.

1.5. MOCK-UPS

- A. Install a 7 ft. x 7 ft. (2 m x 2 m) paver area as described in Article 3.02. This area will be used to determine surcharge of the bedding sand layer, joint sizes, lines, laying pattern(s), color(s), and texture of the job. This area shall be the standard from which the work will be judged.

1.6. DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. Unload pavers at job site in such a manner that no damage occurs to the product.
- B. Protect unit pavers and aggregate during storage and construction against soilage or contamination from earth and other materials.
- C. Builder’s Sand shall be covered with waterproof covering to prevent exposure to rainfall or removal by wind. The covering shall be secured in place.

1.7. ENVIRONMENTAL CONDITIONS

- A. Do not install sand or pavers during heavy rain or snowfall.
- B. Do not install sand and pavers over frozen base materials.
- C. Do not install frozen sand.

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1.8. ADDITIONAL MATERIALS

- A. Deliver 200 square feet of additional pavers on pallets to the City and Borough of Juneau storage facility. Type and color of additional pavers and time and location of delivery to coordinated with the Engineer.

PART 2 – PRODUCTS

2.1. GRANITE UNIT PAVERS

- A. Granite Pavers shall be 2 ¼ x 4 x 8, as provided by Yellow Mountain Stoneworks or approved equal.

Contact: Yellow Mountain Stoneworks Inc. 3445 California Avenue SW, Suite 3 Seattle, WA 98116. Ph. 206-932-5696

- B. Color: Mariposa Azul

2.2. BRICK UNIT PAVERS

- A. Brick pavers shall be 2 ¼ x 4 x 8 as manufactured and supplied by Glen-Gery Brick, color Oak Beech, or approved equal.

- B. Pavers shall meet the following requirements set forth in ASTM C 902, Standard Specification for Brick Paving Units:

1. Average compressive strength of 8,000 psi (55 MPa) with no individual unit under 7,200 psi (50 MPa).
2. Average absorption of 5% with no unit greater than 7% when tested in accordance with ASTM C 140.
3. Resistance to 50 freeze-thaw cycles when tested in accordance with ASTM C 67.

- C. Material shall be manufactured in individual layers on production pallets.

- D. Materials shall be manufactured to produce a solid homogeneous matrix in the produced unit.

2.3. VISUAL INSPECTION

- A. All units shall be sound and free of defects that would interfere with the proper placing of unit or impair the strength or permanence of the construction.

- B. Minor cracks incidental to the usual methods of manufacture, or chipping resulting from customary methods of handling in shipment and delivery, shall not be deemed grounds for rejection.

2.4. SAMPLING AND TESTING

- A. Manufacturer shall provide access to lots ready for delivery to the Engineer or his authorized representative for testing in accordance with ASTM 936-82 for sampling of material prior to commencement of paver placement.

- B. Manufacturer shall provide a minimum of three (3) years testing backup data showing manufactured products that meet and exceed ASTM 936-82 when tested in compliance with ASTM C-140.

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- C. Sampling shall be random with a minimum of five (5) specimens per 4,000 sq. ft. per product shape and size with repeated samples taken every additional 2,000 sq. ft. or a fraction thereof.
- D. Test units in accordance with ASTM for compressive strength, absorption and dimensional tolerance. A minimum of three (3) specimens per test required for an average value. Testing of full units is required.

2.5. REJECTION

- A. In the event the shipment fails to conform to the specified requirements, the manufacturer may sort it and new test units shall be selected at random by the Engineer from the retained lot and tested at the expense of the manufacturer. If the second set of test units fails to conform to the specified requirements, the entire lot shall be rejected.

2.6. EXPENSE OF TESTS

- A. The expense of testing shall be borne by the Contractor.
- B. Inspection by Project Architect/Engineer for acceptance shall be borne by the City.

2.7. EDGE RESTRAINT MATERIAL

- A. Concrete edging and paving.

2.8. JOINT SAND

- A. Provide polymeric joint sand as follows:
 - 1. Polymeric sand shall be Polymeric Sand HP as manufactured by Techniseal, or approved equal.
 - 2. Polymeric sand shall be comprised of graded sand (ASTM C 144) and polymer binders in sealed and labeled containers.
 - 3. Provide color of polymeric sand to best match colors of paver for each paving pattern.
 - 4. Joint Sand Material Requirements: Conform to the grading requirements of ASTM C 144 as shown with modifications in Table 1 below:

TABLE 1
GRADING REQUIREMENTS FOR JOINT SAND
ASTM C 144

Sieve Size	ASTM C 144 Natural Sand Percent Passing	ASTM C 144 Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.35 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 100
No. 50 (0.300 mm)	10 to 35	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075 mm)	0 to 1	0 to 10

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2.9 PAVING AND JOINT SEALER

- A. Epoxy acrylic sealer SUREGUARD, or approved equal.

2.10 PAVER CLEANER

- A. Cleaner shall be Paverprep by PaveChem, or approved equal.

2.11. BEDDING SAND

- A. Bedding and joint sand shall be clean, non-plastic, free from deleterious or foreign matter. The sand shall be natural or manufactured from crushed rock. Limestone screenings or stone dust shall not be used. When concrete pavers are subject to vehicular traffic, the sands shall be as hard as practically available.
- B. Grading of sand samples for the bedding course and joints shall be done according to ASTM C 136. Under no circumstances should masonry mortar sand, limestone screenings or stone dust be used as a leveling course.
- C. The bedding sand shall conform to the grading requirements of ASTM C 33 as shown in Table 1.

Table 1
Grading Requirements for Bedding Sand
ASTM C 33

Sieve Size	Percent Passing
3/8 in. (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (600 µm)	25 to 60
No. 50 (300 µm)	10 to 30
No. 100 (150 µm)	2 to 10

PART 3 – EXECUTION

3.1. EXAMINATION

- A. The Contractor shall examine surfaces indicated to receive paving for compliance with requirements for tolerances and other conditions affecting performance of unit pavers. Do not proceed with installation until unsatisfactory conditions have been corrected. Prior to excavation, the area to receive unit pavers shall be staked and grade elevation established to ensure proper grades.
- B. Compaction of the soil subgrade to at least 95% Standard Proctor Density per ASTM D 1557 for areas subject to continual vehicular traffic. The Contractor shall conduct density tests as required by the Engineer for inspection and acceptance of subgrade preparation, elevations, and for conformance to specifications.

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- C. Verify that aggregate base materials, thickness, compaction, surface tolerances, and elevations conform to the specifications.
- D. Aggregate base materials shall conform to ASTM D 2940. Compaction shall not be less than 98% Modified Proctor Density in accordance with ASTM D 1557. The aggregate base shall be spread and compacted in uniform layers not exceeding 6 in. (150 mm) thickness. The contractor shall assure conformance to specifications of base preparation, surface tolerances, and elevations for inspection and acceptance by the Project Engineer. The Contractor shall conduct and pay for random density tests as required by the Engineer to verify conformance.
- E. The Contractor shall employ mechanical tampers for compaction of soil subgrade and aggregate base around lamp standards, utility structures, edges, curbs, and other protrusions. In areas not accessible to roller compaction equipment, compact to specified density with mechanical tampers.
- F. Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.
- G. Verify that base is dry, uniform, even, and ready to support sand, pavers, and imposed loads.

3.2. PREPARATION OF SUBGRADE

- A. Immediately following excavation, the area should be inspected to be sure that no unacceptable subbase material is present. Remove all organic material, roots, oversize rocks or debris remaining in the soil. Wet areas must be drained or stabilized with crushed rock.
- B. Proof roll prepared subgrade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation until deficient subgrades have been corrected and are ready to receive subbase for unit pavers. Compact subgrade to at least 98 percent density per ASTM D 1557.

3.3. STERILANT

- A. All areas to be paved shall be sterilized with a minimum of twenty (20) pounds polyborchlorate per 1,000 square feet of surface, mixed with water and applied with mechanical spraying device after installation of the base course material is completed.

3.4. EDGE RESTRAINT INSTALLATION

- A. Install concrete edge restraint per the Plans & Specifications

3.5. SAND LEVELING COURSE PLACEMENT

- A. Place Bedding Sand leveling course over compacted base material to a depth of 1-3/4 inch, taking care that the moisture content remains constant and the density is loose and constant until concrete pavers are set and compacted. Do not use frozen or saturated sand for leveling. Do not use sand to fill in irregularities in the base material; base material must be added and compacted.
- B. Screed sand with a straight, true strike board. Once sand has been screeded, it shall not be disturbed, or the procedure shall be repeated.

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3.6. UNIT PAVER INSTALLATION

- A. Lay the pavers in the pattern(s) as shown on the Plans. Random pattern shall mean no diagonal or repeat pattern visually detectable. Maintain curved, plumb & true pattern lines with the use of staking and other means. Place pavers with specified joints, being careful not to disturb the leveling course.
- B. The joints between pavers shall be as shown on plans. Units shall be cut with a masonry saw no smaller than one-third of a whole paver along pavement edges.
- C. Once an area is installed, vibrate the pavers into the sand with a plate vibrator capable of a 3,500 to 5,000 pound compaction force. Perform at least 3 passes across paving with the vibrator. Vibrate under the following conditions:
 - 1. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
 - 2. Before ending each day's work, fully compact installed concrete pavers within 3 feet of the laying face. Cover the open layers with nonstaining plastic sheets overlapped 4 feet on each side of laying face to protect it from rain.
- D. The pavers shall be compacted and dry polymeric joint sand shall be swept into the joints until the joints are full, approximately two or three passes with the compactor. Do not compact within 3-feet of the unrestrained edges of the paving units. Follow manufacturer's recommendations for the application of polymeric joint sand including moisture requirements.
- E. Final Surfacing: The final surface elevations shall not deviate more than 3/8 inch under a 10 feet long straight edge. The top surface of the pavers shall be 1/8 to 1/4 inch above the final elevations and above adjacent drainage inlets, concrete collars or channels to compensate for possible minor settling.
- F. The re-sanding of paver joints shall be accomplished by contractor, as necessary and/or as requested by the Engineer/City for a period of 90 days after completion of work without additional expense to the City. Work shall be guaranteed for one year after final project approval.

3.7. POWER AND JOINT SEALER APPLICATION

- A. All pavers shall be cleaned prior to sealing. Apply paver cleaner per manufacturer's instructions. Apply paver and joint sealer to all pavers, per manufacturer's instructions.

3.8. FIELD QUALITY CONTROL

- A. After removal of excess sand, check final elevations for conformance to the Plans and Specifications.
- B. Repair and replace defective unit pavers which are loose, chipped, broken, stained, or otherwise damaged, or as directed by Engineer. Provide new units to match adjoining units and install in the same manner as original units, with same joint treatment to eliminate evidence of replacement.
- C. Protect paving from damage until Physical Completion. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction

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traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

END OF SECTION

SECTION 02710 – SEEDING

PART 2 – PRODUCTS

ARTICLE 2.1 SEED

Revise paragraph B as follows:

1. See plans for Seed Mix types, location and application rates.

PART 3 – EXECUTION

Add the following:

3.1. SEED INSTALATION

Rake and roll intertidal marsh seed into subgrade to minimize floating and loss of seed.

3.2. MAINTENANCE OF SEEDED LAWN AREAS

Protect and maintain by watering, mowing, reseeding, weeding, and repairing as required to establish thick, weed free, uniform stand of grass or other seeded plantings for 21 calendar days beginning after installation of seed. Continue maintenance until final completion.

Add the following Section:

SECTION 02711 – LANDSCAPE PLANTING

PART 1 – GENERAL

1.1. SUMMARY

A. Section Includes:

1. Trees.
2. Shrubs.
3. Bark Mulch
4. Planting Soils and Amendments.
5. Tree Grates
6. Habitat Logs, Root Wads, Snags and Boulders

1.2. DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Topsoil: Existing native organic and mineral soils.

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- D. Planting Soil: Soil produced by homogeneously blending sand with stabilized organic soil amendments to produce planting soil to meet the planting soil specifications.
 - E. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
 - F. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
 - G. Balled and Potted Stock: Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required.
 - H. Balled and Burlapped Stock (B&B): Plants dug with firm, natural balls of earth encompassing root width that is the same diameter as the plant dripline and root depth that captures 80% of roots or complies with ANSI Z60.1 for type and size of plant, covered in one layer of burlap that is securely but not tightly tied at the base of the stem or trunk with cotton or nylon rope.
 - I. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.
 - J. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
 - K. Root Flare: Also called “trunk flare” or “root crown”. The area at the base of the plant’s stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
 - L. Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- 1.3. SUBMITTALS
- A. Product Data: For each type of product indicated.
 - B. Samples of tree ties, 1 lb. mulch, 5 lbs. topsoil, and 5 lbs. planting soil.
 - C. Product certificates.
 - D. Planting Schedule: Indicating anticipated planting dates for exterior plants.
 - E. Submit within twenty (20) days after contract date a list of all plant material and seed mixes indicating source of supply, order invoice, size and quantity for each species or variety procured, seed mix weight by species and planting fertilizer total weight. All plant material shall meet requirements of State and Federal laws with respect to inspection for plant diseases and infestation.

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1.4. QUALITY ASSURANCE

- A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Topsoil and Planting Soil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; deleterious material; pH; and mineral and plant-nutrient content for topsoil and planting soil.
 - 1. Report suitability of soil for plant growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
- C. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
- D. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
- E. Observation: ENGINEER may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. ENGINEER retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

Notify ENGINEER of arrival of planting materials for inspection three days prior to installation.
- F. Trees shall meet the following specifications for quality:
 - 1. As typical for the species/cultivar, trees shall be healthy and vigorous, as indicated by an inspection for the following:
 - a. foliar crown density
 - b. length of shoot growth (throughout crown)
 - c. size, color and appearance of leaves
 - d. uniform distribution of roots in the container media
 - e. appearance of roots
 - f. absence of twig and/or branch dieback
 - g. relative freedom from insects and diseases
 - 2. There shall be no roots greater than 1/10 diameter of the trunk circling more than one-third the way around in the top half of the root ball. Roots larger than this may be cut provided they are smaller than one-third the trunk diameter. There shall be no kinked roots greater than 1/5 the trunk diameter. Roots larger than this can be cut provided they are less than one-third the trunk diameter.
 - 3. Trunk flare on trees must be visible above the surface of the root ball. Major roots must be found at 2 inches or less below surface of root ball.

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4. Trees should be rooted into the root ball so that soil or media remains intact and trunk and root ball move as one when lifted. The trunk should bend when gently pushed, not pivot at or below soil line.
 5. The point where the top-most root in the root ball emerges from the trunk shall be visible at the soil surface.
 6. The relationship between caliper, height and root ball size shall meet the ANSI Z60.1 standard.
 7. There should be one dominant leader more-or-less straight to the top of the tree with the largest branches spaced at least 6 inches apart. There can be a double leader in the top 10% of the tree.
 8. The tree canopy should be symmetrical, free of large voids, and typical of the species or cultivar. Live crown ratio (distance from bottom of canopy to tree top/tree height) should be at least 60%.
 9. Branches should be less than 2/3 the trunk diameter, free of bark inclusions, and more-or-less radially distributed around the trunk.
 10. Trees greater than 1.5 inches caliper should be able to stand erect without a supporting stake.
 11. The trunk and main branches shall be free of wounds (except for properly-made pruning wounds), damaged areas, conks, bleeding, and signs of insects or disease. Open wounds or visible damage on the trunk shall not exceed 2 inches in length or be more than 5% of the circumference of the trunk. Pruning wounds do not have to be closed over but shall have been made properly and just outside the collar.
 12. At time of inspection and delivery, the rootball shall be moist throughout, and the tree crown shall show no signs of moisture stress, as indicated by wilt, shriveled, dead leaves, or branch dieback. Roots shall show no signs of being subjected to excess soil moisture conditions, as indicated by root discoloration, distortion, death, or foul odor.
 13. If any of the above conditions are not met, trees may be rejected.
- G. Shrubs shall meet the same requirements for quality as for trees with the exception of trunk and branching requirements. The ENGINEER may reject shrubs not meeting these requirements.
- H. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
- I. Pre-installation Conference: Conduct conference on site prior to beginning work.

1.5. DELIVERY, STORAGE, AND HANDLING

- A. Bulk Materials: Do not deliver or place backfill, soils and soil amendments in frozen, wet, or muddy conditions.
1. Do not dump or store bulk materials near structures, utilities, sidewalks, pavements, and other facilities, or on existing trees, turf areas or plants.
 2. Provide protection including tarps, plastic and or matting between all bulk materials and any finished surfaces sufficient to protect the finish material.
- B. Provide erosion-control measures to prevent erosion or displacement of bulk materials and discharge of soil-bearing water runoff or airborne dust to adjacent properties, water conveyance systems, and walkways. Provide additional

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sediment control to retain excavated material, backfill, soil amendments and planting mix within the project limits as needed.

- C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery and handling.
- D. Handle planting stock by root ball or container.
- E. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants and trees in shade, protect from weather and mechanical damage, and keep roots moist.
 - 1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
 - 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.
- F. Keep plant tags and labels on all plants until approved.
- G. Plants that are removed from the planting areas, balled and burlapped and stored for future planting shall be kept away from direct sunlight, protected from wind and extreme weather conditions, stored with plants upright and the roots shall be kept moist but not overly wet. Store all plants together with root balls touching and cover all plants with 6" of mulch or multiple layers of burlap.

1.6. PROJECT CONDITIONS

- A. Verification of Existing Conditions and Protection of New or Existing Improvements: Before proceeding with work in this section, the Installer shall carefully check and verify all dimensions, quantities, and grade elevations, and inform the ENGINEER immediately of any discrepancies.
 - 1. Carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging. Verify the location of all aboveground and underground utility lines, infrastructure, other improvements, and existing trees, shrubs, and plants to remain including their root system, and take proper precautions as necessary to avoid damage to such improvements and plants.
 - 2. In the event of conflict between existing and new improvements notify the ENGINEER in writing and obtain written confirmation of any changes to the work prior to proceeding.
 - a. When new or previously existing utility lines are encountered during the course of excavation, notify the ENGINEER in writing and make recommendations as to remedial action. Proceed with work in that area only upon approval of appropriate remedial action. Coordinate all work with the appropriate utility contractors, utility company or responsible public works agency.

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- B. Protect partially completed installation against damage from other construction traffic when work is in progress, and following completion with highly visible construction tape, fencing, or other means until construction is complete.

1.7. COORDINATION

- A. Planting Restrictions: Plant during the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. All planting shall be performed between April 1 and August 15, unless otherwise authorized in writing by the ENGINEER.
 - 2. Digging and removing of plants to ball and burlap and store for later planting shall be done when plants are dormant, between October 30, 2015 and April 1, 2016.
 - 3. Plant Live stakes between March 1st and May 15th.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit. Do not plant during excessive periods of rain or when soils are saturated and can become compacted due to normal planting operations.

1.8. WARRANTY

- A. Warranty: Installer's standard form in which Installer agrees to repair or replace plantings that fail in materials, workmanship, or growth within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, abuse by ENGINEER, or incidents that are beyond CONTRACTOR's control.
 - b. Structural failures including plantings falling or blowing over.
 - 2. Warranty Periods from Date of Substantial Completion:
 - a. Trees and Shrubs: One year.
 - b. Ground Cover: One year.

1.9. MAINTENANCE SERVICE

- A. Special Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Begin maintenance immediately after each area is planted and continue until substantial completion of project. After substantial completion provide one site visit/landscape inspections to ensure maintenance of landscape by facility staff and/or residents is acceptable. Provide written instruction if any oversights or errors are detected and notify ENGINEER if any actions or lack of actions are resulting in deterioration of plant health, vigor, or site conditions. Coordinate site visit with ENGINEER.
 - 1. Site Visit Period for Trees and Shrubs: 12 months from date of substantial completion.
 - 2. Site Visit Period for Ground Covers: 12 months from date of substantial completion.

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PART 2 – PRODUCTS

2.1. TREE AND SHRUB MATERIAL

- A. Exterior Plant Heights: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- B. Provide trees and shrubs: genera, species, and variety; quantity, size and conditions, as indicated on Drawings.
- C. Tree and shrub sizes indicated on Drawings are sizes after pruning.
- D. Bare root stock shall have a root system sufficient to ensure survival and healthy growth.
- E. Live Stakes: Are cuttings of one to two-year-old wood of species as indicated on Drawings. These cuttings shall be 1/2 to 1 inch in diameter and of a size as indicated on Drawings. Stem cuttings shall be taken at least 24" from the branch tip. The top of each cutting shall be just above a leaf bud, the bottom cut just below one. At least 2 lateral buds shall be above ground after planting. The basal ends of the shoots must be marked clearly in some manner so workers can easily determine which end to plant. The rooting end of all live stakes shall be cut at a 45-degree angle. . Cuttings must be kept covered and moist during transport and storage before planting.

2.2. TOPSOIL

- A. Topsoil: Fertile, friable, surface soil containing natural loam (approximately 45% sand, 40% silt and 15% clay) and complying with ASTM D 5268, pH range of 5.5 to 7, an average of 10 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Topsoil to be free of vegetative plant parts or seed capable of propagating. Topsoil shall be free of volcanic ash and shall not have a deleterious material mass percentage of greater than 5% not passing through a #4 screen. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4" deep; do not obtain from bogs or marshes.
 - 1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient.
- B. The ENGINEER shall be notified on 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.
- C. All topsoil shall be fertilized as follows: the application rates of the fertilizer and limestone per 1,000 square feet of ground area 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:

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1. Nitrogen: 1.0 lb. minimum – 1.5 lb. maximum per 1,000 square feet
2. Phosphoric Acid: 1.0 lb. minimum – 2.0 lb. maximum per 1,000 square feet
3. Potassium: 1.0 lb. minimum – 2.0 lb. maximum per 1,000 square feet
4. 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	3.0

2.3. MYCORRHIZA INOCULANT

- A. All new bare root and container plant materials shall be supplemented, at time of planting, with Soluble as manufactured by Fungi Perfecti, Olympia, WA, 1-800-780-9126 or approved equal.
 1. The mycorrhiza inoculant shall be mixed per the manufacturer's recommendation, and applied prior to removing plants from the container. Each container shall be flooded with the mycorrhiza solution to achieve a saturated root and soil mass.

2.4. INORGANIC SOIL AMENDMENTS

- A. Sand: Clean, washed, natural or manufactured uniform coarse texture sand, free of toxic materials and other deleterious material.

2.5. COMPOST

- A. Compost shall be the result of the biological degradation of Type I or III Feedstocks, under controlled conditions designed to promote aerobic decomposition, per WAC 173-350-220, and meet the requirements below.
 1. Compost shall be certified in compliance with U.S. Composting Council STA program.
 2. Compost shall have 40%-60% organic matter, by weight (Loss on Ignition method).
 3. Compost Maturity shall be greater than 80% in accordance with TMECC 04.10-A.
 4. Compost Stability shall be 7 or below in accordance with TMECC 05.08-B.
 5. Carbon to nitrogen ratio shall be 15:1 to 25:1, as determined using TMECC 04.01 "Total Carbon" and TMECC 04.02D "Total Kjeldhal Nitrogen".
 6. Feedstocks shall originate from local recycling collection programs, and contain a minimum of 10% post-consumer food waste as defined in WAC 173-550.
 7. Compost shall meet the particle size gradations in Table 3.
 8. Approved products include Cedar Grove Compost.

SPECIAL PROVISIONS

2.6. FERTILIZER

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 8 percent nitrogen, 32 percent phosphorous, and 16 percent potassium, by weight.

2.7. PLANTING SOIL

- A. Planting Soil shall be a two-way mix of sand and compost as supplied by Cedar Grove Compost or approved equal, www.cedar-grove.com, Ph. 1-877-SOILS-4U (1-977-764-5748), or the following specification:
 - 1. Planting Soil for planting beds and ornamental turf shall be a mixture of approximately 33-50% compost and 50-65% sand, each meeting the requirements below.
 - 2. Sand shall be free of phyto-toxic materials; viable seeds, rhizomes or roots of State-listed noxious weeds.
 - 3. Mix shall contain 10 to 20% organic matter, by weight (Loss on Ignition).
 - 4. pH shall be between 6.0 and 7.5
 - 5. Soluble salt contents shall be less than 3.0 mmhos/cm.
 - 6. Weight of Slow-Release Fertilizer per 1000 Sq. Ft.: 10 pounds.
 - 7. Add lime as needed to meet specified PH levels but not exceeding 10 lbs. per CY.

2.8. BARK MULCH

- A. Organic Mulch: Ground or shredded bark, dark brown or black in color, no dyed or red mulch.

2.9. STAKES AND GUYS

- A. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, size and length as indicated, pointed at one end.
- B. Tie Wire: ASTM A 641, Class 1 galvanized-steel wire, 2 strand, twisted 0.05 inch in diameter.
- C. Tree Webbing: 1 inch wide, polypropylene webbing, 18 inches long with a brass grummet on each end. Do not use hose and wire.

2.10. TREE GRATE

- A. Tree grate: Chinook 2000, 5'x5' square, with metal frame as manufactured by Urban Accessories. 100% Recycled Grey Iron, per ASTM A48 class 35b. <http://www.urbanaccessories.com/product-categories/tree-grates/products/chinook-2000>. Or approved equal.

2.11. HABITAT LOGS

- A. Use spruce with bark on. Size as noted. Stake out for approval prior to installation. Quantities are as noted in Drawings.

SPECIAL PROVISIONS

2.12. SNAGS

- A. Snags are . Branches on the snags should be a minimum of 15” long and a minimum of 1” in diameter. Cut various cavities into the snags before placement. Install quantity of snags as noted in Drawings. Snags range from 12’ to 30’ in height and are imbedded in the ground. See detail for snag installation. Stake out for approval prior to installation.

2.13. ROOT WADS

- A. Root wads are 6’-8’ in root diameter, and the bole (that comes out of the root mass) is about 2’ in diameter. The bole is 5’-6’ long. 75% of the root wads are to be placed upright and 25% on their sides, to provide underwater “umbrellas.” See Drawings for anchoring and placement requirements. Stake out for approval prior to installation. Quantities are as noted in Drawings.

2.14. LANDSCAPE BOULDERS

- A. Landscape Boulders shall be 36” minus boulders as specified in section 02370 Shore Restoration for boulders. Coordinate boulder selection in Bridge Park area with engineer.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.
- B. Obtain utility locates for all underground utilities and structures in planting areas. Notify the ENGINEER of any conflicts prior to beginning excavation.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Lay out planting beds and trenches for exterior plantings. Stake locations, outline areas, adjust locations when requested and obtain ENGINEER acceptance of layout before starting planting bed excavation work and planting. Make minor adjustments as required.
- E. Excavate beds to the depth required to accept the depth of planting soils as indicated on Drawings.
- F. Fill all excavations completely with water and allow to naturally percolate from excavations. Notify ENGINEER of any beds which fail to percolate within 24 hours and make good excavations through drilling, reducing compaction, and other methods to get adequate percolation as indicated. Repeat water percolation test as needed.

SPECIAL PROVISIONS

- G. Scarify the sides and bottom of all beds to a depth of 3 inches after percolation test to reduce compaction as a result of testing.
- H. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain ENGINEER acceptance of layout before planting. Make minor adjustments as required.

3.3. PLANTING BED ESTABLISHMENT

- A. Homogeneously blend soil mixes off-site before spreading or mix planting soil in beds and homogeneously blend planting soil mix to the full depth to a uniform texture. Do not add planting soil until all water has percolated out of excavation.
- B. Spread topsoil to the depth indicated on Drawings. Install in lifts that do not exceed 8 inches. Compact using irrigation or a water filled roller. Do not use mechanical compaction. Compact soil to 82-85% of maximum dry density. Check the soil compaction with a penetrometer or densometer. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
- C. Spread planting soil to a depth of four inches and incorporate into the upper four inches of the topsoil or subsoil as shown on the drawings. Install in lifts that do not exceed 8 inches. Compact using irrigation or a water filled roller. Do not use mechanical compaction. Compact soil to 84-86% of maximum dry density. Check the soil compaction with a penetrometer or densometer. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
- D. If the planting soil becomes overly compacted, till and rip or remove the soil and reinstall.
- E. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- F. Plant trees and shrubs after finish grades are established. Do not plant in soils immediately after performing irrigation compaction of planting soils. Allow soils to dry before planting.
- G. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.4. TREES AND SHRUBS

- A. Excavation of Planting Pits and Trenches: Excavate pits to a depth and width to accommodate roots and result in the uppermost lateral root being no more than 2 inches below finish grade but below finish grade. Avoid mixing of soil layers during excavation. Scarify sides of plant pit smeared or smoothed during excavation. Limit compaction of planting soils as a result of planting operations. Loosen planting soils, by hand, that have been compacted during planting operations.
- B. Set and support bare-root stock (Alder Pull-ups) in center of planting pit and in center of pit or trench with uppermost lateral root no more than 2 inches below finish grades or with root flare adjacent finish grade.

SPECIAL PROVISIONS

1. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots.
 2. Continue backfilling process in layers to maintain soil layers established prior to excavating plant pits. Water again after placing and tamping final layer of soil.
- C. Set ball and burlapped stock that was stored from the site in the center of the planting pit, remove all burlap from sides of root ball. If root ball is not sufficiently moist throughout, soak root ball. Once water has drained from planting pit, backfill with planting soil and ensure that root flare is at the finish grade of planting soil.
- D. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.5. TREE AND SHRUB PRUNING

- A. Prune only when directed by ENGINEER. Pruning to be executed by a certified Arborist, or experienced nurseryman with pruning experience. Do not cut tree leaders; remove only injured or dead branches from trees. Do not prune branches unless damaged or to retain natural character. Prune trees and shrubs according to standard horticultural practice. Tree sizes indicated are sizes after pruning. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.
- B. Remove all nursery ties, tape, ribbons and wire from branches and trunk. Remove all nursery plant identification labels and tags when approved and directed by ENGINEER.

3.6. GUYING AND STAKING

- A. Upright Staking and Tying: Stake all trees indicated. Use stakes of length required as indicated on drawings and to extend to height indicated above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire and webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Monitor plantings and add additional staking if required.

3.7. BARK MULCH

- A. Cover all beds with minimum of three inch depth of bark mulch. Keep mulch four inches from all trunks and canes. Ensure even coverage.
- B. For trees and shrubs planted in lawn areas, place a minimum three inch depth of mulch around tree trunks to a distance of three feet around trunk. Keep mulch four inches from all trunks.

3.8. PLANT MAINTENANCE

- A. Tree and Shrub Maintenance: Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, and resetting to proper

SPECIAL PROVISIONS

grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease.

- B. Protect plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

3.9. ACCEPTANCE

- A. Inspection to determine acceptance of planted areas will be made by the Owner, upon Contractor's request. Provide notification at least ten (10) working days before requested inspection date.
 - 1. Planted areas will be accepted provided all requirements, including the maintenance period have been complied with and plant materials are alive and in a healthy, vigorous condition.
- B. Upon final completion of the work the City and Borough of Juneau will assume plant maintenance.

3.10. TREE GRATES

- A. Install tree grates at each street tree in concrete sidewalk. Install with matching frame as per manufacturer's instructions and as shown in the Drawings.

3.11. HABITAT LOGS

- A. Keep branches on, but cut to within 12" of trunk. Size as noted. Stake out for approval prior to installation.
- B. Locate to create natural appearance as directed by Engineer.

3.12. SNAGS

- A. Cut various cavities into the snags before placement; quantities provided by Owner are shown on Drawings. See Drawings for snag installation. Stake out for approval prior to installation.
- B. Locate to create natural appearance as directed by Engineer.

3.13. ROOT WADS

- A. 75% of the root wads are to be placed upright, and 25% on their sides, to provide underwater "umbrellas," See Drawings for anchoring and placement requirements. Stake out for approval prior to installation.
- B. Locate to create natural appearance as directed by Engineer.

3.14. LANDSCAPE BOULDERS

- A. Layout each boulder with stakes. Engineer shall approve layout prior to installation
 - 1. Install per drawings.

END OF SECTION

SPECIAL PROVISIONS

SECTION 02720 – PAINTED TRAFFIC MARKINGS

PART 2 – PRODUCTS

ARTICLE 2.1 MATERIAL

Revise paragraph A as follows:

- A. Traffic markings shall be alkyd pavement markings conforming to the requirements of AASHTO M 248, Type F.

END OF SECTION

Add the following Section:

SECTION 02821 – CHAIN-LINK FENCES

PART 1 – PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes chain-link fences and swing gates.

1.2. PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
 - 1. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified and on the following:
 - a. Wind Loads: See structural drawings.
 - b. Exposure Category: See structural drawings.
 - c. Fence Height: 8 feet.
 - d. Material Group: IA, ASTM F 1043, Schedule 40 steel pipe.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of product indicated
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For chain-link fences and gate framework indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4. INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of chain-link fence and gate, from manufacturer.

SPECIAL PROVISIONS

- B. Product Test Reports: For framing strength according to ASTM F 1043.
- C. Sample of special warranty.

1.5. WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1. CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:
 - 1. Fabric Height: 96".
 - 2. Steel Wire Fabric: Wire with a diameter of 0.192 inch.
 - a. Mesh Size: 2-1/8 inches.
 - b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied after weaving.
 - 3. Selvage: Knuckled at both selvages.

2.2. FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
 - 1. Fence Height: 96 inches.
 - 2. Heavy Industrial Strength: Material Group IA, round steel pipe, Schedule 40. Retain first subparagraph below if size is critical. According to ASTM F 1043, first four options are for both types of round pipe, fifth option is for Schedule 40 pipe only, and the last three options are for roll-formed steel C-section shapes.
 - a. Line Post: 2.375 inches in diameter.
 - b. End, Corner and Pull Post: 2.375 inches in diameter.
 - 3. Horizontal Framework Members: Intermediate top and bottom rails complying with ASTM F 1043.
 - 4. Brace Rails: Comply with ASTM F 1043.
 - 5. Metallic Coating for Steel Framing:
 - a. Type A zinc coating.

SPECIAL PROVISIONS

2.3. TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch diameter, marcelled tension wire complying with ASTM A 817 and ASTM A 824, with the following metallic coating:
 - 1. Type II, zinc coated with minimum coating weight matching chain-link fabric coating weight.

2.4. SWING GATES

- A. General: Comply with ASTM F 900 for gate posts and single swing gate types.
 - 1. Gate Leaf Width: As indicated.
 - 2. Gate Fabric Height: 96 inches.
- B. Pipe and Tubing:
 - 1. Zinc-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framing.
 - 2. Gate Posts: Round tubular steel.
 - 3. Gate Frames and Bracing: Round tubular steel.
- C. Frame Corner Construction: Welded.
- D. Hardware:
 - 1. Hinges: 180-degree outward swing.
 - 2. Latches permitting operation from exterior sides of gate with provision for padlocking accessible from exterior.

2.5. PRIVACY SLATS

- A. Material: PVC, UV-light stabilized, flame resistant, four ply, not less than 0.023 inch (0.58 mm) thick; sized to fit mesh specified for direction indicated.
- B. Color: To match adjacent fence.

2.6. GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 – PART 3 – EXECUTION

3.1. INSTALLATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

SPECIAL PROVISIONS

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
- D. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- E. Post Setting: Set posts in concrete.
 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
- F. Privacy Slats: Install slats in direction indicated, securely locked in place.
 1. Vertically
- G. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
- H. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION

Add the following Section:

SECTION 02860 – UNDERSEA GARDEN

PART 1 – GENERAL

1.1. SUMMARY

- A. Furnish all material, labor, services and related items required to complete surfacing construction work indicated on Drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to:
- B. Garden surfacing sub-grade preparation (coordinate with Section 02202 – Excavation and Embankment)
- C. Tumbled Glass surfacing, cobble surfacing, luminescent glass stone surfacing, and associated work.
- D. This Section includes the following undersea garden elements and materials:

SPECIAL PROVISIONS

1. Polyfibercrete Creatures
 2. Metal Art.
 3. Tumbled Glass Surfacing
 4. Luminescent Glass Surfacing
- E. Related Sections include the following:
1. Section 02202 – Excavation and Embankment, for excavation for installation of concrete footings and subgrade preparation for garden surfacing.
 2. Section 02370 – Shore Protection, for gravel and cobble materials.
 3. Section 03300 – Cast in Place Concrete, for installation of anchor bolts cast in place concrete footings.
- F. Products furnished, but not installed under this Section, include anchor bolts to be cast in concrete footings.

1.2. SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, field-assembly requirements, and installation details for approval.
1. Certified test lab report of the sieve analysis of the following:
 - a. Pea Gravel
- B. Samples for Initial Selection: For units with factory-applied color finishes.
- C. Samples: Submit each of the following in sealed plastic bags labeled with material name, size, and supplier.
1. Pea Gravel (1 lb)
 2. 10” minus Cobble & 3” minus Cobble (5 lb)
 3. Core Glow Marble (1 lb)
 4. Tumbled Glass (1 lb)
- D. Product Schedule: For undersea garden elements and materials. Use same designations indicated on Drawings.
- E. Maintenance Data: For undersea garden elements to include in maintenance manuals.

1.3. QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of undersea garden element and material through one source from a single manufacturer.

PART 2 – PRODUCTS

2.1. MANUFACTURERS AND PRODUCTS

- A. Undersea Garden Element Products: Subject to compliance with requirements, provide the following or approved equal in quantities indicated on drawings:
1. PolyFiberCrete®” Creatures with custom handcrafted mosaic tiles as fabricated by Universal Precast Concrete Inc. and supplied by UPC Parks, or approved equal:

SPECIAL PROVISIONS

<http://www.upcparks.com/upcparks-creatures.html>

Contact: 530-605-2664

Northwest Supplier: Bob McGarvey

Northwest Playground Equipment, Inc.

ph:1-800-726-0031

www.nwplayground.com

2. Metal Crab Art shall be supplied by Cattle Point Rock and Topsoil:

933 Cattle Point Road, Friday Harbor, WA

98250 <http://www.cprockandtopsoil.com/>

ph: 360-378-6300.

2.2. MATERIALS

A. Pea Gravel

1. Pea Gravel shall be clean, naturally occurring, rounded to subrounded granular material (river run or processed glacial outwash deposits) free from objectionable materials. The Contractor shall supply a sample of Pea Gravel to be supplied to the project, prior to installation, for approval by the Owner. Pea Gravel shall have such characteristics of size and shape that it will meet the following requirements for gradation:

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	55-100
1/4 inch	10-50
U.S. No. 4	5-15
U.S. No. 8	1-5
U.S. No. 16	< 1

All percentages are by weight.

B. Luminescent Glass Stone Surfacing:

1. “Core Glow Marble”,
Size: 8mm- 15mm (0.3”-0.6”)
Color: green
As manufactured by Core Glow Inc., <https://coreglow.ca/>, or approved equal.
 - a. Type 1: 100% Core Glow Marble, 1” depth
 - b. Type 2: Luminescent Glass Stone and Pea Gravel Mix shall be a 50:50 mix by volume of Core Glow Marble and Pea Gravel.

C. Tumbled Glass Surfacing:

1. Seamix Small Tumbled Glass Cullet, ¼” x ¼” to ¼” x ¾” size, as manufactured by Bedrock Industries, Inc.:

<http://bedrockmosaicglass.com/shop/seamix-small-tumbled-glass-cullet/>

SPECIAL PROVISIONS

D. Cobble with Pea Gravel:

1. Cobble shall be a 50:50 mix (by volume) of 10" minus and 3" minus cobble with 3" of Pea Gravel placed on top as directed by Engineer.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated.
- B. Unless otherwise indicated, install undersea garden elements after landscaping, surfacing and paving have been completed.
- C. ENGINEER to approve location of undersea garden elements prior to installation. Install undersea garden elements level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Coordinate with artist of City provided and installed Bull Kelp Art as required..

3.3. EXCAVATION FOR UNDERSEA GARDEN SURFACING

- A. Cut surface under garden surfacing materials to comply with cross section, elevations and grades as indicated and to allow for material depths as indicated below. Depth of base material, if any, shall be taken into consideration.

3.4. COMPACTION

- A. General: Control soil compaction during construction providing minimum percentage of density specified for area classification.
- B. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages for maximum dry density and within 3 percent of optimum moisture content for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D698; and not less than the following percentages of relative density; determined in accordance with ASTM 2049, for soils which will not exhibit a well-defined moisture density relationship (cohesionless soils).
 1. Concrete footing excavations:
 - a. Prepared subgrade soil 95%
 - b. Import aggregate base material 95%
 2. Luminescent Glass Stone Surfacing, Cobble with Pea Gravel Surfacing and Tumbled Glass Surfacing:
 - a. Subgrade soils 85%.

SPECIAL PROVISIONS

3. Luminescent Glass Stone Surfacing, Cobble with Pea Gravel Surfacing and Tumbled Glass Surfacing: Allow natural settling
 4. Mineral soil fill/common fill areas 75%
- C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. Before compaction, moisten or aerate each layer as necessary to provide optimum content. Compact each layer to required percentages of maximum dry density or relative dry density for each area classification.
- D. Undersea Garden Material Placement Depths:
1. Cobble and Pea Gravel Surfacing: 8 inch depth (min.) and as per the Drawings.
 2. Tumbled Glass Surfacing: 4 inch depth
 3. Luminescent Glass Stone Surfacing Type 1: 2 inch depth
 4. Luminescent Glass Stone Surfacing Type 2: 2 inch depth

END OF SECTION

Add the following Section:

SECTION 02870 – SITE FURNISHINGS

PART 1 – GENERAL

1.1. SUMMARY

- A. This Section includes the following site and street furnishings:
1. Freestanding Benches.
 2. Picnic Tables.
 3. Table Type A (Café Tables)
 4. Chair Type A (Café Chairs)
 5. Whale Tail Bench
 6. Trash Receptacle
 7. Bollard
 8. Removable Bollard
 9. Post-mounted Barbeque Grills
 10. Bike Racks
 11. Drinking Fountain
- B. Related Sections include the following:
1. Section 02202 – Excavation and Embankment, for excavation for installation of concrete footings.
 2. Section 03300 – Cast in Place Concrete, for installation of anchor bolts cast in concrete footings.
 3. Section 02502 – Storm Sewer Manholes, Inlets and Catch Basins
 4. Section 02605 – Water Services

SPECIAL PROVISIONS

- C. Products furnished, but not installed under this Section, include anchor bolts to be cast in concrete footings.

1.2. SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, field-assembly requirements, and installation details for approval.
- B. Samples for Initial Selection: For units with factory-applied color finishes.
- C. Product Schedule: For site and street furnishings. Use same designations indicated on Drawings.
- D. Maintenance Data: For site and street furnishings to include in maintenance manuals.

1.3. QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of site and street furnishings through one source from a single manufacturer.

PART 2 – PRODUCTS

2.1. MANUFACTURERS AND PRODUCTS

- A. Products: Subject to compliance with requirements, provide the following or approved equal in quantities indicated on drawings:
 - 1. Freestanding Benches: Type A
Maglin MLB720W with IPE slat seat and back with powder coated cast aluminum frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options.
 - 2. Free Standing Curved Benches: Type B
Maglin LXM1500-SS-IPELR-4 with IPE slat seat and powder coated cast aluminum frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options. Legs: Style 1 Armless LXM1500-E1.
 - 3. Freestanding Benches: Type C
Maglin MLB720B-W with IPE slat seat and powder coated cast aluminum frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options
 - 4. Picnic Tables: Type A – 4 bench
Apex STAPX-4BJ table with 4 bench seats. Jatoba slats with cast aluminum powder coated frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options.
 - 5. Picnic Tables: Type B - 3 bench (ADA)
Apex STAPX-3B table with 3 bench seats Jatoba slats with cast aluminum powder coated frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options.

SPECIAL PROVISIONS

6. Picnic Tables: Type C - 2 bench (ADA)

Apex STAPX-2BJ table with 2 bench seats Jatoba slats with cast aluminum powder coated frame. Frame color to be selected by Project Engineer from manufacturer's full range of color options.

7. Table Type A:

Landscape Forms Parc Centre Table: 30" round, table top formed of stainless steel with custom all stainless steel legs and (17" diameter) base plate. Free standing with adjustable levelers. Stainless Steel finish or Powdercoat color to be selected by ENGINEER from manufacturer's full range of color options.

Landscape Forms, Inc.
431 Lawndale Avenue
Kalamazoo, Michigan 49048
Toll Free (800) 521-2546
Phone (269) 381-0396

8. Chair Type A:

Landscape Forms, Inc. "Catena" Chair, free standing:

a. Size:

- i. Depth: 23 inches.
- ii. Height: 30 inches.
- iii. Width: 21 inches.
- iv. Seat Height: 17-1/2 inches.

b. Legs and Frame:

- i. -0.875-inch O.D. by 0.125-inch wall
- ii. -Insert rod 5/8-inch diameter.

c. Spindles: 3/16-inch diameter, stainless steel wire, Type 304.

d. Glides: 7/8-inch round swivel glide with retaining clip with stainless steel platform.

e. Stem Bumper: 1/2-inch head.

f. Seat Bumper: 0.77-inch O.D. by 0.38-inch tall

g. Materials:

- i. Seat Panel: 356-T5 cast aluminum, permanent mold ASTM B 108, heat treated.
- ii. Legs and Frame: 6061-T4 extruded aluminum, ASTM B 221
- iii. Spindles: Stainless steel wire, Type 304.
- iv. Stem Bumper: Clear vinyl
- v. Seat Bumper: non-marring black polyethylene.

h. FINISHES

- i. Primer: Rust inhibitor.

SPECIAL PROVISIONS

- ii. Topcoat: Thermosetting polyester powdercoat. UV, chip, and flake resistant.

Powdercoat color to be selected by ENGINEER from manufacturer's full range of color options.

9. Whale Tail Bench:

Aluminum Whale Tail Bench by Blastworks Art & Sign, or approved equal. 6' wide x 6' long x 20" seat height. Installation Method: Underground Hidden Mount / Slab Not Visible as per manufacturer's specifications and modified with brick paver installation over hidden slab.

Provide exposed aluminum finish.

<http://www.blastworks.ca/whale-tail-bus-bench.html>; (250) 713-1665.

10. Trash Receptacles:

Bear Saver, Model: HA-P, 32 gallon capacity, or approved equal, with standard supplied receptacle. Non-locking type. Installation Method: Anchored to wood deck as recommended by manufacturer. Steel Finish: Powder coated. Color: Black. 1390 S. Milliken Ave, Ontario, CA 91761, (909) 605-1697

11. Multi-level Park & Camp Grill:

Model 136-1022 by The Park and Facilities. 18" x 24" x 10" firebox. All 3/16" steel plate. 5/8" diameter steel bar adjustable grate. Heat-resistant paint. 3-1/2" diameter pipe 40" height designed for embedment in concrete foundation.

12. Bike Rack Type A:

Brushed stainless steel custom designed Juneau fin bike rack by DERO, or approved equal "JUNEAU FIN" (DWG #1000690-A)
Size: 30" Wide x 40" Tall

Installation as per manufacturer's directions and as per the Drawings. Provide in-grade mount where bike racks are not on concrete pavement.

(1-888-337-6729); <http://www.dero.com/>

13. Bike Rack Type B:

Brushed stainless steel ribbon bike rack by A A A RIBBON BIKE RACK CO. Size: 3' H x 6' L, or approved equal.

Installation as per manufacturer's directions and as per the Drawings. Provide in-grade mount where bike racks are not on concrete pavement.

A A A RIBBON BIKE RACK CO.
Division of: BRANDIR INTERNATIONAL, INC.
521 Fifth Avenue, 17th Floor
New York NY 10175-1799 USA

SPECIAL PROVISIONS

Phone: 800-849-3488
Email: info@ribbonrack.com
Web: ribbonrack.com

14. Drinking Fountain:
Halsey Taylor Dual Station with Pet Fountain, Model 4420BFDB. ADA accessible fountain ,or approved equal

Unit shall include powder-coated finish with vandal-resistant pushbutton actuation, vandal-resistant bubblers with integral hood guard, and contour-formed rounded basins to reduce splash and prevent standing water. Bottle Filler shall include a laminar flow for minimal splash and provide 1 gallon per minute fill rate. Shall comply with ADA standards and by certified to lead-free compliance including NSF/ANSI 61-Annex G, AB1953.

Powdercoat color to be selected by ENGINEER from manufacturer's full range of color options.

Install as per manufacturer's specifications and as shown in the Drawings.

Manufacturer: Halsey Taylor, 2222 Camden Court, Oak Brook, IL 60523

15. Bollard:
Provide and install as shown on the drawings. Powder coated aluminum color selection by Engineer.
16. Removable Bollard:
Provide and install as shown on the drawings. Powder coated aluminum color selection by Engineer.

2.2. MATERIALS

- A. Steel: Free from surface blemishes and complying with the following:
1. Plates, Shapes, and Bars: ASTM A 36/A 36M.
 2. Steel Pipe: Standard-weight steel pipe complying with ASTM A 53, or electric-resistance-welded pipe complying with ASTM A 135.
 3. Tubing: Cold-formed steel tubing complying with ASTM A 500.
 4. Mechanical Tubing: Cold-rolled, electric-resistance-welded carbon or alloy steel tubing complying with ASTM A 513, or steel tubing fabricated from steel complying with ASTM A 569/A 569M and complying with dimensional tolerances in ASTM A 500; zinc coated internally and externally.
 5. Sheet: Commercial steel sheet complying with ASTM A 569/A 569M.
- B. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, non-corrodible materials; commercial quality; concealed, recessed, and capped or plugged. Provide as required for site and street furnishings' assembly, mounting, and secure attachment.

SPECIAL PROVISIONS

2.3. FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Steel and Iron Components: Galvanized, galvanized and color coated, or color coated. Bare metal steel or iron components are not permitted.
- E. Exposed Surfaces: Polished, sanded, or otherwise finished; smooth all surfaces, free from burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- F. Factory Assembly: Assemble components in the factory to the greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.4. FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.5. STEEL AND GALVANIZED STEEL FINISHES

- A. Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, polyester-TGIC, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

SPECIAL PROVISIONS

3.2. INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated. Complete field assembly of site furnishings, where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. ENGINEER to approve location of furnishings prior to installation. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.

3.3. CLEANING

- A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION

Add the following Section:

SECTION 03300 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections:
 - 1. Division 02 Section "Earth Moving" for drainage fill under slabs-on-grade.
 - 2. Division 02 Section "Concrete Paving" for concrete pavement and walks.

1.2. DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.3. SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.

SPECIAL PROVISIONS

- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
 - D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
 - 1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.
 - E. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
 - F. Qualification Data: For testing agency.
 - G. Welding certificates.
 - H. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Curing compounds.
 - 6. Adhesives.
 - 7. Joint-filler strips.
 - 8. Repair materials.
 - I. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - 1. Aggregates: Include service record data, per ASTM C 1260, indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
 - J. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
 - K. Field quality-control reports.
 - L. Minutes of preinstallation conference.
- 1.4. QUALITY ASSURANCE
- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
 - B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

SPECIAL PROVISIONS

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician – Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- E. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code – Reinforcing Steel."
- F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301, "Specifications for Structural Concrete,"
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- H. Pre-Construction Conference: Conduct conference at Owner's office.
 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - e. Special concrete finish subcontractor.
 - f. Owner and Architect
 2. Unless previously submitted to the ARCHITECT, the CONTRACTOR shall bring to the Pre-Construction Conference on copy each of the following:
 - a. Plan of Operation.
 - b. Project Overview Bar Chart Schedule.
 - c. Procurement schedule of major equipment and materials and items requiring long lead time.
 - d. Shop Drawing/Sample/Substitute or "Or Equal" submittal schedule.

SPECIAL PROVISIONS

- e. Name and telephone number of CONTRACTOR's Project Supervisor.
 - f. Erosion Control Plan.
3. The purpose of the Pre-Construction Conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established.
4. The CONTRACTOR should be prepared to discuss all of the items listed below:
- a. Status of CONTRACTOR's insurance and bonds.
 - b. CONTRACTOR's tentative schedules.
 - c. Transmittal, review, and distribution of CONTRACTOR's submittals.
 - d. Processing applications for payment.
 - e. Maintaining record documents.
 - f. Critical work sequencing.
 - g. Field decisions and Change Orders.
 - h. Use of Project site, office and storage areas, security, housekeeping, and OWNER's needs.
 - i. Major equipment deliveries and priorities.
 - j. CONTRACTOR's assignments for safety and first aid.
5. The OWNER will preside at the Pre-Construction Conference and will arrange for keeping and distribution the minutes to all persons in attendance.

I. Progress Meetings

1. The CONTRACTOR shall schedule and hold regular on-site progress meetings at least weekly and at other times as requested by the Engineer, or as required by progress of the WORK. The CONTRACTOR, ARCHITECTS, and all Subcontractors active on the site must attend each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers, and other Subcontractors.
2. The Engineer shall preside at the meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings will be to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop. During each meeting, the CONTRACTOR is required to present any issues which may impact the WORK, with a view toward resolving these issues expeditiously.

1.5. DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

SPECIAL PROVISIONS

PART 2 – PRODUCTS

2.1. FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - c. Structural 1, B-B or better; mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.2. STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- C. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- D. Plain-Steel Wire: ASTM A 82/A 82M.

SPECIAL PROVISIONS

- E. Deformed-Steel Wire: ASTM A 496/A 496M.

2.3. REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4. CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I, Type III gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
 - 2. Blended Hydraulic Cement: ASTM C 595, Type IS, Portland blast-furnace slag cement.
- B. Silica Fume: ASTM C 1240, amorphous silica.
- C. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 94/C 94M and potable.

2.5. ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

SPECIAL PROVISIONS

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- C. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Axim Italcementi Group, Inc.; CATEXOL CN-CI.
 - b. BASF Construction Chemicals – Building Systems; Rheocrete CNI.
 - c. Euclid Chemical Company (The), an RPM company; ARRMATECT.
 - d. Grace Construction Products, W. R. Grace & Co.; DCI.
 - e. Sika Corporation; Sika CNI.
- D. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals – Building Systems; Rheocrete 222+.
 - b. Cortec Corporation; MCI- 2000.
 - c. Grace Construction Products, W. R. Grace & Co.; DCI-S.
 - d. Sika Corporation; FerroGard 901.

2.6. CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Axim Italcementi Group, Inc.; CATEXOL CimFilm.
 - b. BASF Construction Chemicals – Building Systems; Confilm.
 - c. ChemMasters; SprayFilm.
 - d. Conspec by Dayton Superior; Aquafilm.
 - e. Dayton Superior Corporation; Sure Film (J-74).
 - f. Edoco by Dayton Superior; BurkeFilm.
 - g. Euclid Chemical Company (The), an RPM company; Eucobar.
 - h. Kaufman Products, Inc.; Vapor-Aid.
 - i. Lambert Corporation; LAMBCO Skin.
 - j. L&M Construction Chemicals, Inc.; E-CON.

SPECIAL PROVISIONS

- k. Meadows, W. R., Inc.; EVAPRE.
 - l. Metalcrete Industries; Waterhold.
 - m. Nox-Crete Products Group; MONOFILM.
 - n. Sika Corporation; SikaFilm.
 - o. SpecChem, LLC; Spec Film.
 - p. Symons by Dayton Superior; Finishing Aid.
 - q. TK Products, Division of Sierra Corporation; TK-2120 TRI-FILM.
 - r. Unitex; PRO-FILM.
 - s. Vexcon Chemicals, Inc.; Certi-Vex Envio Set.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
- a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
 - b. BASF Construction Chemicals – Building Systems; Kure 200.
 - c. ChemMasters; Safe-Cure Clear.
 - d. Conspec by Dayton Superior; W.B. Resin Cure.
 - e. Dayton Superior Corporation; Day-Chem Rez Cure (J-11-W).
 - f. Edoco by Dayton Superior; Res X Cure WB.
 - g. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
 - h. Kaufman Products, Inc.; Thinfilm 420.
 - i. Lambert Corporation; AQUA KURE – CLEAR.
 - j. L&M Construction Chemicals, Inc.; L&M Cure R.
 - k. Meadows, W. R., Inc.; 1100-CLEAR.
 - l. Nox-Crete Products Group; Resin Cure E.
 - m. Right Pointe; Clear Water Resin.
 - n. SpecChem, LLC; Spec Rez Clear.
 - o. Symons by Dayton Superior; Resi-Chem Clear.
 - p. TK Products, Division of Sierra Corporation; TK-2519 DC WB.
 - q. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

2.7. RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240.

SPECIAL PROVISIONS

- C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - 1. Types IV and V, load bearing for bonding hardened or freshly mixed concrete to hardened concrete.

2.8. REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 - 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.9. CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of Portland cement, which would otherwise be used, by not less than 40 percent. Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
 - 1. Fly Ash: 25 percent.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 50 percent.

SPECIAL PROVISIONS

4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent Portland cement minimum, with fly ash or pozzolan not exceeding 25 percent and silica fume not exceeding 10 percent.
 5. Silica Fume: 10 percent.
 6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
 7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.10. CONCRETE MIXTURE

- A. Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 5000 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.40.
 3. Slump Limit: 5 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

2.11. FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12. CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

SPECIAL PROVISIONS

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 – EXECUTION

3.1. FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 2. Class C, 1/2 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 1. Install keyways, reglets, recesses, and the like, for easy removal.
 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

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- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2. EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3. REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4. SHORES AND RESHORES

- A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
 - 1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
- B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5. STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

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- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6. JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Locate horizontal joints in walls at the top of footings.
 - 3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 5. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.7. CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

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- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8. FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Rubbed Finish: Apply the following to smooth-form-finished as-cast concrete where exposed:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another

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abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9. MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.10. CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

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3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.11. JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12. CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

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- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 5. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 6. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.13. FIELD QUALITY CONTROL

- A. Testing and Inspecting: OWNER shall engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:
1. Steel reinforcement placement.
 2. Steel reinforcement welding.
 3. Headed bolts and studs.
 4. Verification of use of required design mixture.

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5. Concrete placement, including conveying and depositing.
 6. Curing procedures and maintenance of curing temperature.
 7. Verification of concrete strength before removal of shores and forms from beams and footings.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 7. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
 8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 10. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of

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compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

SECTION 03303 – SIDEWALK, CURB AND GUTTER

PART 2 – PRODUCTS

ARTICLE 2.1 MATERIALS

Revise paragraph B. to read:

- B. Synthetic fibers shall be used for reinforcement with curb and gutter and concrete sidewalk replacements, except a 6-foot length of No. 4 reinforcing bar shall be centered across catch basins centered in the curb. Except as described above, reinforcing steel or wire mesh shall not be used unless approved by the ENGINEER. Sidewalks shall utilize Fibermesh 150, or approved equal. Curbs, gutters and driveways shall utilize a fibrillated product, Fibermesh 300, or approved equal. Application rates of both products shall be at least 1.5 pounds per cubic yard of concrete. Fibermesh shall be as manufactured by "SI Concrete Systems," or approved equal.

END OF SECTION

Add the following Section:

SECTION 04200 – UNIT MASONRY

PART 1 – GENERAL

1.1. SUMMARY

- A. Section Includes:

1. Concrete masonry units.

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1.2. DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
- C. Samples for Verification: For each type and color of exposed masonry unit and colored mortar.

1.4. INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product. For masonry units, include material test reports substantiating compliance with requirements.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5. FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 – PRODUCTS

2.1. UNIT MASONRY GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work

2.2. CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

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1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions
 - B. Integral Water Repellent: Provide units made with integral water repellent for exposed units
 - C. Decorative CMUs: ASTM C 90.
 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
 2. Density Classification: Normal weight.
 3. Pattern and Texture: Standard pattern, ground-face finish.
- 2.3. MORTAR AND GROUT MATERIALS
- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - B. Hydrated Lime: ASTM C 207, Type S.
 - C. Portland Cement-Lime Mix: Packaged blend of Portland cement and hydrated lime containing no other ingredients.
 - D. Masonry Cement: ASTM C 91/C 91M.
 - E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.
 - F. Colored Cement Products: Packaged blend made from Portland cement and hydrated lime or masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 1. Colored Portland Cement-Lime Mix
 2. Colored Masonry Cement
 - G. Aggregate for Mortar: ASTM C 144.
 1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
 - H. Aggregate for Grout: ASTM C 404.
 - I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 - J. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
 - K. Water: Potable.

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2.4. REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

2.5. MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.6. MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
- B. Do not use calcium chloride in mortar or grout.
- C. Use Portland cement-lime mortar unless otherwise indicated
- D. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- E. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- F. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. For reinforced masonry, use Type S.
- G. Pigmented Mortar: Use colored cement product. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
 - 1. Mix to match Architect's sample.
 - 2. Application: Use pigmented mortar for exposed mortar joints with the following units: Decorative CMUs.
- H. Grout for Unit Masonry: Comply with ASTM C 476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 - 2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 - 3. Provide grout with a slump of 6 to 9 inches as measured according to ASTM C 143/C 143M.

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PART 3 – EXECUTION

3.1. INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

3.2. TOLERANCES

- A. Dimensions and Locations of Elements
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
 - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
- C. Joints
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
 - 2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch

3.3. LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

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- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4. MORTAR BEDDING AND JOINTING

- A. Bed face shells in mortar and make head joints of depth equal to bed joints.
- B. Bed webs in mortar in all courses of piers, columns, and pilasters.
- C. Bed webs in mortar in grouted masonry, including starting course on footings.
- D. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated

3.5. ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
- B. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
- C. Anchor masonry with anchors embedded in masonry joints and attached to structure.
- D. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.6. REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
- B. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- C. Placing Reinforcement: Comply TMS 602/ACI 530.1/ASCE 6
- D. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height. Limit height of vertical grout pours to not more than 60 inches.

SPECIAL PROVISIONS

3.7. FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: 1 set of tests.
- D. Testing Frequency: 1 set of tests for each 5000sf of wall area or portion thereof.
- E. CMU Test: Per ASTM C 140 – compressive strength.
- F. Mortar Test: Per ASTM C780 – air content and compressive strength
- G. Grout Test: Per ASTM C1019 – compressive strength

3.8. REPAIRING, POINTING AND CLEANING

- A. Clean work as it progresses – dry brush joints.
- B. Final Cleaning: After mortar cured:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
 - 3. Protect adjacent surfaces from contact with cleaner.
 - 4. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION

Add the following Section:

SECTION 05120 – STRUCTURAL STEEL FRAMING

PART 1 – PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes structural steel and grout.

1.2. DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3. SUBMITTALS

- A. Product Data: For each type of product indicated.

SPECIAL PROVISIONS

- B. Shop Drawings: Show fabrication of structural-steel components.
- C. Qualification Data: For qualified Installer, fabricator, and testing agency.
- D. Welding certificates.
- E. Mill test reports for structural steel, including chemical and physical properties.
- F. Source quality-control reports.

1.4. QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD or SBR.
 - 1. In lieu of AISC certifications above, the CONTRACTOR shall provide independent special inspection of the shop fabrication and welding at the CONTRACTOR's expense. The CONTRACTOR shall submit the name and qualifications of the inspector to the CBJ for review and approval.
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code – Steel."
- D. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 341.
 - 3. AISC 360.
 - 4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- E. Preinstallation Conference: Conduct conference at owner's office.

PART 2 – PRODUCTS

2.1. STRUCTURAL-STEEL MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
 - 1. W-Shapes, WT-Shapes: ASTM A 992 or ASTM A 572, Grade 50.
 - 2. Channels, Angles: ASTM A 36.
 - 3. Plate and Bar: ASTM A 36.
 - 4. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
 - 5. Steel Pipe: ASTM A 53, Type E or S, Grade B.
 - 6. Welding Electrodes: Comply with AWS requirements.

SPECIAL PROVISIONS

2.2. BOLTS, CONNECTORS, AND ANCHORS

- A. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.
 - 1. Finish: Hot-dip zinc coating.
 - 2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating finish.
- B. Dacromet-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.
 - 1. Finish: Dacromet-Coating per ASTM F 1136.
 - 2. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with Dacromet finish.
 - a. Unheaded Anchor Rods: ASTM F 1554, Grade 55 with supplement S1, weldable, unless noted otherwise.
 - 3. Configuration: Straight.
 - 4. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - a. Headed Anchor Rods: ASTM F 1554, Grade 55 with supplement S1, weldable, straight, unless noted otherwise.
 - 5. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - a. Threaded Rods: ASTM A 36 or ASTM A 193, Grade B7.
 - 6. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

2.3. GROUT

- A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.4. FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

2.5. SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened.

SPECIAL PROVISIONS

- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.6. SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.

2.7. GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to all structural steel according to ASTM A 123/A 123M, unless noted otherwise.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.

SPECIAL PROVISIONS

3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3. FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
1. Joint Type: Snug tightened, unless noted otherwise.
- B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

3.4. FIELD QUALITY CONTROL

- A. Testing Agency: OWNER shall engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
1. In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 05500 – METAL FABRICATIONS

PART 1 – PART 1 – GENERAL

1.1. SUMMARY

- A. This Section includes metal fabrications for construction of structural steel, timber decking, handrails, seatwalls and other associated construction.

1.2. SUBMITTALS

- A. Product Data: For the following:
 - 1. Grout.
 - 2. Drilled-in anchor bolt resins.
 - 3. Stainless Steel cable railing and connectors.
- B. Shop Drawings: Detail fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
 - 1. Provide templates for anchors and bolts specified for installation under other Sections.
- C. Samples for Verification: For each type and finish of extruded stair tread.
- D. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.
- E. Welding Certificates: Copies of certificates for welding procedures and personnel.
- F. ICBO Certificates: Copies of certificates for anchor bolt resins.

1.3. QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- B. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1, “Structural Welding Code--Steel.”
 - 2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.4. PROJECT CONDITIONS

- A. Field Measurements: Where metal fabrications are indicated to fit existing construction, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the WORK.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the WORK, establish dimensions and proceed with

SPECIAL PROVISIONS

fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting.

1.5. COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete. Deliver such items to Project site in sufficient time for installation.

PART 2 – PRODUCTS

2.1. METALS, GENERAL

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed WORK, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

2.2. FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36.
- B. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.
- C. Steel Pipe: ASTM A 53, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.
- D. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

2.3. STAINLESS STEEL CABLE RAILING AND ACCESSORIES:

- A. Cable: Stainless Steel, 1x19, semi-rigid.
- B. Turnbuckles: Terminator model, as manufactured by CS Johnson Co., or equal.
- C. Fasteners and Washers: Building Fasteners, or equal.
- D. Provide Stainless Steel Ball end terminal posts at terminal ends at stairs. CS Johnson or approved equal.

2.4. PAINT

- A. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds and damaged surfaces in steel, complying with SSPC-Paint 20, in accordance with ASTM A 780.

2.5. FASTENERS

- A. General: Provide Type 316 stainless-steel fasteners or hot-dipped galvanized steel fasteners, as indicated. Select fasteners for type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and flat washers.
- C. Post-Installed Anchor Bolts:

SPECIAL PROVISIONS

1. Unheaded Rods: Stainless Steel (Type 316) (ASTM A 276, UNS S31603).
2. Nuts: Stainless Steel (Type 316) (ASTM F 594, Group 2).
3. Washers: Stainless Steel (Type 316).
4. Anchor Bolt Resin: Injectable two component resin based system shall have International Code Council (ICC) Certification for use in cracked concrete in Seismic Design Category D

2.6. GROUT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7. FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
 1. Shear and punch metals cleanly and accurately. Remove burrs.
 2. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing WORK.
- B. Weld corners and seams continuously to comply with the following:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- C. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- D. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- E. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.
- F. Form exposed WORK true to line and level with accurate angles and surfaces and straight sharp edges.
- G. Remove sharp or rough areas on exposed traffic surfaces.

2.8. LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
 1. Galvanize plates after fabrication.

SPECIAL PROVISIONS

2.9. MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports that are not a part of structural-steel or pier timber WORK framework as necessary to complete the WORK.
 - 1. General: Provide steel framing and supports indicated and as necessary to complete the WORK.
 - 2. Fabricate units from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.

2.10. STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize all items to comply with applicable standard listed below:
 - 1. ASTM A 123, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- B. Zinc-based alloy solders: For field coatings of welds and damaged surfaces, apply in accordance with ASTM A 780.

PART 3 – EXECUTION

3.1. INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners for securing metal fabrications to in-place construction.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- E. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Corrosion Protection: Coat all damaged surfaces with zinc-based alloy solders followed by galvanizing repair paint in accordance with ASTM A 780.

SPECIAL PROVISIONS

3.2. SETTING BEARING AND LEVELING PLATES

- A. Clean concrete bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
 - 1. Use nonshrink grout.
 - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.3. INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings, if any.
- B. Support steel girders on solid concrete as indicated.
 - 1. Where grout space under bearing plates is indicated at girders supported on concrete, install as specified above for setting and grouting bearing and leveling plates.

3.4. ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780, coating with zinc-based alloy solders followed by high-zinc-dust-content paint.

3.5. POST-INSTALLED ANCHOR BOLTS

- A. Post-installed anchor bolts shall be installed in strict accordance with manufacturer's instructions. At a minimum, anchor bolt holes shall be embedded into existing concrete, where indicated, 10 anchor bolt diameters.
- B. Anchor bolts shall be embedded in the locations indicated either by percussive or core drilling at the CONTRACTOR's option. If existing reinforcing is encountered in the locations indicated, that reinforcing shall be removed by use of a core drill.

END OF SECTION

Add the following Section:

SECTION 05511 – METAL GRATING STAIR TREADS

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes galvanized steel-grating treads.

SPECIAL PROVISIONS

1.2. ACTION SUBMITTALS

- A. Product Data: For metal grating stairs treads.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments.

PART 2 – PRODUCTS

2.1. PERFORMANCE REQUIREMENTS

- A. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Load: 100 lbf/sq. ft.
 - 2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.
 - 3. Uniform and concentrated loads need not be assumed to act concurrently.
 - 4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
- B. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. Component Importance Factor: 1.5.

2.2. METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- D. Steel Bars for Grating Treads: ASTM A 36/A 36M or steel strip, ASTM A 1011/A 1011M or ASTM A 1018/A 1018M.
- E. Wire Rod for Grating Crossbars: ASTM A 510.

2.3. FASTENERS

- A. Provide zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

2.4. MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

2.5. FABRICATION, GENERAL

- A. Weld connections to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

SPECIAL PROVISIONS

2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. Weld exposed corners and seams continuously unless otherwise indicated.
 5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 4 welds: good quality, uniform undressed weld with minimal splatter.
- B. Fabricate joints that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- C. Metal Bar-Grating Stairs: Form treads and platforms to configurations shown from metal bar grating; fabricate to comply with NAAMM MBG 531, "Metal Bar Grating Manual."
1. Fabricate treads and platforms from welded or pressure-locked steel grating with openings in gratings no more than 1/2 inch in least dimension.
 2. Surface: Serrated.
 3. Finish: Galvanized.
 4. Fabricate grating treads with cast-abrasive nosing and with steel angle or steel plate carrier at each end for stringer connections. Secure treads to stringers with bolts.

2.6. FINISHES

- A. Finish metal stairs after assembly.
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

PART 3 – EXECUTION

3.1. INSTALLATION

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- B. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.

3.2. ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 06201 – EXTERIOR FINISH CARPENTRY

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes the following:

1. Lumber

1.2. SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Samples: For each type of material indicated.

1.3. QUALITY ASSURANCE

A. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, “FSC Principles and Criteria for Forest Stewardship

PART 2 – PRODUCTS

2.1. MATERIALS, GENERAL

A. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by ALSC’s Board of Review.

2.2. GUARDRAIL TOP RAILING

A. Lumber

1. Species: Alaskan Yellow Cedar
2. Grading: Select Tight know, Appearance Grade
3. Grading Rules Agency: WWPA 62.10 with no shake or wane.

B. Treatment for Guardrail top rails:

1. Sand exposed surfaces smooth with 120 grit sandpaper, with a final sanding with 200 grit.
2. Seal rails. Product: Arborcoat clear protective coating, as manufactured by Benjamin Moore, or eq.
3. Application: Apply before wood has weathered following manufacturer’s recommendation.

2.3. SITE BUILT BENCHES

A. Lumber

1. Species: Alaskan Yellow Cedar
2. Grading: Select Tight know, Appearance Grade
3. Grading Rules Agency: WWPA 62.10 with no shake or wane.

B. Treatment for Site Built Benches:

1. Sand exposed surfaces smooth with 120 grit sandpaper.

SPECIAL PROVISIONS

2. Product: Daly's Benite or approved equal.
3. Application: Apply before wood has weathered following manufacturer's recommendation.

C. Cast in Place Seat Wall – Wood Seat

Provide Kebony 2 x 6 Southern Yellow Pine Clear finish or approved equal. As supplied Pine River Group Contact Andy Hehl ph: 1-517-819-5771; email ahehl@pinerivergroup.com. Provide stainless steel hardware bolts and screws for all wood seat connections as shown on the drawings.

2.4. PINE RAIL BARRIER FENCE

- A. Pine Rail Fence: Preservative treated lodge pole pine rails and posts.

PART 3 – EXECUTION

3.1. PREPARATION

- A. As noted above.

3.2. INSTALLATION, GENERAL

- A. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
1. Scribe and cut exterior lumber finish carpentry to fit adjoining work. Refinish and seal cuts.

END OF SECTION

Add the following Section:

SECTION 06610 – FIBERGLASS REINFORCED PLASTIC STAIRS

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes glass-fiber-reinforced-plastic component system for stairs including tread grates, risers, guardrails, hand rails, pickets, supporting structural shapes. and connecting hardware.

1.2. ACTION SUBMITTALS

- A. Product Data: For glass-fiber-reinforced-plastic components and hardware.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.

PART 2 – PRODUCTS

2.1. MANUFACTURERS

- A. Manufacturers offering products meeting requirements include but are not limited to:
1. AM Grating

SPECIAL PROVISIONS

2. Fiber Grate
3. FS Industries
4. National Grating

2.2. PERFORMANCE REQUIREMENTS

- A. Structural Performance: Gratings and stair components shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 1. Floors: Uniform load of 125 lbf/sq. ft. (6.00 kN/sq. m) or concentrated load of 2000 lbf (8.90 kN), whichever produces the greater stress.

2.3. GLASS-FIBER-REINFORCED-PLASTIC GRATING TREADS

- A. Pultruded Glass-Fiber-Reinforced Grating Tread: Bar gratings assembled from components made by simultaneously pulling glass fibers and extruding thermosetting plastic resin through a heated die under pressure to produce a product without voids and with a high glass-fiber content. Provide with slip resistant nosings and matching solid risers.
 1. Configuration: Configuration: As required to comply with structural performance requirements and ADA compliance meaning that a sphere no larger than ½" in diameter can pass through the grating at any individual point.
 2. Traffic Surface: Applied abrasive finish.
 3. Color: Gray

2.4. FIBERGLASS STRUCTURAL SHAPES

- A. All structural shapes are to be manufactured by the pultrusion process with a glass content minimum of 45%, maximum of 55% by weight. The structural shapes shall be composed of fiberglass reinforcement and resin in qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions as specified in the Contract Documents.
- B. Fiberglass reinforcement shall be a combination of continuous roving, continuous strand mat, and surfacing veil in sufficient quantities as needed by the application and/or physical properties required. All finished surfaces of FRP items and fabrications shall be smooth, resin-rich, free of voids and without dry spots, cracks, crazes or unreinforced areas. All glass fibers shall be well covered with resin to protect against their exposure due to wear or weathering.
- C. All finished surfaces of FRP items and fabrications shall be smooth, resin-rich, free of voids and without dry spots, cracks, crazes or unreinforced areas. All glass fibers shall be well covered with resin to protect against their exposure due to wear or weathering. All pultruded structural shapes shall be further protected from ultraviolet (UV) attack with 1) integral UV inhibitors in the resin and 2) a synthetic surfacing veil to produce a resin rich surface
- D. All shapes products shall be certified to NSF/ANSI Standard 61.
- E. Color: Gray
- F. Sealing: All shop fabricated cuts or drilling shall be coated with vinyl ester resin to provide maximum corrosion resistance.

SPECIAL PROVISIONS

2.5. GRATING SUPPORTS

- A. Frames and Supports for Glass-Fiber-Reinforced-Plastic Grating: Fabricate from glass-fiber-reinforced-plastic shapes of sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.

2.6. RAILINGS AND PICKETS

- A. Railings to be 1-1/2" diameter FRP pipe. Secure to guardrail using Manufacturer's standard brackets. Provide hand rail extensions per architectural drawings.
- B. Pickets: Provide Manufacturer's standard square vertical pickets between top and bottom of guardrail. Space uniformly so that a 4" diameter sphere cannot pass between the pickets. and General:
- C. Color: Gray

2.7. FASTENERS

- A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5.

2.8. FABRICATION

- A. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- B. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

PART 3 – EXECUTION

3.1. INSPECTION

- A. Inspect field conditions to assure proper sizes, alignment and fit.

3.2. INSTALLATION

- A. Install according to shop drawings and Manufacturer's written instructions.

3.3. SEALING

- A. All field fabricated cuts or drilling shall be coated similarly by the contractor in accordance with the manufacturer's instructions.

3.4. INSTALLATION, GENERAL

- A. All field fabricated cuts or drilling shall be coated similarly by the contractor in accordance with the manufacturer's instructions.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation.

SPECIAL PROVISIONS

- C. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack. Fit exposed connections accurately together to form hairline joints.
- D. Use manufacturer's standard stainless-steel anchor clips and hold-down devices for bolted connections.

END OF SECTION

Add the following Section:

SECTION 07110 – BITUMINOUS DAMPPROOFING

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes cold-applied, emulsified asphalt dampproofing.

1.2. ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 – PRODUCTS

2.1. MATERIALS, GENERAL

- A. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction unless otherwise required.

2.2. COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Trowel Coats: ASTM D 1227, Type II, Class 1.

2.3. AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended in writing by dampproofing manufacturer for intended use and compatible with bituminous dampproofing.
- B. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended in writing by manufacturer.

PART 3 – EXECUTION

3.1. APPLICATION, GENERAL

- A. Comply with manufacturer's written instructions for substrate preparation, dampproofing application, cure time between coats, and drying time before backfilling unless more stringent requirements are indicated.
- B. Apply dampproofing to provide continuous plane of protection and apply additional coats if recommended in writing by manufacturer or to achieve a smooth surface and uninterrupted coverage.
- C. Where dampproofing footings and foundation walls, apply from finished-grade line to top of footing; extend over top of footing and down a minimum of 6 inches (150 mm) over outside face of footing. Extend dampproofing 12 inches

SPECIAL PROVISIONS

(300 mm) onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.

3.2. COLD-APPLIED, EMULSIFIED-ASPHALT DAMPPROOFING

- A. Concrete Foundations: Apply two brush or spray coats at not less than 1.5 gal./100 sq. ft. (0.6 L/sq. m) for first coat and 1 gal./100 sq. ft. (0.4 L/sq. m) for second coat, one fibered brush or spray coat at not less than 3 gal./100 sq. ft. (1.2 L/sq. m), or one trowel coat at not less than 4 gal./100 sq. ft. (1.6 L/sq. m).
- B. Unexposed Face of Concrete Retaining Walls: Apply one brush or spray coat at not less than 1.25 gal./100 sq. ft. (0.5 L/sq. m).

END OF SECTION

Add the following Section:

SECTION 07410 – STANDING-SEAM METAL ROOF PANELS

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes standing-seam metal roof panels.

1.2. PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
- C. Samples: For each type of metal panel indicated.

1.4. INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Warranties: Sample of special warranties.

1.5. CLOSEOUT SUBMITTALS

- A. Maintenance data.

1.6. QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7. WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

SPECIAL PROVISIONS

- B. Warranty Period: 5 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1. PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: As indicated on Drawings.
- B. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 90.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2. STANDING-SEAM METAL ROOF PANELS

- A. Basis of Design: Provide AEP Span's SpanSeam.SPS2216. Other Manufacturer's offering similar products that may be incorporated into the Work include but are not limited to:
1. ATAS
 2. MBCI
 3. Metal Sales
 4. Nucor
 5. ATAS
- B. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
- C. Material: 24 Gauge steel conforming to ASTM A792, Class AZ50, Zincalume prepared.
- D. Size: 12" width flat pan.
- E. Seam Height: 2" – factory-applied butyl mastic seam sealant, fully mechanically seamed in vertical configuration.
- F. Finish: High-build Duratech 5000 Premium Fluoropolymer (PVDF) Coating. Color as selected by Engineer from Manufacturer's full product line.
- G. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in

SPECIAL PROVISIONS

side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

- H. Underlayment:
 - 1. Self-adhering “peel and stick” ice and water shield as recommended by roof panel Manufacturer.
 - 2. Slip Sheet: Provide as recommended by roof panel Manufacturer.
 - I. Clips and Plates: Provide and install corrosion-resistant clips, and bearing plates specified by roof panel Manufacturer to allow for movement. Provide with factory sealant.
 - J. Fasteners: As recommended by Manufacturer for specific installation. Corrosion-resistant #12-14 x 1-1/4” self-drilling, hex head drive.
 - K. Trims and Flashings: Match roof materials and finish. Refer to drawings.
 - L. Sealant for Field Application: As recommended by roof panel Manufacturer, a non-curing butyl or curing urethane sealant.
- 2.3. FABRICATION
- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer’s standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
 - B. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
 - C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer’s recommendations and recommendations in SMACNA’s “Architectural Sheet Metal Manual” that apply to design, dimensions, metal, and other characteristics of item indicated.

PART 3 – EXECUTION

3.1. PREPARATION

- A. Miscellaneous Supports: Install sub-framing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer’s written recommendations.

3.2. UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.
 - 1. Apply over the entire roof surface.
- B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

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- C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.3. METAL PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
 - 4. Watertight Installation:
 - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.
- B. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
- C. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4. CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION

Add the following Section:

SECTION 08800 – GLAZING

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

SPECIAL PROVISIONS

1. Laminated vertical glazing.
2. Aluminum glazing component system.

1.2. PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design glass, including comprehensive engineering analysis according to ICC's 2006 International Building Code by a qualified professional engineer, using the following design criteria:
 1. Design Wind Pressures: As indicated on Drawings.
 2. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

1.3. PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing material type, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
- B. Testing will not be required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.

1.4. ACTION SUBMITTALS

- A. Product Data: For each glass product and glazing material indicated.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location.
- D. Shop Drawings: For aluminum frame components.
- E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5. INFORMATIONAL SUBMITTALS

- A. Preconstruction adhesion and compatibility test report.

1.6. QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."

1.7. WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to

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glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

- B. Warranty Period: 5 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1. GLASS PRODUCTS, GENERAL

- A. Subject to compliance with requirements, provide product indicated in glass schedules or comparable product by one of the following:
1. AGC Glass Company North America, Inc.
 2. Guardian Industries Corp.
 3. Hartung Glass Industries.
 4. Northwestern Industries, Inc.
 5. Oldcastle Building Envelope.
 6. Pilkington North America Inc.
 7. PPG Industries, Inc.
 8. Saint-Gobain Corporation.
 9. Viracon, Inc.
- B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
- C. Thickness: Provide glass lites in thicknesses as needed to comply with performance and load requirements indicated. No glass assembly shall be less than 5/8" total thickness.
- D. Strength: Where float glass is indicated, provide Kind HS heat-treated float glass, or Kind FT heat-treated float glass as needed to comply with "Performance Requirements" Article.

2.2. GLASS PRODUCTS

- A. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

2.3. LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
1. Construction: Laminate glass with interlayer to comply with interlayer manufacturer's written recommendations.
 - a. Thickness of Each Glass Ply: 5/16" (or as required to meet performance and load requirements indicated)
 - b. Outer Ply: Clear float glass.
 - c. Inner Ply: Clear float glass.

SPECIAL PROVISIONS

2.4. INTERLAYER

- A. Basis of Design: DuPont™ SentryGlas® , as manufactured by DuPont™ Glass Laminating Solutions; 4417 Lancaster Pike, Wilmington, DE 19805; www.sentryglas.com.
 - 1. Thickness: 0.060 inch (or as required to meet performance and load requirements indicated)
 - 2. Color: Clear
 - 3. Interlayer Physical Properties:
 - a. Young's Modulus: 43 kpsi, when tested in accordance with ASTM D5026
 - b. Tensile Strength: 5.0 kpsi, when tested in accordance with ASTM D638.
 - c. Elongation: 400%, when tested in accordance with ASTM D638
 - d. Flex Modulus: 50 kpsi, when tested in accordance with D790.
 - e. Heat Deflection Temperature at 0.46 MPa: 110 deg F, when tested in accordance with D648.

2.5. GLAZING GASKETS

- A. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
 - 1. Neoprene complying with ASTM C 864.
 - 2. EPDM complying with ASTM C 864.
 - 3. Silicone complying with ASTM C 1115.
 - 4. Thermoplastic polyolefin rubber complying with ASTM C 1115.
- B. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned neoprene, EPDM silicone or thermoplastic polyolefin rubber gaskets complying with ASTM C 509, Type II, black; of profile and hardness required to maintain watertight seal.
- C. Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.

2.6. GLAZING SEALANTS

- A. General:
 - 1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 - 3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

SPECIAL PROVISIONS

2.7. GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 806.3 tape, for glazing applications where tape subject to continuous pressure.
 - 2. AAMA 807.3 tape, for glazing applications where not subject to continuous pressure.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
 - 1. AAMA 810.1, Type 1, for glazing applications where tape acts as the primary sealant.
 - 2. AAMA 810.1, Type 2, where tape is used in combination with full bead of sealant.

2.8. MISCELLANEOUS GLAZING MATERIALS

- A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- C. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- D. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.9. EXTRUDED ALUMINUM FRAME

- A. Basis of Design Product: EFCO's 402 Series. Manufacturers offering similar products may submit product information for possible product approval.
 - 1. Profile: Square edge, center-glazed extrusions
 - 2. Finish: Clear Anodized.
 - 3. Gaskets, Sealants, Blocking and the like: Manufacturer's recommended standard.

PART 3 – EXECUTION

3.1. GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

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- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2. TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- D. Apply heel bead of elastomeric sealant.
- E. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.3. GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

SPECIAL PROVISIONS

- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.4. SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5. CLEANING AND PROTECTION

- A. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- D. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

END OF SECTION

Add the following Section:

SECTION 12360 – STAINLESS STEEL COUNTERTOPS

PART 1 – GENERAL

1.1. SUMMARY

- A. Section includes:
 - 1. Stainless steel countertops and supports

SPECIAL PROVISIONS

1.2. ACTION SUBMITTALS

- A. Product Data: For all components and fasteners.
- B. Shop Drawings: Show all component assembly details including dimensions and fasteners.

1.3. QUALITY ASSURANCE

- A. Applicable Publications:
 - 1. American Society for Testing and Materials (ASTM)
- B. A167-99 Stainless & Heat-resisting Chromium Nickel Steel Plate, Sheet & Strip
- C. A1008-10 Steel, Sheet, Cold-rolled, Carbon, Structural High Strength, Low Alloy

PART 2 – PRODUCTS

2.1. MATERIALS

- A. Stainless Steel: ASTM A167, Type 316
- B. Gage: 14
- C. Fasteners: Metals used for welding – same as materials joined
- D. Use metal studs, bolts, spacers, threaded rods with nuts or screws suitable for materials being joined with metal splice plates, channels or other supporting shape.
- E. Sound-deadening: NSF sprayed-on latex.

2.2. FABRICATION

- A. Fabricate in sections indicated.
- B. Front Edge: Rolled per detail
- C. Side Edge: Vertical per detail, welded and ground at joints.
- D. Reinforcing: Minimum 1-1/2" stainless steel hat channel stiffeners per detail.
- E. Finish: Brushed #4

PART 3 – EXECUTION

3.1. PREPARATION

- A. Verify field conditions, dimensions and support bracket locations.
- B. Install countertop level, square and true. Shim as needed with plastic shims.
- C. Attach countertop hat channels to support brackets using vandal-resistant stainless steel screws.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 13312 – TENSIONED FABRIC STRUCTURES

PART 1 – GENERAL

1.1. DEFINITIONS

- A. Tensioned Fabric Structure: Cable and/or frame supported tensioned membrane-covered fabric structure incorporating a fabric with low-elongation characteristics under tension and capable of an anticlastic configuration.

1.2. SUMMARY

- A. Section includes: Tensioned Fabric Canopy System
- B. Contract Drawings indicate design intent and do not include all system details. Provide all components and accessories required for complete tensioned fabric canopy system whether shown or not.
- C. Tensioned fabric structure shall have bolted/pinned connections – no field welding permitted.
- D. Work includes structural design, detailing, supply, fabrication, shipping and installation of the complete system including cables and fittings, perimeter, catenary and sectionalized aluminum clamping system, structural steel including trusses, struts and beams as indicated in the drawings, fasteners and gaskets. For masts (frames) and foundations refer to drawings.

1.3. REFERENCES

- A. Division 03 Concrete Sections and Division 05 Steel Sections and their references shall apply to the work of this Section.
- B. ASTM A586 Standard Specification for Zinc-coated Steel Structural Strand
- C. ASTM A603 Standard Specification for Zinc-coated Steel Wire Rope.
- D. NFPA 701 Standard Methods of Fire Tests for Flame-Propagation of Textiles and Films
- E. Steel Structures Painting Council (SSPC) Steel Structures Painting Manual

1.4. ACTION SUBMITTALS

- A. Product Data for each type of product including light transmission, rated capacities and test data
- B. Design Drawings: Include plans, elevations, sections, heights, assembly details, conceptual member sizes, plan dimensions, preliminary foundation design and fabric attachment details.
- C. Engineered Shop Drawings: Include sealed/signed engineering drawings and calculations from licensed State of Alaska structural engineer. Include full details of all system components including connections to final mast(s) and foundation(s) design.
- D. Fabric Samples (4 -2"x 3" minimum)

SPECIAL PROVISIONS

1.5. INFORMATIONAL SUBMITTALS

- A. Qualifications of installer, fabricator and engineer.
- B. Welding certificates.
- C. Fabric sample warranty.
- D. Closeout Submittal: Maintenance Data.

1.6. QUALITY ASSURANCE

- A. Fabricator must demonstrate a minimum of five years successful experience making similar products.
- B. Installer must also be fabricator or trained and approved by fabricator.
- C. All welding to be by AWS certified welders.

1.2 WARRANTY

- D. Manufacturer/fabricator shall repair or replace any component that fails in material or workmanship within one year of date of substantial completion.

PART 2 – PRODUCTS

2.1. MANUFACTURER

- A. Basis of Design Product: Eide Industries Inc.'s Tensioned Fabric Structures. Other manufacturers/fabricators may submit qualifications and product data for possible approval and incorporation into the Work. All tensioned fabric structures must be from a single source and single manufacturer.

2.2. PERFORMANCE REQUIREMENTS

- A. Meet requirements of authorities having jurisdiction.
- B. Delegated Design: Manufacturer shall have a qualified professional structural engineer licensed in State of Alaska design the tensioned fabric structures. Requirements include:
 - 1. Drawings showing geometry of structure and components including all dimensions, reaction loads, anchoring loads, connection details, interfaces and seam layouts.
 - 2. Structural calculations.
 - 3. Structural Performance: Tensioned fabric canopy system shall withstand the effects of gravity loads and the loads indicated on the drawings within limits and under conditions indicated according to ASCE/SEI 7.
 - 4. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating dissimilar metals from one another.

2.3. FABRIC

- A. Manufacturer
 - 1. Saint Gobain (Sheerfill product line)
 - 2. Ferrari Textiles (Precontraint product line)
 - 3. SEFAR (Tenara product line)
 - 4. Interglass (Atex product line)

SPECIAL PROVISIONS

5. Seaman Corp. (Shelter-Rite product line)
6. Verseidag (Duraskin product line)
7. Nauzil
8. Hiraoka
9. Mehler (Polymar product line)

B. Properties

1. Fabric thickness and tensile strength: Meet engineering requirements with a safety factor of five (5).
2. Color: White.

2.4. FRAME, CABLES, FITTINGS AND ACCESSORIES

- A. General: Provide accessories as standard with tensioned fabric canopy system fabricator and as specified. Fabricate and finish at the factory to the greatest extent possible.
- B. Metal Surfaces: Smooth surfaces free of seam marks, discoloration and blemishes.
- C. Frame: Galvanized steel with steel plate closure welded to sloping diagonal cut at tops.
- D. Diagonal Wood Cover: Wood veneer for sloping section of frame masts: Glued-laminated Alaska Yellow Cedar – 1-1/2” thickness. Install with recessed and plugged stainless steel screws fastened through plate.
- E. Steel and Iron Materials:
 1. Tubing: ASTM A 500 or ASTM A513
 2. Bars: Hot-rolled, carbon steel ASTM A 29/A 29M, Grade 1010.
 3. Plates, shapes and bars: ASTM A36 or ASTM A572 as required.
- F. Metal fabric battens: Extruded Aluminum ASTM B 221, Alloy 6063-T5/T52
- G. Stainless Steel Cables
 1. 7 x 19 wire rope complying ASTM A492, Type 316
 2. Fittings: stainless steel capable of sustaining loads equal to the minimum breaking strength of cable used.
 3. Any cable in contact with fabric shall have PV coating.

PART 3 – EXECUTION

3.1. EXAMINATION:

- A. Examine field conditions and confirm acceptance. Do not begin until conditions are satisfactory.
- B. Engage a factory-authorized service representative to test and inspect all components, assemblies and equipment installations, including connections.

3.2. EXAMINATION:

- A. Erect frame prepared in accordance with Manufacturer’s written directions and shop drawings.

SPECIAL PROVISIONS

- B. Pre-stress components in order to eliminate fabric wrinkles and excess cable sag.
- C. Adjusting: Up to 12 months from date of substantial completion, provide on-site assistance in adjusting system to suit conditions. Provide a factory-authorized representative to train Owner's personnel to adjust cable and fabric tension and to clean and maintain canopy fabric.

END OF SECTION

Add the following Section:

SECTION 16050 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this section.

1.2. SUMMARY

- A. This section includes the following:
 - 1. Supporting devices for electrical components.
 - 2. Electrical identification.
 - 3. Electrical demolition.
 - 4. Cutting and patching for electrical construction.
 - 5. Touchup painting.

1.3. DEFINITIONS

- A. IMC: Intermediate metal conduit.
- B. LFMC: Liquidtight flexible metal conduit.
- C. RNC: Rigid nonmetallic conduit.

1.4. QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.5. COORDINATION

- A. Coordinate chases, slots, inserts, and openings with general construction WORK and arrange during progress of construction to facilitate the electrical installations that follow.
- B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the WORK.

SPECIAL PROVISIONS

- C. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.

PART 2 – PRODUCTS

2.1. SUPPORTING DEVICES

- A. Material: Cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.
- B. Metal Items for Use Outdoors, in Damp Locations, or in corrosive environments: Hot-dip galvanized steel, or stainless steel.
- C. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch diameter slotted holes at a maximum of 2 inches o.c., in webs.
 - 1. Channel Thickness: Selected to suit structural loading.
 - 2. Fittings and Accessories: Products of the same manufacturer as channel supports.
- D. Raceway and Cable Supports: Manufactured straps, trapeze hangers, wall brackets, and spring-steel clamps on channel.
- E. Expansion Anchors: Carbon-steel wedge or sleeve type.
- F. Toggle Bolts: All-steel springhead type.
- G. Powder-Driven Threaded Studs: Heat-treated steel.

2.2. ELECTRICAL IDENTIFICATION

- A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
- B. Underground Warning Tape: Permanent, bright-colored, continuous-printed, vinyl tape with the following features:
 - 1. Not less than 6 inches wide by 4 mils thick.
 - 2. Compounded for permanent direct-burial service.
 - 3. Embedded continuous metallic strip or core.
 - 4. Printed legend that indicates type of underground line.
- C. Tape Markers for Wire: Vinyl or vinyl-cloth, self-adhesive, wraparound type with preprinted numbers and letters.
- D. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- E. Fasteners for Nameplates: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.3. TOUCHUP PAINT

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

SPECIAL PROVISIONS

PART 3 – EXECUTION

3.1. ELECTRICAL EQUIPMENT INSTALLATION

- A. Materials and Components: Install level, plumb, and parallel and perpendicular to other systems and components, unless otherwise indicated.
- B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Connect for ease of disconnecting, with minimum interference with other installations.
- C. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2. ELECTRICAL SUPPORTING DEVICE APPLICATION

- A. Damp Locations and Outdoors: Hot-dip galvanized materials, stainless steel materials, or nonmetallic, U-channel system components.
- B. Selection of Supports: Comply with manufacturer's written instructions.
- C. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb design load.

3.3. SUPPORT INSTALLATION

- A. Install support devices to securely and permanently fasten and support electrical components.
- B. Install individual and multiple raceway hangers to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.
- C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
- D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.
- E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
- F. Install 1/4-inch diameter or larger threaded steel hanger rods, unless otherwise indicated.
- G. Install metal channel racks for mounting cabinets, pull and junction boxes, and other devices, unless components are mounted directly to structural elements of adequate strength.
- H. Securely fasten electrical items and their supports to structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:
 - 1. Wood: Fasten with wood screws or screw-type nails.
 - 2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
 - 3. New Concrete: Concrete inserts with machine screws and bolts.
 - 4. Existing Concrete: Expansion bolts.

SPECIAL PROVISIONS

5. Instead of expansion bolts, threaded studs driven by a powder charge and provided with lock washers may be used in existing concrete.
6. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.4. IDENTIFICATION MATERIALS AND DEVICES

- A. Install at locations for most convenient viewing without interference with operation and maintenance of equipment.
- B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Use consistent designations throughout Project.
- C. Self-Adhesive Identification Products: Clean surfaces before applying.
- D. Install continuous underground plastic markers during trench backfilling, for exterior underground power, security, and communication lines. Locate 6 to 8 inches below finished grade, unless shown otherwise in the drawings. If width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches, overall, use a single line marker.
- E. Color-code 208/120-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
 1. Phase A: Black.
 2. Phase B: Red.
 3. Phase C: Blue.
- F. Color-code 480/277-V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
 1. Phase A: Brown.
 2. Phase B: Orange.
 3. Phase C: Yellow.

3.5. DEMOLITION

- A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the WORK, remove damaged portions and install new products of equal capacity, quality, and functionality.
- B. Accessible WORK: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.
- C. Abandoned WORK: Cut and remove buried raceway and wiring, indicated to be abandoned in place, 2 inches below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.
- D. Remove demolished material from Project site.
- E. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

SPECIAL PROVISIONS

3.6. CUTTING AND PATCHING

- A. Cut, channel, chase, and drill surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

3.7. FIELD QUALITY CONTROL

- A. Inspect installed components for damage and faulty WORK, including the following:
 - 1. Supporting devices for electrical components.
 - 2. Electrical identification.
 - 3. Electrical demolition.
 - 4. Cutting and patching for electrical construction.
 - 5. Touchup painting.

3.8. TOUCHUP PAINTING

- A. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
- B. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

3.9. CLEANING AND PROTECTION

- A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.
- B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

END OF SECTION

Add the following Section:

SECTION 16075 - ELECTRICAL IDENTIFICATION

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Retain or delete this article in all Sections of Project Manual. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Identification for conductors.
 - 2. Underground-line warning tape.
 - 3. Warning labels and signs.
 - 4. Instruction signs.
 - 5. Equipment identification labels.
 - 6. Miscellaneous identification products.

SPECIAL PROVISIONS

1.3. QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Retain paragraph below if retaining self-adhesive products in Part 2. See Editing Instruction No. 1 in the Evaluations.
- F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.4. COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

PART 2 – PRODUCTS

2.1. CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide.
- B. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mil- (0.08-mm-) thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.
- C. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tube with machine-printed identification label. Sized to suit diameter of and shrinks to fit firmly around conductor it identifies. Full shrink recovery at a maximum of 200 deg F (93 deg C). Comply with UL 224.
- D. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- E. Write-On Tags: Polyester tag, 0.010 inch (0.25 mm) thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.
 - 1. Labels for Tags: Self-adhesive label, machine-printed with permanent, waterproof, black ink recommended by printer manufacturer, sized for attachment to tag.

2.2. UNDERGROUND-LINE WARNING TAPE

- A. Tape:

SPECIAL PROVISIONS

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.

2.3. WARNING LABELS AND SIGNS

- A.** Comply with NFPA 70 and 29 CFR 1910.145.
- B.** Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- C.** Metal-Backed, Butyrate Warning Signs:
1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch (1-mm) galvanized-steel backing; and with colors, legend, and size required for application.
 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 3. Nominal size, 10 by 14 inches (250 by 360 mm).

2.4. INSTRUCTION SIGNS

- A.** Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.
1. Engraved legend with black letters on white face.
 2. Punched or drilled for mechanical fasteners.
 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5. EQUIPMENT IDENTIFICATION LABELS

- A.** Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

2.6. CABLE TIES

- A.** UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
1. Minimum Width: 3/16 inch (5 mm).
 2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 4. Color: Black.

SPECIAL PROVISIONS

2.7. MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 – EXECUTION

3.1. INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches (400 mm) overall.

3.2. IDENTIFICATION SCHEDULE

- A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG.
 - b. Colors for 208/120-V Circuits:
 - i. Phase A: Black.
 - ii. Phase B: Red.
 - iii. Phase C: Blue.
 - c. Colors for 480/277-V Circuits:
 - i. Phase A: Brown.
 - ii. Phase B: Orange.
 - iii. Phase C: Yellow.
 - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible

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unwinding. Locate bands to avoid obscuring factory cable markings.

- B. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes and handholes, use write-on tags with the conductor or cable designation, origin, and destination.
- C. Control-Circuit Conductor Termination Identification: For identification at terminations provide self-adhesive vinyl labels with the conductor designation.
- D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, and control wiring.
- E. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- F. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 - 1. Labeling Instructions:
 - a. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
 - b. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
 - 2. Equipment to Be Labeled:
 - a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
 - b. Enclosures and electrical cabinets.
 - c. Switchboards.
 - d. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
 - e. Contactors.
 - f. Remote-controlled switches, dimmer modules, and control devices.

END OF SECTION

SPECIAL PROVISIONS

Add the following Section:

SECTION 16120 – CONDUCTORS AND CABLES

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2. SUMMARY

- A. This section includes:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations for wiring systems rated 600 V and less.
- B. Related Requirements:
 - 1. Section 16123 "Control-Voltage Electrical Power Cables" for control systems communications cables and Classes 1, 2 and 3 control cables.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

PART 2 – PRODUCTS

2.1. CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Alcan Products Corporation; Alcan Cable Division.
 - 2. Alpha Wire.
 - 3. Belden Inc.
 - 4. Encore Wire Corporation.
 - 5. General Cable Technologies Corporation.
 - 6. Southwire Incorporated.
- B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type XHHW-2.
- D. Multiconductor Cable: Comply with NEMA WC 70/ICEA S-95-658 for metal-clad cable, Type MC with ground wire.

SPECIAL PROVISIONS

2.2. CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Gardner Bender.
 - 3. Hubbell Power Systems, Inc.
 - 4. Ideal Industries, Inc.
 - 5. IlSCO; a branch of Bardes Corporation.
 - 6. NSi Industries LLC.
 - 7. O-Z/Gedney; a brand of the EGS Electrical Group.
 - 8. 3M; Electrical Markets Division.
 - 9. Tyco Electronics.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3. SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

PART 3 – EXECUTION

3.1. CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Stranded copper.
- B. Branch Circuits: Stranded copper.

3.2. CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type XHHW-2, single conductors in raceway.
- B. Exposed Feeders: Type XHHW-2, single conductors in raceway.
- C. Feeders Underground: Type XHHW-2, single conductors in raceway.
- D. Exposed Branch Circuits, Including in Crawlspace: Type XHHW-2, single conductors in raceway, and Metal-clad cable, Type MC.
- E. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

3.3. INSTALLATION OF CONDUCTORS AND CABLES

- A. Complete raceway installation between conductor and cable termination points according to Section 16130 "Raceways and Boxes" prior to pulling conductors and cables.

SPECIAL PROVISIONS

- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Section 16073 "Hangers and Supports for Electrical Systems."

3.4. CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.
 - 1. Use oxide inhibitor in each splice, termination, and tap.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5. IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 16075 "Electrical Identification."

3.6. FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.
 - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
 - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results.

SPECIAL PROVISIONS

Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

- B. Test and Inspection Reports: Prepare a written report to record the following:
 - 1. Procedures used.
 - 2. Results that comply with requirements.
 - 3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION

Add the following Section:

SECTION 16123 - CONTROL-VOLTAGE ELECTRICAL POWER CABLES

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Multimode optical-fiber cabling.
 - 2. UTP cabling.
 - 3. RS-485 cabling.
 - 4. Low-voltage control cabling.
 - 5. Control-circuit conductors.
 - 6. Identification products.

1.3 DEFINITIONS

- A. Retain terms that remain after this Section has been edited for a project.
- B. EMI: Electromagnetic interference.
- C. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
- D. UTP: Unshielded twisted pair.

1.4. ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

SPECIAL PROVISIONS

PART 2 – PRODUCTS

2.1. SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2. OPTICAL-FIBER CABLE

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

1. Belden Inc.
2. CommScope, Inc.
3. Corning Incorporated.
4. Emerson Connectivity Solutions.
5. General Cable Technologies Corporation.
6. Mohawk; a division of Belden Inc.
7. Nexans; Berk-Tek Products.
8. Siemon Company (The).
9. Superior Essex Inc.
10. SYSTIMAX Solutions; a CommScope, Inc. brand.
11. 3M.
12. Tyco Electronics/AMP Netconnect; Tyco International Ltd.

- C. Description: Multimode, 62.5/125-micrometer, 6-fiber, nonconductive, tight-buffer, optical-fiber cable.

1. Comply with ICEA S-83-596 for mechanical properties.
2. Comply with TIA-568-C.3 for performance specifications.
3. Comply with TIA-492AAAB-A for detailed specifications.
4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444, UL 1651, and NFPA 70 for the following types:

- a. General Purpose, Nonconductive: Type OFN, Type OFNG, Type OFNP, or Type OFNR in metallic conduit.

5. Maximum Attenuation: **3.5 dB/km** at 850 nm; **1.5 dB/km** at 1300 nm.
6. Minimum Modal Bandwidth: 160 MHz-km at 850 nm; 500 MHz-km at 1300 nm.

- D. Jacket:

1. Jacket Color: Orange for 62.5/125-micrometer cable.
2. Cable cordage jacket, fiber, unit, and group color shall be according to TIA-598-C.
3. Imprinted with fiber count, fiber type, and aggregate length at regular intervals not to exceed 40 inches (1000 mm).

SPECIAL PROVISIONS

2.3. OPTICAL-FIBER CABLE HARDWARE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ADC.
 - 2. American Technology Systems Industries, Inc.
 - 3. Belden Inc.
 - 4. Corning Incorporated.
 - 5. Dynacom Inc.
 - 6. Hubbell Incorporated.
 - 7. Molex Premise Networks; a division of Molex, Inc.
 - 8. Panduit Corp.
 - 9. Siemon Company (The).
- B. Cross-Connects and Patch Panels: Modular panels housing multiple-numbered, duplex cable connectors.
 - 1. Number of Connectors per Field: One for each fiber of cable or cables assigned to field, plus spares and blank positions adequate to suit specified expansion criteria.
- C. Patch Cords: Factory-made, dual-fiber cables in 12-inch (300-mm) lengths.
- D. Cable Connecting Hardware:
 - 1. Comply with Optical-Fiber Connector Intermateability Standards (FOCIS) specifications of TIA-604-2-B, TIA-604-3-B, and TIA/EIA-604-12. Comply with TIA-568-C.3.
 - 2. Quick-connect, simplex and duplex, Type SC connectors. Insertion loss of not more than 0.75 dB.

2.4. UTP CABLE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ADC.
 - 2. Alpha Wire Company; a division of Belden Inc.
 - 3. Belden Inc.
 - 4. CommScope, Inc.
 - 5. Draka Cableteq USA.
 - 6. Genesis Cable Products; Honeywell International, Inc.
 - 7. Mohawk; a division of Belden Inc.
 - 8. Nexans; Berk-Tek Products.
 - 9. Siemon Company (The).
 - 10. Superior Essex Inc.
 - 11. SYSTIMAX Solutions; a CommScope, Inc. brand.
 - 12. 3M.
 - 13. Tyco Electronics/AMP Netconnect; Tyco International Ltd.
- B. Description: 100-ohm, four-pair UTP.

SPECIAL PROVISIONS

1. Comply with ICEA S-90-661 for mechanical properties of Category 5e cables.
2. Comply with TIA-568-C.1 for performance specifications.
3. Comply with TIA-568-C.2, Category 5e.
4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 NFPA 70 for the following types:
 - a. Communications, General Purpose: Type CM or Type CMG.

2.5. UTP CABLE HARDWARE

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. ADC.
 2. American Technology Systems Industries, Inc.
 3. Belden Inc.
 4. Dynacom Inc.
 5. Hubbell Incorporated.
 6. Leviton Commercial Networks Division.
 7. Molex Premise Networks; a division of Molex, Inc.
 8. Panduit Corp.
 9. Siemon Company (The).
 10. Tyco Electronics/AMP Netconnect; Tyco International Ltd.
- B. General Requirements for Cable Connecting Hardware: Comply with TIA/EIA-568-C.2, IDC type, with modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of same category or higher.
- C. Connecting Blocks: 110-style IDC for Category 5e. Provide blocks for the number of cables terminated on the block. Integral with connector bodies, including plugs and jacks where indicated.
- D. Cross-Connect: Modular array of connecting blocks arranged to terminate building cables and permit interconnection between cables.
 1. Number of Terminals per Field: One for each conductor in assigned cables.
- E. Jacks and Jack Assemblies: 100-ohm, balanced, twisted-pair connector; four-pair, eight-position modular. Comply with TIA/EIA-568-C.1.
- F. Patch Cords: Factory-made, four-pair cables in 12-inch (300-mm) lengths; terminated with eight-position modular plug at each end.
 1. Patch cords shall have bend-relief-compliant boots and color-coded icons. Patch cords shall have latch guards to protect against snagging.

2.6. RS-485 CABLE

- A. Standard Cable: NFPA 70, Type CMG.
 1. Paired, twisted, No. 22 AWG, stranded (7x30) tinned-copper conductors.
 2. PVC insulation.
 3. Unshielded.
 4. PVC jacket.

SPECIAL PROVISIONS

5. Flame Resistance: Comply with UL 1685.

2.7. LOW-VOLTAGE CONTROL CABLE

- A. Paired Cable: NFPA 70, Type CMG.
 1. Multi-pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
 2. PVC insulation.
 3. Unshielded.
 4. PVC jacket.
 5. Flame Resistance: Comply with UL 1685.

2.8. CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type XHHW-2, in raceway, complying with UL 44.
- B. Class 2 Control Circuits: Stranded copper, Type XHHW-2, in raceway, complying with UL 44.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type XHHW-2, in raceway, complying with UL 44.

2.9. SOURCE QUALITY CONTROL

- A. Factory test UTP cables according to TIA-568-C.2.
- B. Factory test optical-fiber cables according to TIA-568-C.3.
- C. Cable will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Test cables on receipt at Project site.
 1. Test optical-fiber cable to determine the continuity of the strand end to end. Use optical-fiber flashlight.
 2. Test each pair of UTP cable for open and short circuits.

3.2. INSTALLATION OF RACEWAYS AND BOXES

- A. Comply with requirements in Section 16130 "Raceways and Boxes" for raceway selection and installation requirements for boxes, conduits, and wireways as supplemented or modified in this Section.
- B. Comply with TIA-569-B for pull-box sizing and length of conduit and number of bends between pull points.
- C. Install manufactured conduit sweeps and long-radius elbows if possible.

3.3. INSTALLATION OF CONDUCTORS AND CABLES

- A. Comply with NECA 1 and NFPA 70.
- B. General Requirements for Cabling:

SPECIAL PROVISIONS

- C. Comply with TIA-568-C Series of standards.
 - 1. Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems" and Ch. 6, "Optical Fiber Structured Cabling Systems."
 - 2. Terminate all conductors and optical fibers; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
 - 3. Cables may not be spliced.
 - 4. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
 - 5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems" and Ch. 6, "Optical Fiber Structured Cabling Systems." Install lacing bars and distribution spools.
 - 6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
 - 7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Do not use heat lamps for heating.
 - 8. Pulling Cable: Comply with BICSI ITSIMM, Ch. 5, "Copper Structured Cabling Systems" and Ch. 6, "Optical Fiber Structured Cabling Systems." Monitor cable pull tensions.
 - 9. Support: Do not allow cables to lay on removable ceiling tiles.
 - 10. Secure: Fasten securely in place with hardware specifically designed and installed so as to not damage cables.
- D. UTP Cable Installation:
 - 1. Comply with TIA-568-C.2.
 - 2. Do not untwist UTP cables more than 1/2 inch (12 mm) at the point of termination to maintain cable geometry.
- E. Installation of Control-Circuit Conductors:
 - 1. Install wiring in raceways. Comply with requirements specified in Section 16130 "Raceways and Boxes."
- F. Optical-Fiber Cable Installation:
 - 1. Comply with TIA-568-C.3.
 - 2. Terminate cable on connecting hardware that is rack or cabinet mounted.

3.4. CONTROL-CIRCUIT CONDUCTORS

- A. Minimum Conductor Sizes:
 - 1. Class 1 remote-control and signal circuits; No 14 AWG.
 - 2. Class 2 low-energy, remote-control, and signal circuits; No. 16 AWG.
 - 3. Class 3 low-energy, remote-control, alarm, and signal circuits; No 12 AWG.

SPECIAL PROVISIONS

3.5. GROUNDING

- A. For data communication wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Bonding and Grounding (Earthing)" Chapter.
- B. For low-voltage control wiring and cabling, comply with requirements in Section 16060 "Grounding and Bonding."

3.6. IDENTIFICATION

- A. Comply with requirements for identification specified in Section 16075 "Electrical Identification."
- B. Identify data and communications system components, wiring, and cabling according to TIA-606-A; label printers shall use label stocks, laminating adhesives, and inks complying with UL 969.

3.7. FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Visually inspect UTP and optical-fiber cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA-568-C.1.
 - 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
 - 3. Test UTP cabling for direct-current loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not after cross-connection.
 - a. Test instruments shall meet or exceed applicable requirements in TIA-568-C.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - 4. Optical-Fiber Cable Tests:
 - a. Test instruments shall meet or exceed applicable requirements in TIA-568-C.0. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
 - b. Link End-to-End Attenuation Tests:
 - i. Multimode Link Measurements: Test at 850 or 1300 nm in one direction according to TIA/EIA-526-14-A, Method B, One Reference Jumper.
 - ii. Attenuation test results for links shall be less than 2.0 dB.

SPECIAL PROVISIONS

- B. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- C. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION

Add the following Section:

SECTION 16130 – RACEWAYS AND BOXES

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Metal conduits, tubing, and fittings.
 - 2. Nonmetal conduits, tubing, and fittings.
 - 3. Boxes, enclosures, and cabinets.
 - 4. Handholes and boxes for exterior underground cabling.

1.3. DEFINITIONS

- A. GRC: Galvanized rigid steel conduit.
- B. IMC: Intermediate metal conduit.

1.4. ACTION SUBMITTALS

- A. Product Data: For hinged-cover enclosures and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

PART 2 – PRODUCTS

2.1. METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit.
 - 3. Anamet Electrical, Inc.
 - 4. Electri-Flex Company.
 - 5. O-Z/Gedney.

SPECIAL PROVISIONS

6. Picoma Industries.
 7. Republic Conduit.
 8. Robroy Industries.
 9. Southwire Company.
 10. Thomas & Betts Corporation.
 11. Western Tube and Conduit Corporation.
 12. Wheatland Tube Company.
- B. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. GRC: Comply with ANSI C80.1 and UL 6.
- D. IMC: Comply with ANSI C80.6 and UL 1242.
- E. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- F. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
- G. Joint Compound for IMC or GRC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2. NONMETALLIC CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. AFC Cable Systems, Inc.
 2. Anamet Electrical, Inc.
 3. Arnco Corporation.
 4. CANTEX Inc.
 5. CertainTeed Corporation.
 6. Condux International, Inc.
 7. Electri-Flex Company.
 8. Kraloy.
 9. Lamson & Sessions; Carlon Electrical Products.
 10. Niedax-Kleinhuis USA, Inc.
 11. RACO; Hubbell.
 12. Thomas & Betts Corporation.
- B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
- D. LFNC: Comply with UL 1660.
- E. Fittings for RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
- F. Fittings for LFNC: Comply with UL 514B.

SPECIAL PROVISIONS

- G. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.3. BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Adalet.
 - 2. Cooper Technologies Company; Cooper Crouse-Hinds.
 - 3. EGS/Appleton Electric.
 - 4. Erickson Electrical Equipment Company.
 - 5. FSR Inc.
 - 6. Hoffman.
 - 7. Hubbell Incorporated.
 - 8. Kraloy.
 - 9. Milbank Manufacturing Co.
 - 10. Mono-Systems, Inc.
 - 11. O-Z/Gedney.
 - 12. RACO; Hubbell.
 - 13. Robroy Industries.
 - 14. Spring City Electrical Manufacturing Company.
 - 15. Stahlin Non-Metallic Enclosures.
 - 16. Thomas & Betts Corporation.
 - 17. Wiremold / Legrand.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- E. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.
- F. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 4, stainless steel with continuous-hinge cover unless otherwise indicated.
- G. Cabinets:
 - 1. NEMA 250, Type 4X stainless-steel box with removable interior panel.
 - 2. Hinged door in front cover with concealed hinge.
 - 3. Metal barriers to separate wiring of different systems and voltage.

2.4. HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. General Requirements for Handholes and Boxes:
 - 1. Boxes and handholes for use in underground systems shall be designed and identified as defined in NFPA 70, for intended location and application.

SPECIAL PROVISIONS

2. Boxes installed in wet areas shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel, fiberglass, or a combination of the two.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armorcast Products Company.
 - b. Carson Industries LLC.
 - c. NewBasis.
 - d. Oldcastle Precast, Inc.
 - e. Quazite: Hubbell Power System, Inc.
 - f. Synertech Moulded Products.
 2. Standard: Comply with SCTE 77.
 3. Configuration: Designed for flush burial with open bottom unless otherwise indicated.
 4. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure and handhole location.
 5. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 6. Cover Legend: Molded lettering, "LIGHTING".

2.5. SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

- A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
 1. Tests of materials shall be performed by an independent testing agency.
 2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
 3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012 and traceable to NIST standards.

PART 3 – EXECUTION

3.1. RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 1. Exposed Conduit: GRC or IMC.
 2. Concealed Conduit, Aboveground: GRC or IMC.
 3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.

SPECIAL PROVISIONS

4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X.
- B. Minimum Raceway Size: 1/2-inch (16-mm) trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 2. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

3.2. INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Complete raceway installation before starting conductor installation.
- C. Comply with requirements in Section 16073 "Hangers and Supports for Electrical Systems" for hangers and supports.
- D. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- F. Install conduits parallel or perpendicular to structure lines.
- G. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- H. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- J. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- K. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- L. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

SPECIAL PROVISIONS

- M. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- N. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- O. Comply with manufacturer's written instructions for solvent welding RNC and fittings.
- P. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches (915 mm) of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
- Q. Fasten junction and pull boxes to or support from structure. Do not support boxes by conduits.

3.3. INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
 - 1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 02202 "Trenching" for pipe less than 6 inches (150 mm) in nominal diameter.
 - 2. Install backfill as specified in Section 02202 "Trenching".
 - 3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 02202 "Trenching"
 - 4. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment.
 - a. Couple steel conduits to ducts with adapters designed for this purpose.
 - b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits rise poles, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment base or pole. Install insulated grounding bushings on terminations at equipment.
 - 5. Underground Warning Tape: Comply with requirements in Section 16075 "Electrical Identification."

3.4. INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

SPECIAL PROVISIONS

- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch (25 mm) above finished grade.
- D. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

END OF SECTION

Add the following Section:

SECTION 16140 - WIRING DEVICES

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Weather-resistant receptacles.

1.3. DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

1.4. ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.5. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6. CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing-label warnings and instruction manuals that include labeling conditions.

SPECIAL PROVISIONS

PART 2 – PRODUCTS

2.1. MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
 - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 3. Leviton Mfg. Company Inc. (Leviton).
 - 4. Pass & Seymour/Legrand (Pass & Seymour).
- B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2. GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:
 - 1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
 - 2. Devices shall comply with the requirements in this Section.

2.3. STRAIGHT-BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 5351 (single), CR5362 (duplex).
 - b. Hubbell; HBL5351 (single), HBL5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5361 (single), 5362 (duplex).

2.4. GFCI RECEPTACLES

- A. General Description:
 - 1. Straight blade, non-feed-through type.
 - 2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
 - 3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

SPECIAL PROVISIONS

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; VGF20.
 - b. Hubbell; GFR5352L.
 - c. Pass & Seymour; 2095.
 - d. Leviton; 7590.

2.5. WALL PLATES

- A. Single and combination types shall match corresponding wiring devices.
 2. Plate-Securing Screws: Metal with head color to match plate finish.
 3. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant thermoplastic with lockable cover.

2.6. FINISHES

- A. Device Color:
 1. Wiring Devices Connected to Normal Power System: Gray unless otherwise indicated or required by NFPA 70 or device listing.

PART 3 – EXECUTION

3.1. INSTALLATION

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
 1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
 2. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 3. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
 1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

SPECIAL PROVISIONS

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.

3.2. GFCI RECEPTACLES

- A. Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.3. FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

SPECIAL PROVISIONS

- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION

Add the following Section:

SECTION 16145 – LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Photoelectric switches.
 - 2. Outdoor motion sensors.
 - 3. Lighting contactors.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5. CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lighting control device to include in emergency, operation, and maintenance manuals.

PART 2 – PRODUCTS

2.1. OUTDOOR PHOTOELECTRIC SWITCHES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cooper Industries, Inc.
 - 2. Intermatic, Inc.
 - 3. NSi Industries LLC; TORK Products.
 - 4. Tyco Electronics; ALR Brand.
- B. Description: Solid state, with SPST dry contacts rated for 1800 VA, to operate connected load, complying with UL 773.
 - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

SPECIAL PROVISIONS

2. Light-Level Monitoring Range: 1.5 to 10 fc (16.14 to 108 lux), with an adjustment for turn-on and turn-off levels within that range.
3. Time Delay: Thirty-second minimum, to prevent false operation.
4. Lightning Arrester: Air-gap type.

2.2. OUTDOOR MOTION SENSORS

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

1. Bryant Electric.
2. Cooper Industries, Inc.
3. Hubbell Building Automation, Inc.
4. Leviton Manufacturing Co., Inc.
5. Lithonia Lighting; Acuity Brands Lighting, Inc.
6. NSi Industries LLC; TORK Products.
7. RAB Lighting.
8. Sensor Switch, Inc.
9. Watt Stopper.

- B. General Requirements for Sensors: Solid-state outdoor motion sensors.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. PIR type, weatherproof. Detect occurrences of 6-inch- (150-mm-) minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. (232 sq. cm). Comply with UL 773A.
3. Switch Rating:
 - a. Lighting-Fixture-Mounted Sensor: 1000-W incandescent, 500-VA fluorescent.
 - b. Separately Mounted Sensor: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac.
4. Switch Type: SP.
5. Voltage: Match the circuit voltage.
6. Detector Coverage:
 - a. Long Range: 180-degree field of view and 110-foot (34-m) detection range.
7. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc (108 to 1600 lux). The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
8. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and help eliminate false "off" switching.
10. Operating Ambient Conditions: Suitable for operation in ambient temperatures ranging from minus 40 to plus 130 deg F (minus 40 to plus 54 deg C), rated as "raintight" according to UL 773A.

SPECIAL PROVISIONS

PART 3 – EXECUTION

3.1. SENSOR INSTALLATION

- A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.2. WIRING INSTALLATION

- A. Wiring Method: Comply with Section 16120 "Conductors and Cables." Minimum conduit size is 1/2 inch (13 mm).
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3. IDENTIFICATION

- A. Identify components and power and control wiring according to Section 16075 "Electrical Identification."
 - 1. Identify controlled circuits in lighting contactors.
 - 2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

3.4. FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Lighting control devices will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

3.5. ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
 - 1. For motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.

SPECIAL PROVISIONS

3.6. DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION

Add the following Section:

SECTION 16146 - RELAY-BASED LIGHTING CONTROLS

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes: Lighting control panels using mechanically held relays for switching.

1.3. DEFINITIONS

- A. RS-485: A serial network protocol, similar to RS-232, complying with TIA-485-A.

1.4. ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control modules, relays, and conductors and cables.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For each relay panel and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail wiring partition configuration, current, and voltage ratings.
 - 3. Short-circuit current rating of relays.
 - 4. Include diagrams for power, signal, and control wiring.
 - 5. Block Diagram: Show interconnections between components specified in this Section and devices furnished with power distribution system components. Indicate data communication paths and identify networks, data buses, data gateways, concentrators, and other devices to be used. Describe characteristics of network and other data communication lines.

1.5. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

SPECIAL PROVISIONS

1.6. CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For lighting controls to include in emergency, operation, and maintenance manuals.

1.7. DELIVERY, STORAGE, AND HANDLING

- A. Handle and prepare panels for installation according to NECA 407.

PART 2 – PRODUCTS

2.1. SYSTEM DESCRIPTION

- A. Input signal from digital signal sources, shall open or close one or more lighting control relays in the lighting control panels. Any combination of inputs shall be programmable to any number of control relays.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with 47 CFR, Subparts A and B, for Class A digital devices.
- D. Comply with UL 916.

2.2. LIGHTING CONTROL RELAY PANELS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Acuity Brands, Inc., Lighting Control & Design, Inc.; GR2400.
 - 2. General Electric Company, GE Consumer & Industrial - Electrical Distribution; LVRC.
 - 3. Leviton Mfg. Company Inc.; Z-Max Plus.
 - 4. Lightolier Controls, a Philips Group brand; Lyteswitch.
 - 5. Siemens Energy & Automation, Inc.; LCP3000EZ.
 - 6. Touch-Plate Technologies; Zone Z.
 - 7. WattStopper, a Legrand Group brand; Lighting Integrator.
- B. Description: Standalone lighting control panel using mechanically latched relays to control lighting and appliances.
- C. Lighting Control Panel:
 - 1. A single enclosure with incoming lighting branch circuits, control circuits, switching relays, and on-board timing and control unit.
 - 2. A vertical barrier separating branch circuits from control wiring.
- D. Control Unit: Contain the power supply and electronic control for operating and monitoring individual relays.
 - 1. Timing Unit:
 - a. 365-day calendar, astronomical clock, and automatic adjustments for daylight savings and leap year.
 - b. Clock configurable for 12-hour (A.M./P.M.) or 24-hour format.
 - c. Four independent schedules, each having 24 time periods.
 - d. Schedule periods settable to the minute.

SPECIAL PROVISIONS

- e. Day-of-week, day-of-month, day-of-year with one-time or repeating capability.
 - f. 10 special date periods.
- 2. Sequencing Control with Override:
 - a. Automatic sequenced on and off switching of selected relays at times set at the timing unit, allowing timed overrides from external switches.
 - b. Sequencing control shall operate relays one at a time, completing the operation of all connected relays in not more than 10 seconds.
 - c. Override control shall allow any relay connected to it to be switched on or off by a field-deployed manual switch or by an automatic switch, such as an photoelectric sensor.
- 3. Nonvolatile memory shall retain all setup configurations. After a power failure, the controller shall automatically reboot and return to normal system operation, including accurate time of day and date.
- E. Relays: Electrically operated, mechanically held single-pole switch, rated at 20 A at 120-V tungsten, 30 A at 277-V ballast, 1.5 hp at 120 V, and 3 hp at 277 V. Short-circuit current rating shall be not less than 14 kA. Control shall be three-wire, 24-V ac.
- F. Power Supply: NFPA 70, Class 2, sized for connected equipment, plus 20 percent spare capacity. Powered from a dedicated branch circuit of the panelboard that supplies power to the line side of the relays, sized to provide control power for the local panel-mounted relays, bus system, low-voltage inputs, field-installed occupancy sensors, and photo sensors.
- G. Operator Interface:
 - 1. Integral alphanumeric keypad and digital display, and intuitive drop-down menus to assist in programming.
 - 2. Log and display relay on-time.
 - 3. Connect relays to one or more time and sequencing schemes.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Examine panels before installation. Reject panels that are damaged or rusted or have been subjected to water saturation.
- B. Examine elements and surfaces to receive panels for compliance with installation tolerances and other conditions affecting performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. WIRING INSTALLATION

- A. Comply with NECA 1.

SPECIAL PROVISIONS

- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Install lacing bars and distribution spools.

3.3. PANEL INSTALLATION

- A. Comply with NECA 1.
- B. Install filler plates in unused spaces.

3.4. IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 16075 "Electrical Identification."
- B. Create a directory to indicate loads served by each relay; incorporate Owner's final room designations. Obtain approval before installing. Use a PC or typewriter to create directory; handwritten directories are unacceptable.
- C. Lighting Control Panel Nameplates: Label each panel with a nameplate complying with requirements for identification specified in Section 16075 "Electrical Identification."

3.5. FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- B. Acceptance Testing Preparation:
 - 1. Test continuity of each circuit.
- C. Lighting control panel will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports, including a certified report that identifies lighting control panels and describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations made after remedial action.

3.6. STARTUP SERVICE

- A. Perform startup service.
 - 1. Complete installation and startup checks according to manufacturer's written instructions.
 - 2. Confirm correct program the lighting control system according to approved configuration schedules, time-of-day schedules, and input override assignments.

SPECIAL PROVISIONS

3.7. ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions.

3.8. DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain the control unit and operator interface.

END OF SECTION

Add the following Section:

SECTION 16211 - ELECTRICITY METERING

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section includes equipment for electricity metering by utility company.

1.3. QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.4. DELIVERY, STORAGE, AND HANDLING

- A. Receive, store, and handle modular meter center according to NECA 400.

1.5. COORDINATION

- A. Electrical Service Connections: Coordinate with utility companies and components they furnish as follows:
 - 1. Comply with requirements of utilities providing electrical power services.
 - 2. Coordinate installation and connection of utilities and services, including provision for electricity-metering components.

PART 2 – PRODUCTS

2.1. EQUIPMENT FOR ELECTRICITY METERING BY UTILITY COMPANY

- A. Meters will be furnished by utility company.
- B. Current-Transformer Cabinets: Comply with requirements of electrical-power utility company.

SPECIAL PROVISIONS

- C. Meter Sockets: Comply with requirements of electrical-power utility company.
- D. Meter Sockets: Steady-state and short-circuit current ratings shall meet indicated circuit ratings.

PART 3 – EXECUTION

3.1. INSTALLATION

- A. Comply with equipment installation requirements in NECA 1.
- B. Install meters furnished by utility company. Install raceways and equipment according to utility company's written requirements. Provide empty conduits for metering leads and extend grounding connections as required by utility company.

3.2. IDENTIFICATION

- A. Comply with requirements for identification specified in Section 16075 "Electrical Identification."
 - 1. Series Combination Warning Label: Self-adhesive type, with text as required by NFPA 70.

END OF SECTION

Add the following Section:

SECTION 16441 - SWITCHBOARDS

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Service and distribution switchboards rated 600 V and less.
 - 2. Transient voltage suppression devices.
 - 3. Disconnecting and overcurrent protective devices.
 - 4. Instrumentation.
 - 5. Control power.
 - 6. Accessory components and features.
 - 7. Identification.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of switchboard, overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
- B. Shop Drawings: For each switchboard and related equipment.

SPECIAL PROVISIONS

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.
6. Detail utility company's metering provisions with indication of approval by utility company.
7. Include evidence of NRTL listing for series rating of installed devices.
8. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
9. Include schematic and wiring diagrams for power, signal, and control wiring.

1.4. INFORMATIONAL SUBMITTALS

A. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.5. CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals. Include the following:

1. Routine maintenance requirements for switchboards and all installed components.
2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

1.6. QUALITY ASSURANCE

- A. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA PB 2.
- D. Comply with NFPA 70.
- E. Comply with UL 891.

1.7. DELIVERY, STORAGE, AND HANDLING

- A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

SPECIAL PROVISIONS

- B. Remove loose packing and flammable materials from inside switchboards and install temporary electric heating (250 W per section) to prevent condensation.
- C. Handle and prepare switchboards for installation according to NEMA PB 2.1.

1.8. PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
 - b. Altitude: Not exceeding 6600 feet (2000 m).
- B. Service Conditions: NEMA PB 2, usual service conditions, as follows:
 - 1. Ambient temperatures within limits specified.
 - 2. Altitude not exceeding 6600 feet (2000 m).

1.9. COORDINATION

- A. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

1.10. WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1. MANUFACTURED UNITS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Front-Connected, Front-Accessible Switchboards:
 - 1. Main Devices: Panel mounted.
 - 2. Branch Devices: Panel mounted.
 - 3. Sections front and rear aligned.
- C. Nominal System Voltage: 208Y/120 V.
- D. Main-Bus Continuous: Per Drawings.
- E. Outdoor Enclosures: Type 3R.

SPECIAL PROVISIONS

1. Finish: Factory-applied finish in manufacturer's standard color; undersurfaces treated with corrosion-resistant undercoating.
 2. Enclosure: Downward, rearward sloping roof; bolt-on rear for each section.
 3. Doors: Personnel door, minimum width of 30 inches (762 mm); opening outwards; with panic hardware and provisions for padlocking.
- F. Barriers: Between adjacent switchboard sections.
- G. Insulation and isolation for main and vertical buses of feeder sections.
- H. Cubical Space Heaters: Factory-installed electric space heaters of sufficient wattage in each vertical section to maintain enclosure temperature above expected dew point.
1. Space-Heater Control: Thermostats to maintain temperature of each section above expected dew point.
 2. Space-Heater Power Source: 120-V external branch circuit.
- I. Utility Metering Compartment: Fabricated, barrier compartment and section complying with utility company's requirements; hinged sealed door; buses provisioned for mounting utility company's current transformers as required by utility company. If separate vertical section is required for utility metering, match and align with basic switchboard. Provide service entrance label and necessary applicable service entrance features.
- J. Customer Metering Compartment: A separate customer metering compartment and section with front hinged door, for indicated metering, and current transformers for each meter. Current transformer secondary wiring shall be terminated on shorting-type terminal blocks.
- K. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.
- L. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.
- M. Buses and Connections: Three phase, four wire unless otherwise indicated.
1. Phase- and Neutral-Bus Material: Tin-plated, high-strength, electrical-grade aluminum alloy with tin-plated aluminum circuit-breaker line connections.
 2. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with mechanical connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.
 3. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with mechanical connectors for feeder and branch-circuit ground conductors..
 4. Main Phase Buses and Equipment Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections.
 5. Neutral Buses: 50 percent of the ampacity of phase buses unless otherwise indicated, equipped with mechanical connectors for outgoing circuit neutral cables. Brace bus extensions for busway feeder neutral bus.

SPECIAL PROVISIONS

- 6. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.
- N. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

2.2. TRANSIENT VOLTAGE SUPPRESSION DEVICES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Surge Protection Device Description: IEEE C62.41-compliant, integrally mounted, bolt-on, solid-state, parallel-connected, modular (with field-replaceable modules) type, with sine-wave tracking suppression and filtering modules, UL 1449, second edition, short-circuit current rating matching or exceeding the switchboard short-circuit rating, and with the following features and accessories:
 - 1. Fuses, rated at 200-kA interrupting capacity.
 - 2. Fabrication using bolted compression lugs for internal wiring.
 - 3. Integral disconnect switch.
 - 4. Redundant suppression circuits.
 - 5. Redundant replaceable modules.
 - 6. Arrangement with wire connections to phase buses, neutral bus, and ground bus.
 - 7. LED indicator lights for power and protection status.
 - 8. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of system operation. Contacts shall reverse position on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
 - 9. Four-digit, transient-event counter set to totalize transient surges.
- C. Peak Single-Impulse Surge Current Rating: 80 kA per mode/160 kA per phase.
- D. Withstand Capabilities: 12,000 IEEE C62.41, Category C3 (10 kA), 8-by-20-mic.sec. surges with less than 5 percent change in clamping voltage.
- E. Protection modes and UL 1449 SVR for grounded wye circuits with 208Y/120-V, three-phase, four-wire circuits shall be as follows:
 - 1. Line to Neutral: 400 V for 208Y/120.
 - 2. Line to Ground: 400 V for 208Y/120.
 - 3. Neutral to Ground: 400 V for 208Y/120.

2.3. DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

SPECIAL PROVISIONS

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
3. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor material.
 - c. Application Listing: Appropriate for application.
 - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
 - e. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.

2.4. INSTRUMENTATION

- A. Instrument Transformers: IEEE C57.13, NEMA EI 21.1, and the following:
 1. Current Transformers: IEEE C57.13; 5 A, 60 Hz, secondary; bar or window type; single secondary winding and secondary shorting device. Burden and accuracy shall be consistent with connected metering and relay devices.
 2. Control-Power Transformers: Dry type, mounted in separate compartments for units larger than 3 kVA.
- B. Multifunction Digital-Metering Monitor: Microprocessor-based unit suitable for three- or four-wire systems and with the following features:
 1. Switch-selectable digital display of the following values with maximum accuracy tolerances as indicated:
 - a. Phase Currents, Each Phase: Plus or minus 1 percent.
 - b. Phase-to-Phase Voltages, Three Phase: Plus or minus 1 percent.
 - c. Phase-to-Neutral Voltages, Three Phase: Plus or minus 1 percent.
 - d. Megawatts: Plus or minus 2 percent.
 - e. Megavars: Plus or minus 2 percent.
 - f. Power Factor: Plus or minus 2 percent.
 - g. Frequency: Plus or minus 0.5 percent.
 - h. Accumulated Energy, Megawatt Hours: Plus or minus 2 percent; accumulated values unaffected by power outages up to 72 hours.
 - i. Megawatt Demand: Plus or minus 2 percent; demand interval programmable from five to 60 minutes.
 - j. Contact devices to operate remote impulse-totalizing demand meter.
 2. Mounting: Display and control unit flush or semiflush mounted in instrument compartment door.

SPECIAL PROVISIONS

2.5. CONTROL POWER

- A. Control Circuits: 120-V ac, supplied from remote branch circuit.
- B. Control Wiring: Factory installed, with bundling, lacing, and protection included. Provide flexible conductors for No. 8 AWG and smaller, for conductors across hinges, and for conductors for interconnections between shipping units.

2.6. IDENTIFICATION

- A. Service Equipment Label: NRTL labeled for use as service equipment for switchboards with one or more service disconnecting and overcurrent protective devices.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Receive, inspect, handle, and store switchboards according to NEMA PB 2.1.
- B. Examine switchboards before installation. Reject switchboards that are moisture damaged or physically damaged.
- C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. INSTALLATION

- A. Install switchboards and accessories according to NEMA PB 2.1.
- B. Equipment Mounting: Install switchboards on concrete base, 4-inch (100-mm) nominal thickness. Comply with requirements for concrete base specified in Section 03300 "Cast-in-Place Concrete."
 - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to switchboards.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from switchboard units and components.
- D. Install filler plates in unused spaces of panel-mounted sections.
- E. Install overcurrent protective devices, transient voltage suppression devices, and instrumentation.
- F. Comply with NECA 1.

3.3. IDENTIFICATION

- A. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Section 16075 "Electrical Identification."

SPECIAL PROVISIONS

- B. Device Nameplates: Label each disconnecting and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Section 16075 "Electrical Identification."

3.4. FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 - 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each switchboard. Remove front and rear panels so joints and connections are accessible to portable scanner.
 - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each switchboard 11 months after date of Substantial Completion.
 - c. Instruments and Equipment:
 - i. Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Switchboard will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies switchboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.5. ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

SPECIAL PROVISIONS

3.6. PROTECTION

- A. Temporary Heating: Apply temporary heat, to maintain temperature according to manufacturer's written instructions, until switchboard is ready to be energized and placed into service.

END OF SECTION

Add the following Section:

SECTION 16442 - PANELBOARDS

PART 1 – GENERAL

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2. SUMMARY

- A. Section Includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.3. ACTION SUBMITTALS

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 6. Include wiring diagrams for power, signal, and control wiring.

1.4. INFORMATIONAL SUBMITTALS

- A. Field Quality-Control Reports:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

SPECIAL PROVISIONS

1.5. CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 01700 "Project Closeout," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

1.6. QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA PB 1.
- D. Comply with NFPA 70.

1.7. DELIVERY, STORAGE, AND HANDLING

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
- B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.8. PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Not exceeding minus 22 deg F (minus 30 deg C) to plus 104 deg F (plus 40 deg C).
 - b. Altitude: Not exceeding 6600 feet (2000 m).
- B. Service Conditions: NEMA PB 1, usual service conditions, as follows:
 - 1. Ambient temperatures within limits specified.
 - 2. Altitude not exceeding 6600 feet (2000 m).

PART 2 – PRODUCTS

2.1. GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Enclosures: Flush-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - 2. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.
- B. Phase, Neutral, and Ground Buses:
 - 1. Material: Tin-plated aluminum.
 - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

SPECIAL PROVISIONS

- C. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Tin-plated aluminum.
 - 2. Main and Neutral Lugs: Mechanical type.
 - 3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
- D. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- E. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2. LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: lugs only.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

2.3. DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
 - 3. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).

SPECIAL PROVISIONS

4. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.

PART 3 – EXECUTION

3.1. EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2. INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Install overcurrent protective devices and controllers not already factory installed.
- C. Install filler plates in unused spaces.
- D. Comply with NECA 1.

3.3. IDENTIFICATION

- A. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- B. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 16075 "Electrical Identification."

3.4. FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 2. Test continuity of each circuit.
- C. Tests and Inspections:

SPECIAL PROVISIONS

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
 - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
 - c. Instruments and Equipment:
 - i. Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- 3.5. ADJUSTING
- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- 3.6. PROTECTION
- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION

Add the following Section:

SECTION 16521 – EXTERIOR LIGHTING

PART 1 – GENERAL

- 1.1. RELATED DOCUMENTS
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2. SUMMARY
- A. Section Includes:
1. Exterior luminaires.

SPECIAL PROVISIONS

2. Poles and accessories.

1.3. DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. LER: Luminaire efficacy rating.
- D. Luminaire: Complete lighting fixture, including ballast housing if provided.
- E. Pole: Luminaire support structure, including tower used for large area illumination.
- F. Standard: Same definition as "Pole" above.

1.4. STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4-M.
- B. Live Load: Single load of 500 lbf (2224 N), distributed as stated in AASHTO LTS-4-M.
- C. Ice Load: Load of 3 lbf/sq. ft. (145 Pa), applied as stated in AASHTO LTS-4-M Ice Load Map.
- D. Wind Load: Pressure of wind on pole and luminaire and banners and banner arms, calculated and applied as stated in AASHTO LTS-4-M.
 - 1. Basic wind speed for calculating wind load for poles 50 feet (15 m) high or less is 100 mph (45 m/s).
 - a. Wind Importance Factor: 1.0.
 - b. Minimum Design Life: 25 years.
 - c. Velocity Conversion Factors: 1.0.

1.5. ACTION SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
 - a. Testing Agency Certified Data: For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

SPECIAL PROVISIONS

6. Materials, dimensions, and finishes of poles.
 7. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
 8. Anchor bolts for poles.
 9. Manufactured pole foundations.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 2. Anchor-bolt templates keyed to specific poles and certified by manufacturer.

1.6. INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.
- B. Warranty: Sample of special warranty.

1.7. CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

1.8. QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.

1.9. DELIVERY, STORAGE, AND HANDLING

- A. Store poles on decay-resistant-treated skids at least 12 inches (300 mm) above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- B. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.10. WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.

SPECIAL PROVISIONS

2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
4. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

PART 2 – PRODUCTS

2.1. MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.2. GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
 1. LER Tests Fixtures: Where LER is specified, test according to NEMA LE 5A.
- B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Exposed Hardware Material: Stainless steel.
- G. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- H. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
 1. White Surfaces: 85 percent.
 2. Specular Surfaces: 83 percent.
 3. Diffusing Specular Surfaces: 75 percent.
- I. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- J. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

2.3. DRIVERS FOR LED SOURCED LUMINAIRES

- A. General Requirements for Electronic Drivers:

SPECIAL PROVISIONS

1. Comply with UL and ANSI C82.11.
2. Exterior Environmental Protection: IP66 outdoor rated.
3. Designed for type and quantity of LED's served.
4. Drivers shall be designed for full light output unless dimmer control is indicated.
5. Drivers shall operate at 60 Hz.
6. Sound Rating: Class A.
7. Output Voltage Regulation: 1 percent Line and 5 percent Load.
8. Total Harmonic Distortion Rating: Less than 20 percent.
9. Current Crest Factor: 1.5, maximum.
10. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.

2.4. GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4-M.
 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 1. Materials: Shall not cause galvanic action at contact points.
 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
 3. Anchor-Bolt Template: Plywood or steel.
- D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws.
- E. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Section 03300 "Cast-in-Place Concrete."

2.5. STEEL POLES

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet (12 m) in height with access handhole in pole wall.
 1. Shape: Per Drawings.
 2. Mounting Provisions: Butt flange for bolted mounting on foundation support.
- B. Steel Mast Arms: Per Drawings. Material and finish same as pole.

SPECIAL PROVISIONS

- C. Brackets for Luminaires: Per Drawings
 - 1. Match pole material and finish.
- D. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Section 16060 "Grounding and Bonding," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- E. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- F. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or with SSPC-SP 8, "Pickling."
 - 2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
 - 3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: Per Drawings.

2.6. POLE ACCESSORIES

- A. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.

PART 3 – EXECUTION

3.1. LUMINAIRE INSTALLATION

- A. Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

3.2. POLE INSTALLATION

- A. Alignment: Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Section 03300 "Cast-in-Place Concrete."
- C. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.
 - 1. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.

SPECIAL PROVISIONS

2. Install base covers unless otherwise indicated.
 3. Use a short piece of 1/2-inch- (13-mm-) diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.
- D. Raise and set poles using web fabric slings (not chain or cable).

3.3. CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Section 16130 "Raceways and Boxes." In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4. GROUNDING

- A. Ground metal poles and support structures according to Section 16060 "Grounding and Bonding."
 1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

3.5. FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 1. Verify operation of controls.

END OF SECTION

END OF SPECIAL PROVISIONS