CITY OF DILLINGHAM, ALASKA

Aerated Lagoon Facility Improvements

ADDENDUM NO. 2

April 18, 2022

The changes, additions, deletions, and clarifications reflected in this addendum are hereby made a part of the Aerated Lagoon Facility Improvements Contract Documents.

SPECIFICATIONS AND CONTRACT DOCUMENTS

I. Make the following changes to Section 00 11 16 INVITATION TO BID:

ALL BIDS ARE DUE PRIOR TO 2:00 p.m., April 28, 2022

BIDS WILL BE OPENED AT 2:00 p.m., April 28, 2022

II. Delete Section 31 00 00 EARTHWORK in its entirety and replace with the attached Section 31 00 00 – EARTHWORK REVISION 1 specification.

III. Delete Section 31 05 19 GEOMEMBRANE in its entirety and replace with the attached Section 31 05 19 – GEOMEMBRANE specification.

BIDDER MUST ACKNOWLEDGE RECEIPT OF THIS ADDENDUM IN THE APPROPRIATE SPACE ON THE BID FORM. FAILURE TO DO SO WILL SUBJECT THE BIDDER TO DISQUALIFICATION.

* * * END OF ADDENDUM NO. 2 * * *

SECTION 31 00 00 - EARTHWORK REVISION 1

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general requirements for earthwork, including controlled fill, compaction, grading, imported materials and backfill, and accessories.

B. Work under Specification SECTION 31 23 00 – EXCAVATION is directly related to this Specification.

C. See SECTION 31 05 19 for geomembrane specifications.

D. No petroleum product storage tanks will be allowed on site without prior written approval of the Engineer.

1.2 REFERENCES

1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
2. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods.

1.3 DEFINITIONS

A. Imported Material: Materials obtained from sources offsite, suitable for specified use.

B. Influence Area: Area within planes sloped downward and outward at 60-degree angle from horizontal measured from:
   1. 1 foot outside outermost edge at base of foundations or slabs.
   2. 1 foot outside outermost edge at surface of roadways or shoulder.
   3. 0.5 foot outside exterior at spring line of pipes or culverts.

C. Lift: Loose (uncompacted) layer of material.

D. Prepared Ground Surface: Ground surface after completion of required clearing, excavation to grade, and subgrade preparation.

E. Prepared Subgrade: The ground surface after clearing, grading, excavation, smoothing, and/or compaction to meet the requirements for placement of the next overlying layer.

F. Processed Material: Materials processed onsite that are suitable for specified use. The only materials that may be processed from onsite materials are “Suitable Materials”. All other materials must be imported to the site.

G. Proof Rolling: Rolling a soil or rock surface with a minimum of 3 passes with compaction equipment as specified and reviewed by the Engineer for the purpose of detecting soft or loose areas.

H. Select Backfill Material: Material imported or processed from on-site excavation.

I. Stockpiles: Excavated material placed at a designated site for future use by Lagoon Operations staff, or the Contractor's temporary stockpile location for imported material.

J. Suitable Material: Material imported or excavated from the cut areas, which is suitable for use in constructing fills and meets the requirements of Section 2.2.

K. Unsuitable Material: Material from project excavations which, in the opinion of the Engineer, is not suitable for use in backfill or compacted fills.

L. Well-Graded:
1. A mixture of particle sizes with no specific concentration or lack thereof of one or more sizes.
2. Does not define numerical value that must be placed on coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
3. Used to define material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

1.4 SUBMITTALS

A. A Construction Plan shall be submitted to the Engineer at least 15 days prior to any earthwork activities. The Construction Plan shall, at a minimum, include the following:
1. Proposed source(s) of Imported Materials for acceptance.
2. Proposed soil processing, placement, compaction, and moisture control equipment, including equipment catalog with weight, dimensions, ground pressure exerted by track or rubber tire machines expressed in (psi), and operating data.
3. Proposed work schedule.
4. Proposed method of protecting work, to include temporary drainage measures and freeze protection.
5. Proposed excavation, stockpiling, re-grading and staging plan describing handling and transport of on-site and off-site materials.
6. Proposed proof rolling method and equipment for each sub-grade condition.
7. Submit plans showing the proposed methods of removing overburden, overburden stockpiles and methods of placing overburden onto the outside of the pretreatment pond berm.

B. Include submittals for the following materials:
1. Geotextile fabric.
2. Geomembrane liner.
3. Imported fill materials.

C. A Quality Assurance Plan shall be submitted to the Engineer at least 15 days prior to any earthwork activities. The Quality Assurance Plan shall, at a minimum, included:
1. Items listed in Section 1.4.

1.5 QUALITY ASSURANCE

A. Notify Engineer when:
   1. Facility is ready for backfilling or filling, and whenever backfilling or filling operations are resumed after a period of inactivity.
   2. Soft or loose subgrade materials are encountered wherever fill or backfill is to be placed.
   3. Fill or backfill material appears to be deviating from Specifications.
   4. Fill or backfill is compacted and ready for testing.

B. Referenced Standards: This section incorporates by reference the latest revision of the following documents. It is part of this section as specified and modified. In case of conflict between the requirements of this section and that of the listed documents, the requirements of this section shall prevail:

1.6 SEQUENCING AND SCHEDULING

A. Complete applicable Work specified in Specification SECTION 31 23 00 – EXCAVATION before placing fill or backfill, except as specified.

B. Notify Engineer at least 24 hours prior to commencement of filling and compaction work.

1.7 PROTECTION

A. All roads, grading, structures, utilities, wells, survey monuments, and other improvements not specifically designated to be cleared, removed, stripped or altered as a part of the work shall be protected from damage throughout the construction period. Any damage caused by the Contractor, his employees, agents, or any lower tiered subcontractors shall be immediately repaired and re-established to the original condition and to the satisfaction of the Engineer at no additional cost to the City.

PART 2 - PRODUCTS

2.1 SOURCE QUALITY CONTROL

A. All tests necessary for the Contractor to locate acceptable sources of specified materials shall be the Contractor’s responsibility, including obtaining necessary samples. Tests shall be conducted by an approved independent testing lab retained by the Contractor. All imported materials must be reviewed and approved by the Engineer prior to transport to site.

2.2 MATERIALS

A. Pipe Bedding – Aggregate with a maximum particle size of 2” containing no muck, frozen materials, roots, sod or other deleterious matter with a plasticity index not greater than 6 as tested by ATM 204 and ATM 304. Meet the following gradation as tested by ATM 304:

Sieve	Percent Passing by Weight
No. 4	20-60%
No. 200	0-6%, determined on the minus 3-inch portion of the sample

B. Berm Fill/Trench Backfill – Earth, sand, gravel, rock, or combinations thereof containing no muck, peat, frozen material, roots, sod or other deleterious matter, and is compactable in accordance with Section 3.3.

2.3 ACCESSORIES

A. Geotextile Fabric
1. Per ADOT&PF SSHC – 729-2.01 Geotextile, Separation, meeting AASHTO M288 for Separation, except provide a minimum permittivity of 0.05 sec^{-1}.

B. Geomembrane Liner
~~1. Layfield, Hazgard 100. layfieldgroup.com. (619) 273-5006.~~
2. ~~Substitutions meeting the above requirements shall be submitted to the Engineer in writing for approval.~~ SEE SECTION 31 05 19.

C. Board Insulation
1. Dow Highload 40 Extruded Polystyrene Insulation, or approved equal.

D. Detectable Warning Tape
1. Minimum five (5) mil, foil backed, six inches (6”) wide vinyl tape, colored green, with “Caution Buried Sewer Line Below” continuously printed in black along the tape length. Minimum eighteen inches (18”) and maximum thirty six inches (36”) above the pipe.

PART 3 - EXECUTION

3.1 GENERAL

A. Keep placement surfaces free of water, debris, and foreign material during placement and compaction of fill and backfill materials.

B. Place and spread fill and backfill materials in horizontal lifts of uniform thickness not to exceed eight (8) inches, in a manner that avoids segregation, and compact each lift before placing succeeding lifts. Slope lifts only where necessary to conform to final grades or as necessary to keep placement surfaces drained of water.

C. Provide compaction equipment appropriate for the material types. Operate and maintain compaction equipment in accordance with the manufacturer’s instructions and recommendations. If inadequate densities are obtained, provide larger and/or different type equipment at no additional cost to the Owner.

D. Do not place fill or backfill if material is frozen, or if surface upon which fill or backfill is to be placed is frozen.

E. Tolerances:

1. Final Lines and Grades: Within a tolerance of 0.1 foot unless dimensions or grades are shown or specified otherwise.
2. Grade to establish and maintain slopes and drainage as shown. Reverse slopes or grading that creates closed depressions are not permitted.

F. Settlement: Correct and repair any subsequent damage caused by settlement of fill or backfill material.

G. Water will not be available at the site. The Contractor shall provide equipment and labor to collect and haul the water, which is incidental to the work.

H. Coordinate haul routes with the lagoon operator.

I. Prepared subgrade shall be compacted to a minimum 92% maximum dry density prior to placing additional fill or materials.

3.2 SITE TESTING

A. Control Section: The Engineer may approve the use of control section for establishment of acceptable compaction efforts for each material type. The purpose of this method is to establish an acceptable placement / watering / roller pattern that will achieve the required compaction for the project.

If at any time the Engineer feels that the control section is no longer valid for the type or location of compaction efforts the Engineer may require compaction test or the re-establishment of a new control section at no cost to the owner. If the contractor wishes to use Control Sections these must be established in in the contractor's Quality Assurance Plan

3.3 PLACING AND SPREADING FILL MATERIAL

A. Refer to Drawings for details.
1. Use Suitable Material, See Articles 2.2.
2. Maximum 8-inch Lifts.
3. Place Fill to the lines and grades shown on the Drawings.
4. Compact Material to 95% maximum dry density or greater in traffic areas and to 90% or greater elsewhere.

B. Stockpile Suitable Material that is suitable for use as select backfill in temporary stockpile areas within the project limits as approved by the Engineer until material is used in the construction.

C. Construct Selected Material fills with moisture and density control unless the Engineer determines that such controls are not feasible.

D. Compaction with moisture and density control. Adjust the moisture content of the Selected Material to within 2% of the optimum moisture content and compact each layer as indicated in Article 3.3 A.

E. Grade in a manner that shall promote positive site drainage and that shall direct drainage away from the work and prevent ponding.

F. Uniformly grade areas to provide a finished surface that is smooth, compacted and free of irregularities. Comply with compaction requirements and grade to cross sections, lines and elevations indicated. Organic material placed on the outside of the cell should be even in appearance and have no protrusions greater than 6 inches from the surface.

G. Confine stockpiles to within approved work areas. Do not obstruct roadways.

3.4 ACCESSORIES

A. Install per the drawings and manufacturers recommendations.

END OF SECTION 31 00 00

SECTION 310519 – GEOMEMBRANE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Manufacture, storage, delivery, and installation of geomembrane materials as shown in the drawings or as directed by the Engineer.

1.2 DEFINITIONS

A. Definitions shall be in accordance with ASTM D4439, unless otherwise indicated.

B. Bridging: When the geomembrane becomes suspended over the subgrade due to expansion or contraction of the material or poor installation.

C. Geomembrane Subgrade: The surface upon which the geomembrane is placed.

D. Geosynthetics: Geotextiles, Geosynthetic Clay Liner (GCL), or geomembrane.

E. Installer: The party responsible for transporting, storing, handling, deploying, installing, and protecting the geomembrane.

F. Manufacturer: The party responsible for the production of the GEOMEMBRANE in accordance with this Specification.

G. Overlap: Distance measured perpendicular from overlapping edge of one sheet to underlying edge of adjacent sheet.

H. Panel: The unit area of geomembrane that will be seamed in the field. A panel is a roll or portion of a roll without any seams.

1.3 SUBMITTALS

A. Prior to shipping geomembrane to the site, submit the following:
   1. Certificate of Conformance and Sample: Prior to shipping to the site, the Contractor shall submit a certificate or affidavit signed by a legally authorized official of the Manufacturer for the geomembrane attesting that the geomembrane meets the physical and manufacturing requirements stated in these Specifications. The Contractor shall also submit a sample of the geomembrane to be used. The sample shall be labeled with the product name and be accompanied by the Manufacturer's specifications.
   2. Shipping, Handling, and Storage Instructions: The Manufacturer's plan for shipping, handling, and storage shall be submitted for review.
   3. Installation Procedures: Submit installation plan for carrying out the work. Furnish copies of the delivery tickets or other approved receipts as evidence for materials received that will be incorporated into the construction.

B. Upon completion of the geomembrane installation, the Contractor shall submit the following: Completed material performance warranty.

C. Installation plan describing the proposed methods and equipment for geomembrane deployment, panel layout, seaming, repair, and protection.

D. Manufacturer's and Installer's warranties.

E. Record Drawings showing all changes from the approved installation plan drawings. The record drawings shall identify and show the dimensioned location of each seam, repair, penetration, and sample taken from the installed geomembrane.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery, storage, and handling of the geomembrane shall conform to ASTM D4873 and the manufacturer's recommendations.

B. Each roll shall be labeled with the lot number, roll number, and other information necessary to identify it for inventory and CQC and CQA testing.

C. Upon delivery at the site, the Contractor and the Engineer shall inspect the surfaces of all rolls for defects and for damage. This inspection shall be conducted without unrolling rolls unless defects or damages are found or suspected. The Engineer will determine:
1. Rolls, or portions thereof, which should be rejected and removed from the site because they have severe flaws.
2. Rolls or factory panels which include repairable flaws.
3. Rolls that are not properly labeled. No unlabeled rolls shall be used for any application. Unlabeled rolls shall be removed from the site and replaced at the Contractor's expense.

D. Immediately repair any damaged protective covering. Preserve integrity and legibility of geomembrane roll labels.

E. Store and protect geomembrane from dirt, water, vandalism, and other sources of damage.

F. Handling:
1. Use appropriate handling equipment to load, move, and deploy geomembrane rolls. Appropriate handling equipment includes cloth chokers, spreader bars and roll bars.
2. Dragging panels on ground surface shall not be permitted.

1.5 QUALIFICATIONS

A. Manufacturer Qualifications: The manufacturer shall be a commercial entity normally engaged in manufacture of geomembranes for waste containment applications and shall have:
1. Manufactured at least 10 million square feet of geomembranes.
2. Have at least 5 years continuous experience in the manufacturing of geomembrane.

B. The geomembrane Installer shall have at least 5 years' experience in the installation of HDPE geomembrane, for 5 or more completed facilities.

1.6 WARRANTY

A. Provide a manufacturer's warranty for the geomembrane material in compliance with provisions of the Standard General Provisions of the Contract and these

Specifications. Provide a minimum 10-year warranty for the materials against deterioration.

B. Provide an installation warranty for the geomembrane material in compliance with the Standard General Provisions of the Contract. Provide a minimum 2-year non-pro rata warranty for the installation against defects.

C. The warranties shall be provided to the Owner as purchaser and shall be signed by authorized representatives of the geomembrane Manufacturer and Installer.

D. The manufacturer's standard warranty must be received as a condition of Liner Material approval; and, the installer's warranty must be received as a condition for payment for liner installed.

PART 2 - PRODUCTS

2.1 GEOMEMBRANE

A. Material: 9146 XR-5 ULT, 50 mil thick

B. Suppliers: All geomembrane rolls shall be furnished by one supplier.

C. Geomembrane shall be manufactured by Seaman Corporation or approved equal.

2.2 GEOMEMBRANE SHEET

A. Provide finished product free from blemishes, holes, pin holes, bubbles, blisters, excessive gels, undispersed resins, and/or carbon black, contamination by foreign matter and nicks or cuts on edges.

B. The physical, mechanical, and environmental properties of the finished sheet shall meet or exceed the values specified in Table 1:

TABLE 1. Geomembrane Required Properties

Property	Required Value[1]	Test Method
Thickness	50 mil	ASTM D751
Weight	46.0 ± oz/yd^2	ASTM D754
Tongue Tear	90/90 lb_f	ASTM D751
Trapezoidal Tear	85/85 lb_f	ASTM D4533
Grab Tensile	850/900 lb_f	ASTM D751
Strip Tensile	620/620 lb_f/in	ASTM D751 Procedure B
Adhesion	40 lb_f/2in	ASTM D751 Dielectric Weld

Bursting Strength	1100 lb_f	ASTM D751 (Ball Tip)
Low Temperature	-50 ºF	ASTM D2136
Weathering Resistance	8000 hrs (min) No appreciable changes, stiffening or cracking of coating	ASTM G155 (Xenon)

Note: [1]Min. Avg. Value, unless otherwise specified.

2.3 MANUFACTURER SOURCE QUALITY CONTROL

A. The geomembrane manufacturer shall perform source quality control testing to confirm the manufacturer's published material characteristics and demonstrate compliance with this Section. Testing shall be performed at a minimum frequency of once per lot or once every 100,000 square feet, whichever results in the greater number of tests.

B. The Contractor shall submit the geomembrane manufacturer's source quality certification for all rolls of geomembrane shipped to the site. Each quality control certificate shall include roll identification numbers and results of quality control tests. The quality control certificate shall be signed by a responsible party employed by the manufacturer, such as the production manager. The quality control certificate shall include:
1. Roll numbers and identification, resin lot, and batch numbers.
2. Sampling procedures and results of quality control tests.

2.4 LABELING

A. Each geomembrane roll shall be marked or tagged with the following information:
1. Manufacturer's name.
2. Product identification.
3. Lot number.
4. Roll dimensions.
5. Roll weight.

PART 3 - EXECUTION

3.1 GENERAL

A. Install geomembranes at the locations, lines, and grades shown on the Drawings. All geomembranes shall be installed in accordance with manufacturer guidelines.

3.2 GEOMEMBRANE SUBGRADE

A. The subgrade on which the geomembrane is to be installed shall be smooth and free of any rocks, sharp objects, debris, or any other protrusions or deleterious material that may damage the geomembrane.

3.3 DEPLOYMENT

A. Field Panel Placement:

1. Field panels shall be installed as indicated in the approved layout plan and manufacturers guidelines.
2. Sufficient geomembrane shall be deployed to account for shrinkage and contraction while avoiding wrinkles. Installed geomembrane shall be stress-free with no bridging before it is covered.
3. Place sandbags, or other form of ballast approved by the Engineer, on the geomembrane to prevent uplift from wind.
   No vehicles shall be operated on top of the geomembrane during placement.
4. Placement Conditions: Geomembrane placement shall not proceed at an ambient temperature below 32 degrees F or above 100 degrees F as measured 6 inches above the geomembrane surface unless otherwise authorized by the Engineer. Geomembrane shall not be welded during any precipitation, in the presence of excessive moisture (e.g., fog, dew), in an area of ponded water, or in the presence of excessive winds. Placement methods shall prevent damage to underlying materials.

B. Orientation:
1. In general, seams shall be oriented parallel to the line of maximum slope, i.e., oriented up and down the slope.
2. In corners and odd-shaped geometric locations, the number of seams shall be minimized.
3. Seams shall be aligned to produce the fewest possible number of wrinkles and "fishmouths." Before wrinkles fold over, attempt to push them out. Wrinkles that cannot be pushed out shall be cut out and the cuts repaired.
4. Panels of geomembrane shall have a finished overlap of a minimum of 3 inches for extrusion welding and 5 inches for fusion welding. Overlap may be greater if so recommended by the geomembrane Manufacturer for the type of seaming equipment used.

3.4 FIELD SEAMING

A. Seaming:
1. Seaming shall be performed per the manufactures installation guidelines.

3.5 INSPECTION AND REPAIR

1. Examine all welds and non-weld areas of the geomembrane for defects, holes, blisters, undispersed raw materials, and any sign of contamination by foreign matter. The surface of the geomembrane shall be clean at the time of the examination.
2. Repair any portion of the geomembrane exhibiting a flaw, according to manufacturer's guidelines.

3.6 GEOMEMBRANE ACCEPTANCE

A. The Contractor shall retain all ownership and responsibility for the geomembrane until final acceptance of the Project by Engineer.

B. The Engineer will accept the geomembrane installation when:
1. All required documentation from the manufacturer and installer has been received and accepted.
2. The installation is complete.

3. The Contractor has submitted all written warranties, certification documents, and drawings required by this section.

END OF SECTION