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SECTION 31 20 00
EARTH MOVING

PART 1 - GENERAL

1.01 WORK INCLUDES

A. Excavate and grade exterior areas at parking, access drives and other areas shown on the Civil designated Drawings.

1.02 RELATED REQUIREMENTS

A. Alaska Department of Transportation and Public Facilities Standard Specifications for Highway Construction, 2015 edition.

B. Section 32 00 00, Exterior Improvements

1.03 DEFINITIONS

A. Finished grade shall mean the final grade elevations indicated on the Drawings. Profile elevations indicated on the Drawings shall govern over elevation contours in case of conflict.

B. Non-Frost Susceptible (NFS) Soil: Granular self-draining soils free of organic material and containing less, by weight, than ten percent finer than a No. 200 sieve and three percent finer than 0.02 millimeters that can be compacted to a tight, unyielding surface.

C. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below Aggregate Base and Surface Course.

1.04 TESTING

A. The Contractor shall provide soil testing and inspection service by an independent geotechnical-civil engineering firm experienced in performing soil analysis. The testing firm shall be approved by code enforcement authorities and the Owner prior to commencing work.

B. The testing firm shall inspect and report on imported fill material, backfill compaction, and existing bearing soil for compliance with the Drawings and Specifications.

1.05 TEST AND INSPECTION REPORTS REQUIRED

A. Imported Fill Materials: One sieve particle size test for every different borrow source and one for every 1,000 cubic yards of fill.

B. Fill Compaction: One test for each lift layer placed and not less than one test per 2,500 square feet at locations designated by the Engineer.

C. Existing Subgrade: One inspection for loose or deleterious soil is required of existing soils under planned pavement after the existing has been excavated to the bottom of the structural section.

D. Reports shall be signed by a civil engineer registered to practice in the state of Alaska.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do no earthwork when outside temperature is, or is expected to be below 35 degrees F (40 degrees F for asphalt paving) or when the subgrade has standing water or snow.

B. Do not place frozen fill materials.

1.07 PROTECTION

A. Protect existing structures and surfacing from equipment and vehicular traffic by fencing, screens or other appropriate shielding.

B. Protect above and below grade utilities which are to remain.

C. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

PART 2 - PRODUCTS

2.01 EXISTING SOILS ON SITE

A. All foundation and pavement soils are to be prepared as required in Part 3.

B. Excavated inorganic subsoil materials may be used for non-structural fill in areas which require grading.

2.02 DELETERIOUS SUBSTANCES

A. Substances such as sod, organics, peat, wood chips, frozen material or construction debris is not allowed in fill material.

2.03 Hot Mixed Asphalt Pavement

A. Used for surfacing of parking and drive areas.

B. Conforms to the particle gradation and quality requirements for “HMA Type 1; Class B” in Section 401 of DOT&PF (2015).

2.04 AGGREGATE BASE COURSE

C. Used for leveling course under HMA.

D. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and the following requirements:

a. Conforms to the particle gradation, quality and crushing requirements for “Base Course Grading D-1” in Section 703 of DOT&PF (2015).

E. Upon written approval of the engineer, existing in-situ soils meeting the requirements for Base Course as specified above may be substituted for Base Course, on an inch for inch basis. Contractor shall submit material analysis reports for approval by the engineer.

2.05 GENERAL FILL

A. Used to form embankment, is soil that conforms to the requirements of “Select Material Type C” in Section 703 of DOT&PF (2015).

B. Materials excavated on-site may be used as *general fill* if it meets the above criteria, is stockpiles separately, and is kept free of organics, other debris, and excess moisture.

2.06 STRUCTURAL FILL

A. Used as the roadway structural section, conforms to the particle gradation, quality and crushing requirements for “Selected Material Type A” in Section 703 of DOT&PF (2015).

PART 3 - EXECUTION

3.01 INSPECTION OF SITE

A. Examine site surfaces and elevations, existing site plans and details on Drawings for defects that will adversely affect the work.

B. Start of work shall mean acceptance of existing conditions as capable of producing an acceptable job.

3.02 DEWATERING

A. Do not allow water to accumulate in excavations. Remove and convey standing water from excavations by pumping if necessary.

3.03 MATERIAL STORAGE

A. Stockpile reusable soils to prevent cave-in.

B. Shape stockpiles for drainage.

3.04 EXCAVATION

A. Conform to elevations and dimensions shown on the Drawings and as specified. Remove any loose and protruding rock over four inches from edges of excavation.

B. Do not disturb bottom of excavation which receives pipes. Smooth and compact as required to lines and grades indicated.

3.05 OVEREXCAVATION

A. Over-excavation shall be restored to compacted condition at no cost to Owner with approved soils.

3.06 SUBGRADE PREPARATION

A. Scarify and moisture condition all subgrade to receive fill as necessary to ensure proper bond and compaction.

B. Areas to receive fill shall be approved by the Architect/Soils Engineer before any fill is placed.

C. Plow, strip or break up sloped surfaces steeper than one vertical to four horizontal.

3.07 PLACING FILL

A. Prior to fill placement proof-roll excavated subgrades to identify any soft or loose zones. Over-excavate and replace with compacted subgrade fill until firm, unyielding subgrade is produced.

B. Place and compact fill horizontal layers not of more than 12 inches loose depth (four inches if hand compacted).

C. Moisture condition by adding water or drying as necessary for compaction.

D. Spread fill with spreader boxes, wide tracked vehicles, or other approved methods that minimize re-handling and rutting the underlying course.

E. Do not dump fill from vehicles into large piles which require extensive re-handling. Take care to avoid segregation or pockets of fine or course material.

F. Do not spread more than 1,000 square yards in advance of compaction.

G. Backfill around pipes carefully by hand if necessary to avoid damage to structure and waterproofing.

3.08 COMPACTION

A. Compact fill to required density with mechanical tampers of heavy vibrator type where possible.

B. Compact to not less than the following percentages of maximum dry density (relative compaction) for material which exhibits a well-defined moisture density relationship determined in accordance with ASTM D1557-78.

Location	ASTM D1557
Areas to be paved	95 percent
Areas to be landscaped	90 percent

3.09 ELECTRICAL RACEWAYS

A. Trench for at least six inch clearance each side of pipe.

B. Smooth bottom of excavation to lines and grades required without disturbing bottom of excavation. Bed pipe in four inches of sub-base fill to lower 1/4 of pipe.

C. Do not backfill until mechanical-electrical systems have been tested, inspected and approved.

D. Bring backfill up evenly around and eight inches above pipe or raceway in eight inch maximum loose layers. Compact each layer using hand tampers within twenty inches of pipe. Except for areas to receive asphalt or Portland cement concrete pavement, remainder of backfill may be existing site soils.

E. Do not use vehicular compactors over or within twenty-four inches of pipes.

3.10 GRADING

A. Grade top of compacted fill to allow for paving and landscaping topsoil elevations indicated.

B. Bring top of fill to a firm unyielding layer. Correct soft spots or depressions that develop under compaction by removing and replacing material until the surface is smooth and uniform.

C. Provide adequate water supply for compaction.

3.11 WASTE DISPOSAL

A. Any excess soil shall be removed and legally disposed of off site. Coordinate landscaping topsoil reuse and remove excess.

3.12 MAINTENANCE

A. Keep fills in satisfactory condition for pavement construction following final grading. Provide drainage and erosion control until completion of covering work.

B. Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify, compact and grade prior to further construction.

C. Should subsurface bearing surfaces of natural soil previously approved become softened by frost or moisture before final covering, re-excavate to firm bearing and extend backfill to suit, or dry and re-compact subsurfaces if approved by the Engineer.

3.13 CLEAN UP

A. Smooth grade transition to existing soils grade at any depressions or disturbed areas adjacent to the backfilled areas. Repair any damage to existing structure or roadways which results from earthwork.

B. Remove excess soil, and construction debris.

3.14 TOLERANCES

A. Surface grades uniform to elevations indicated within plus or minus 0.10 foot in ten feet.

END OF SECTION

SECTION 32 00 00
EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 WORK INCLUDES

A. Civil Sitework shown on the civil designated Drawings.

1.02 RELATED SECTIONS

A. General Conditions of the Construction Contract.

B. Supplementary General Conditions to the Contract for Construction.

1.03 REFERENCED SPECIFICATIONS

A. This contract is subject to and hereby incorporates by reference the following documents as though physically contained herein:
   1. Sections of the Alaska Department of Transportation and Public Facilities Standard Specification for Highway Construction, 2015 Edition, as enumerated below, with modifications as contained herein. This document is herein referred to as SSHC 2015.

B. When conflicts exist between SSHC 2015 and the Project Specifications, the Project Specifications shall govern.

C. Where an item of Work is not addressed by the Project Specifications, but addressed by SSHC 2015, the item of Work shall be in accordance with SSHC 2015, regardless of whether or not the SSHC 2015 Section of relevance is specifically enumerated herein.

D. The incorporated reference documents are available from the following sources:
   1. The Alaska Standard Specifications for Highway Construction, 2015 Edition is available online at: http://www.dot.state.ak.us/stwddes/dcsspecs/index.shtml

E. All references to “Department” shall mean “Owner.”

F. This Specification section applies only to the civil designated Drawings.

1.04 ALASKA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2015 EDITION, AS AMENDED, herein after referred to as “SSHC 2015”.

A. Division 100 – General Provisions

Section 101:	Definitions & Terms
Section 104:	Scope of Work
Section 105:	Control of Work
Section 106:	Control of Material

B. Division 200 - Earthwork

Section 201: Clearing and Grubbing
Section 202: Removal of Structures and Obstructions
Section 203: Excavation and Embankment

C. Division 300 - Bases

Section 301: Aggregate Base and Surface Couse
Section 304: Subbase

D. Division 400 – Asphalt Pavements and Surface Treatments

Section 401: Hot Mixed Asphalt Pavement

E. Division 500 – Structures

Section 501: Structural Concrete
Section 503: Reinforcing Steel
Section 504: Steel Structures
Section 505: Piling

F. Division 600 – Miscellaneous Construction

Section 603: Culverts and Storm Drains
Section 618: Seeding
Section 620: Topsoil
Section 621: Planting Trees and Shrubs
Section 641: Erosion, Sediment, and Pollution Control
Section 660: Signals and Lighting
Section 670: Traffic Markings

G. Division 700 - Materials

Section 702: Asphalt Materials
Section 703: Aggregates
Section 708: Paints
Section 715 Steel for Piles
Section 724: Seed
Section 726: Topsoil
Section 740: Signals and Lighting Materials

1.05 SUBMITTALS

A. Erosion and Sediment Control Plan (ESCP)

B. Hot Mixed Asphalt Pavement

1. Asphalt Binder Content
2. Asphalt Binder Grade
3. Aggregate Gradation
4. In-Place Density Test Results

C. Aggregate Base and Surface Course
   1. Particle-size Analysis
   2. Moisture/Density Relationship
   3. In-Place Density Test Results

1.06 MODIFICATIONS AND/OR ADDITIONS TO SSHC 2015.

A. All Divisions, All Sections: Delete articles entitled “Method of Measurement” and “Basis of Payment.”

B. Replace all references to materials testing by the Engineer with an equivalent reference to materials testing by the Contractor. The Contractor shall be responsible for all materials testing and quality control. Frequency of in-place density testing for all constructed earthwork under SSHC 2015 shall be as follows:

SSHC 2015 Section	Material	Testing Frequency
Section 301	Aggregate Base and Surface Course	1 test per lift or 1 test per 10,000 SF
Section 401	Hot Mixed Asphalt Pavement	1 test per 10,000 SF

PART 2 - MATERIALS

A. See referenced SSHC 2015 Sections for Materials.

PART 3 – CONSTRUCTION REQUIREMENTS

A. See referenced SSHC 2015 Sections for Construction Requirements.

END OF SECTION