CITY OF BOARDMAN, OREGON

TABLE OF CONTENTS

SECTION 4

SURFACE RESTORATION

CITY OF BOARDMAN, OREGON

TECHNICAL SPECIFICATIONS

SECTION 4

SURFACE RESTORATION

PART 1 - GENERAL

1.1 Scope

A. The Contractor shall perform all Work and furnish all materials to restore the work area including any gravel, asphalt, concrete, lawn, fences, or any other surfaces or items damaged or disturbed by their construction operation. Surface restoration shall follow as closely as possible the backfill and compaction of excavations.

B. Items specified in this Technical Specification are intended to be broad in scope and may not always apply to all items of Work to be constructed.

1.2 Submittals

A. Cold Mix Asphalt

The Contractor shall deliver to the Project a sample load of cold-mix asphalt concrete they propose to use on the Project. The mix shall be placed at locations which will be typical to its use on the Project. The City and Contractor shall review its performance in the field. If its performance appears satisfactory, the mix may be used on the Project. If its performance is not satisfactory, a revised mix shall be provided until a satisfactory mix is determined. Quality control of the mix will be based upon field performance. It will take some time to evaluate field performance. Therefore, the same mix shall be delivered to the Project early in the Work.

B. Hydroseed

The hydroseed mix shall be reviewed by the City prior to application.

PART 2 - MATERIALS

2.1 Base Rock

Base rock shall substantially conform to current Oregon Standard Specifications for Construction for base aggregate materials. The intent is to specify a base rock which is suitable for use in the restoration of areas disturbed by the Contractor's Work. Base rock required shall generally be 3/4"-0 unless otherwise specified or approved.

2.2 Asphalt Concrete

Asphalt concrete shall be an approved commercial mix generally conforming to the applicable provisions of the current Oregon Standard Specifications for Construction for asphalt concrete pavement. Unless approved otherwise, the gradation of the mix shall generally conform to a 1/2-inch dense mix. The Contractor shall submit for review by the City data on the asphalt concrete mix to be used. Data shall include aggregates, gradation and tolerances, aggregate suitability, asphalt concrete, mix proportions and tolerances, etc.

2.3 Surface Aggregate

A. The surface aggregate shall be crushed stone, slag, or gravel meeting the following requirements:

Liquid Limit (AASHTO T 89) 35 Maximum

Plasticity Index (AASHTO T 90) 2 to 9 Maximum

Dust Ratio $\frac{\%\text{ Passing No. 200}}{\%\text{ Passing No. 30}}$ 2/3 Maximum

Grading Requirements (AASHTO T 11 and T 27)	
Sieve	**Percent Passing**
1"	100
3/4"	70-98
#4	36-60
#8	25-47
#30	12-31
#200	8-15

B. At least 70 percent by weight of the particles retained on the #4 sieve shall have at least two fractured faces.

2.4 Cold-Mix Asphalt Concrete

Cold-mix asphalt concrete shall consist of a mixture of asphalt cement cut back with No. 2 fuel oil, and well-graded aggregate, plant mixed, and laid on a prepared foundation and compacted with a minimum 8-ton steel wheel roller. The aggregate shall meet the quality and gradation

requirements for a standard ODOT Class "C" asphalt concrete mix. The liquid fraction of the mix shall be 6-1/2 to 7 percent content by weight and shall consist of 70 percent PBA-2 or PBA-5 asphalt cement, and 30 percent No. 2 fuel oil. The cold-mix asphalt concrete shall remain alive in the stockpile until it is placed and compacted. After the No. 2 fuel oil evaporates, the remaining asphalt and aggregate mix shall remain stable and durable under traffic.

2.5 Portland Cement Concrete

A. The Portland Cement concrete used for this Work shall be an approved commercial transit mix. The exact proportions of all the materials entering into the concrete shall be as established by an approved laboratory mix design and shall be changed only as directed by the laboratory when necessary to obtain the specified strength, desired density, uniformity, or workability. Previously prepared mix designs will be allowed provided adequate test data is available to document the suitability of the mix and the Contractor can document that the same materials are being used.

B. The mix shall have a maximum water-cement ratio of 0.45, a minimum 28-day compressive strength of 4,000 psi, a minimum of 564 pounds of cement per cubic yard of mix, and an air content of 4 to 7 percent. The maximum allowable slump shall be 4 inches for all structures covered under this section of the Specifications.

2.6 Seed

A. Lawn Seed

Lawn seed shall be a blend typically used in the area and of the type to match existing lawn areas, and must be approved by the City prior to use.

B. Pasture Seed

Pasture seed shall be a mixture of orchard grass, rye grass, and fescue, native to the area and must be approved by the City prior to use.

2.7 Fertilizer

Except for hydroseeding, inorganic fertilizer shall be commercially available 22-16-8 with 22 percent nitrogen, 16 percent available phosphoric acid, 8 percent soluble potash, and a minimum of 2 percent sulfur.

CITY OF BOARDMAN, OREGON

TECHNICAL SPECIFICATIONS

SECTION 4

SURFACE RESTORATION

2.8 Topsoil

Topsoil shall be native to the area and shall be approved by the City prior to use.

Furnish topsoil that is from the fertile part of a soil profile, commonly referred to as the "A" horizon, typically ranging in depth from 3 inches to 12 inches below original ground surface. Do not take material for topsoil from a depth greater than 12 inches below original ground surface.

2.9 Mulch

All mulch shall be straw that has been air dried and seasoned before baling or loading. It shall be free of noxious weeds and other materials detrimental to grass growth.

2.10 Sod

A. Sod shall be 100 percent Kentucky Blue Grass or other types as approved by the City.

B. The sod shall be grown on agricultural land that is cultivated specifically for turf sod. The sod shall be free of weeds, diseases, nematodes, and insects. All sod shall be mature and not less than 10 months old. All sod shall be machine cut to a uniform thickness of 5/8-inch or more, excluding top growth and thatch.

2.11 Erosion Control Matting

Erosion control matting shall be seed and curlex blanket as supplied by American Excelsior Co., of Yakima, Washington, or approved equal.

2.12 Hydroseed

A. The hydroseed shall be a specifically designed hydromulch consisting of cellulose fiber, fertilizers, seed, tackifier, etc.

B. The hydromulch shall be specifically processed cellulose fiber containing no growth or germination inhibiting factors. It shall be manufactured in such a manner that, after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogenous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of cellulose fiber shall be marked by the manufacturer to show the air dry weight and content.

C. The fertilizer shall be a complete plant food containing slow release nitrogen, phosphoric acid, and potash in the amounts of 16-16-16+1.5 FE. It shall be delivered in

uniform composition and be dry and free flowing and delivered in the original unopened containers bearing the manufacturer's guaranteed analysis.

D. The grass seed shall be certified, blue tagged, cleaned, and delivered in original unopened packages bearing an analysis of the contents. It shall be guaranteed 95 percent pure and have a minimum germination rate of 85 percent within 1 year of test. The seed shall be as agreed upon by the City. The seed shall be applied at a minimum rate of 4 pounds per 1,000 square feet.

2.13 Slope Stabilization Rock

A. Slope stabilization rock shall be pit run, a well-graded 4"-0 material with the approximate gradation:

Sieve	Percent Passing
4"	100
2"	35-50
1/2"	10-20
Less 1/4"	0-5

B. The 4"-0 slope stabilization rock shall be hard, durable, and resistant to weathering. The rock shall be angular in shape with an apparent specific gravity of 2.5 minimum. The Contractor shall develop a test pile of 4"-0 slope stabilization rock for approval by the City. Once the test pile has been approved, all other 4"-0 rock shall be visually the same as the test pile.

2.14 Hot Asphalt-Rubber Joint Sealant

Hot asphalt-rubber joint sealant shall be Roadsaver 221 as manufactured by Crafco, Inc., or equal.

PART 3 - EXECUTION

3.1 Gravel Surface Restoration

A. During trench and general excavation, the Contractor shall minimize the disturbance of adjacent gravel surfaces.

B. Backfill of trenches and other work areas shall be in accordance with Technical Specifications - "Excavation and Backfill of Trenches," or other applicable requirements.

C. In gravel streets, parking areas or driveways disturbed by the Work, the Contractor shall resurface the areas with base rock.

D. In gravel streets, shoulders, parking strips and driveways, a 4-inch minimum compacted depth shall be required or a compacted depth equal to the existing depth of gravel plus the depth of granular subbase, if any, whichever is greater, unless otherwise specified.

E. The resurfacing aggregate shall be compacted to 95 percent of laboratory density as determined by ASTM D1557.

3.2 Asphalt Street Restoration and Asphalt Parking-Driveway Restoration

A. Existing asphalt surfaces shall be cut on each side of the trench prior to excavation to provide a vertical, neat, straight-line joint in the surface. Should any asphalt surface be undermined or damaged during construction, the undermined or damaged asphalt shall be similarly cut and removed prior to backfill. This work shall be performed along neat, continuously straight lines to provide a pleasing finished appearance. Irregular lines will not be allowed.

B. Backfill shall be made in accordance with Technical Specifications - "Excavation and Backfill of Trenches."

C. The base rock under the asphalt pavement shall be replaced to a compacted depth equal to the existing base rock depth plus the depth of granular subbase, if any, or 10 inches, whichever is greater, unless specified otherwise. The base rock shall be compacted to 95 percent of the laboratory density as determined by ASTM D1557.

D. Immediately following backfill and compaction of the trench, and until the asphalt concrete is replaced, the base rock course shall be placed and compacted flush with the existing asphalt surface and maintained in a good condition.

E. In areas of heavy traffic, highway crossings, etc., a temporary cold-mix patch shall be placed and maintained until asphalt surface restoration is accomplished. The cold-mix asphalt concrete delivered to the Project shall be fresh and workable.

F. Just prior to placing the asphalt concrete, the base rock course and any temporary patch shall be excavated to the depth equal to that of the asphalt concrete to be placed.

G. Placement of Asphalt Concrete

1. Asphalt concrete for all areas, except in the State Highway, shall be 3 inches in depth after compaction or a depth equal to the existing pavement, whichever is greater, unless specified otherwise.

2. The restoration of asphalt concrete pavement in the State Highway shall be performed as described on State Highway Crossing Permits.

3. Asphalt concrete shall be compacted with an 8-ton minimum steel-wheeled roller and compacted to a minimum of 91 percent of the maximum density as determined by ASTM D2041.

4. Prior to placing the asphalt concrete, an asphalt tack coat shall be applied to the edges of the existing asphalt. An asphalt tack coat shall also be used between lifts should the Contractor elect to patch with multiple lifts. The Contractor shall utilize a paving machine, spreader box, or other approved mechanical equipment to place the asphalt concrete material. No lift of asphalt placed shall have a compacted thickness of less than 1/2 inch or greater than 3 inches. The finished asphalt surface shall be flush with the existing surface, uniform in appearance equal to or better than the existing pavement, and shall provide a smooth ride.

5. Installation shall conform to the applicable provisions of the current Oregon Standard Specifications for Construction, Sections 00495 and 00744. Asphalt Concrete for temporary patches shall conform to Section 00745.50 of the Oregon Standard Specifications for Construction.

3.3 Asphalt Concrete Joint Sealing

A. After a minimum of 30 days following completion of asphalt concrete restoration, the Contractor shall rout and clean joints between new asphalt concrete and the existing pavement.

B. Routed joints shall be 1/2-inch wide x 3/4-inch to 1-inch deep.

C. A hot asphalt-rubber joint sealant shall be placed in the joint flush with the surface to make a watertight seal.

CITY OF BOARDMAN, OREGON

TECHNICAL SPECIFICATIONS

SECTION 4

SURFACE RESTORATION

3.4 Concrete Sidewalk and Curb Restoration

A. Existing concrete surfaces shall be saw cut on each side of the trench prior to excavation to provide a vertical, straight-line joint in the surface. Should any concrete surface be undermined or damaged during construction, the undermined or damaged concrete shall be similarly cut and removed prior to backfill. This work shall be performed along neat lines to provide a pleasing finished appearance. Irregular lines will not be allowed.

B. Backfill shall be made in accordance with Technical Specifications - "Excavation and Backfill of Trenches."

C. A 2-inch compacted depth leveling course of base rock shall be placed on the prepared subgrade. The base rock shall be compacted to 95 percent of the laboratory density as determined by ASTM D698.

D. Any forms used shall be wood or metal and shall be straight. They shall be suitably braced to prevent movement during placement. Joints shall be placed to match existing or as directed by the City. The placement and curing of the concrete shall follow good concrete placement practices. The concrete thickness, section, finish, configuration, etc., shall match the existing structure as closely as possible.

3.5 General Surface Restoration

A. General

1. The Contractor shall replace or restore, equivalent to their original condition, all surfaces, trees and shrubbery, lawns, agricultural areas, pastures and fences, or other existing facilities disturbed by their Work unless otherwise specified. Restoration and cleanup shall be a continuing operation and shall be diligently pursued until completed. Surface restoration shall be completed as soon as possible after the underground work is complete.

2. All surplus material, rock and debris, and temporary structures, as well as excess excavation, shall be removed by the Contractor and the entire Site of Contractor's operations shall be left in a neat and clean condition.

3. Lawns and pastures in private easement shall be restored to a smooth condition and reseeded with a like mixture of grass unless specified or in the easement documents. When backfilling trenches in private easements, unless otherwise specified, Contractor shall replace topsoil to minimum 1-foot depth or to a depth

equal to the original depth, whichever is less. Lawn sod shall be utilized where required by the City.

B. Agricultural Areas

1. The existing top soils in the excavation area shall be removed and stockpiled at a separate location from the general trench excavation material. This topsoil shall not be mixed or contaminated with any other materials.

2. Upon completion of the trench backfill and after all rocks and unsuitable material have been removed from the work area, the stockpiled topsoil shall be replaced and graded to match the existing ground. The depth of topsoil restoration shall be as shown on the City Standard Drawings.

C. Seeding

1. All areas to be seeded shall have a minimum of 6 inches of topsoil.

2. After the backfilling and compaction have been completed, the top 2 inches of the topsoil shall be scarified to provide a good seed bed and the area seeded, fertilized, compacted with a weighted roller, a straw mulch applied, and the initial watering completed.

3. All additional watering of the grass seed shall be the responsibility of the property owners.

4. Unless required otherwise, the seed shall be applied at a minimum rate of 4 pounds per 1,000 square feet, the fertilizer at 1 pound per 100 square feet, and the mulch at a rate needed to provide a minimum mulch thickness of 1 inch.

3.6 Lawn Sod Restoration

A. Preparation of Areas

1. Cultivate the existing ground or new topsoil so the soil is loose and friable for at least a 6 inch depth and suitable for fine grading. Remove vegetative matter, rocks, clods, roots, sticks, debris, and other matter detrimental to the germination and growth of sod from the areas to be sodded.

2. Apply herbicide to kill existing weeds and grasses.

3. Spread soil amendments and fertilizers evenly over the sod bed at the rates specified below, then thoroughly till into the upper 4 inches of the soil.

4. After tilling, fine-grade and roll the area to provide a fine-textured, smooth, firm surface, free of any undulations or irregularities.

5. The finish grade of the sod bed shall be 1 inch below the finish grade of the walks. Rates of applications shall be as follows:

Material	Rate Per 1,000 Sq. Ft.
Soil Conditioner	6 Cu. Yds. (2" Depth)
Fertilizer: 22-16-8	10 Lbs.

B. Planting Season

Perform the Work only when local weather and other conditions are favorable to bed preparation and placing of sod. Do not place sod before March 15 or after September 30 unless approved otherwise.

C. Placing Sod

1. Do not place sod until the sod bed has been approved. Immediately before placing sod, water the bed to prevent drying of grass roots.

2. Lay the first row in a straight line and place subsequent rows parallel to and tightly against each other. Stagger lateral joints. Do not stretch or overlap the sod. Tightly butt all joints. Do not use sod segments containing less than 2 square feet of surface area, broken, torn, or uneven pieces.

3. After placing sod, diagonally roll and thoroughly water. Apply a second application of fertilizer at the rate specified for preparation of areas and thoroughly water.

D. Sod Lawn Establishment

1. The establishment period for sod lawn begins after placing of sod in an area is completed. The establishment period will be at least two weeks and ends when accepted by the City. During the established period, the Contractor shall

adequately water the sod to keep the new sod green. Keep mowed to a height of 1-1/2 to 2 inches.

2. Do not attempt the first mowing until the sod is firmly rooted and secure in place. Remove no more than 1/3 of the grass leaf during initial or subsequent cuttings.

3. Control all weeds, foreign grasses, etc., that grow in or through the sod for up to 45 days after the sod is placed.

4. Acceptance of sod lawn will be contingent on the grass being uniform in color, density, and height, and being weed-free. All dead or brown sod shall be replaced at no cost to the City.

3.7 Hydroseeding

A. Application Rates

Hydroseeding shall be placed at the following application rates unless otherwise approved by the City.

Material	Application Rate
Mulch	2,000 pounds per acre
Fertilizer	Lawn 430 pounds per acre Dryland Grass 50 pounds per acre
Tackifier	20 pounds per acre
Seed	4 pounds per 1,000 square feet
Wood Cellulose Fiber Tracer	< 250 pounds per acre

B. Seeding shall not be done during windy weather or when the ground is excessively wet or otherwise un-tillable. Seed shall be placed at the rate and mix specified below. Seed will be placed with an approved hydroseeder which utilizes water as the carrying agent, and maintains continuous agitation through paddle blades.

C. Hydroseeder

1. Hydroseeder shall have an operating capacity sufficient to agitate, suspend and mix into a homogenous slurry, and the specified amount of seed and water or other material.

2. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with a set of hydraulic spray nozzles which will provide a uniform distribution of the slurry.

D. Seed and fertilizer may be applied in one application provided the fertilizer is placed in the hydroseeder tank no more than 30 minutes prior to application. The seed shall have a tracer added to aid uniform application. This tracer shall not be harmful to plant and animal life.

E. The Contractor shall remove mulch material which falls on plants, roadways, gravel shoulders, structures, areas where mulching is not specified, or which collects at the ends of culverts or accumulates to excessive depths, as directed.

3.8 Mulch

A. Place mulch approximately 1-1/2 inches deep in a loose condition at a rate of 2 to 2.5 tons/acre. Place grass straw mulch so that it is loose enough for sunlight to penetrate and air to circulate; but dense enough to shade the ground, reduce water evaporation, and materially reduce soil erosion.

B. Anchor using a crimping disc, an approved tackifier, or approved modified sheepsfoot roller, or another method approved by the City.

3.9 Cleanup

A. Cleaning up shall be a continuing process from the start of the work to final acceptance of the Project. The Contractor shall, at all times, keep the area on which work is in progress free from accumulations of waste material or rubbish.

B. Spillage from the Contractor's hauling vehicles on traveled public or private roads shall be promptly cleaned up. Upon completion of the work the Contractor shall remove all temporary structures, rubbish, and waste material, equipment and supplies, resulting from the Contractor's operations. The Contractor shall leave such lands in a neat and orderly condition which is at least as good as the condition in which the Contractor

found them prior to the Contractor's operations. See specific conditions in the General Requirements.

C. In roadways and traffic areas, the Contractor shall be responsible for maintaining a road surface suitable for travel by the public from the time of excavation until the road surface has been restored. Such work includes dust control, temporary patching, signing, grading, and filling of potholes on temporary street surfaces, etc. The Contractor shall be responsible for all Claims and damages resulting from their failure to maintain a suitable surface.

END OF SECTION