

**CITY OF UNION, OREGON**  
**TECHNICAL SPECIFICATIONS**  
**SECTION 5**  
**SURFACE RESTORATION**

**A. GENERAL**

These Specifications cover the restoration of gravel and asphalt streets and parking areas, concrete curbs and sidewalks, and agricultural and lawn areas.

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. All applicable sections, as determined by the City Engineer, shall control the work.

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 his construction operation. Surface restoration shall follow as closely as possible the backfill and compaction of excavations.

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.

Spillage from the Contractor's hauling vehicles on public and 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.

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 his failure to maintain a suitable surface.

Any deficiencies found during the one-year guarantee period, such as settlement, potholes, or the breaking up of pavement, etc., including the failure to maintain a suitable temporary road surface, shall be promptly remedied by the Contractor upon the receipt of a written notice from the City Engineer at no cost to the City.

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**B. MATERIALS**

**1. Base Rock.** Base rock shall substantially conform to current Oregon Standard Specifications for Construction for base aggregate materials, or as otherwise approved by the City Engineer. 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 1"-0, or 3/4"-0 unless otherwise specified or approved. The Contractor shall submit to the City Engineer samples of the base rock he plans to use on the project.

**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 Engineer 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.

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. Portland Cement Concrete.** 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 approved by the City Engineer or 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.

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.

**4. 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.

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**5. Pasture Seed.** Pasture seed shall be a mixture of orchard grass, rye grass, and fescue, native to the area and of the type to match existing pasture areas.

**6. Fertilizer.** 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.

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

**8. 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.

**9. Sod.** Sod shall be 100 percent Kentucky Blue Grass or of the type to match existing lawn areas .

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. The seed mixture must be approved by the City Engineer prior to use on this project.

**10. Soil Conditioners.** Soil conditions shall be manufactured from composted sewage sludge, amended with organic and inorganic materials. They shall be as manufactured by EKO Systems, Inc. of Lewiston, Idaho, or equal.

**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.

**C. CONSTRUCTION**

**1. Gravel Surface Restoration.** During trench and general excavation, the Contractor shall minimize the disturbance of adjacent gravel surfaces. Backfill of trenches and other work area shall be in accordance with Technical Specifications - "Excavation and Backfill of Trenches," or other applicable requirements. In gravel streets, parking areas or driveways disturbed by the work, the Contractor shall resurface the areas with "Base Rock" to a compacted depth equal to the existing depth of gravel plus the depth of granular subbase, if any, whichever is greater. The

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resurfacing aggregate shall be compacted to 95 percent of laboratory density as determined by ASTM D-1557 or WSDOT Test Method 606, as applicable.

**2. Asphalt Street Restoration and Asphalt Parking-Driveway Restoration.**

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 damages 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. Backfill shall be made in accordance with Technical Specifications - "Excavation and Backfill of Trenches." 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. The base rock shall be compacted to 95 percent of the laboratory density as determined by ASTM D-1557 or WSDOT Test Method 606, as applicable.

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. In areas of heavy traffic, highway crossings, etc., a temporary cold-mix patch shall be placed and maintained until asphalt surface restoration is accomplished. 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. 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.

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

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 D-2041. 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. 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.

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**3. Concrete Sidewalk and Curb Restoration.** 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 similar 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. Backfill shall be made in accordance with Technical Specifications - "Excavation and Backfill of Trenches."

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 D-698 or WSDOT Test Method 606, as applicable.

Any forms used shall be wood or metal and shall be straight. They shall be suitably braced to prevent movement during placement. New joints shall be placed to match existing joints. 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.

**4. General Surface Restoration.**

**a. General.** The Contractor shall replace or restore, equal to their original condition, all surfaces, trees and shrubbery, lawns, agriculture area, pastures and fences, or other existing facilities disturbed by his 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. 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. Lawns and pastures in private easement shall be restored to a smooth condition and reseeded with a like mixture of grass unless specified otherwise 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 called for on the Drawings or as specified in the easement documents.

**b. Agricultural Areas.** Where called for on the Drawings, 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. Upon completion of the trench backfill and

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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 Drawings or as specified in the easement documents.

**c. Seeding.** All areas to be seeded shall have a minimum of 6 inches of topsoil. 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. All additional watering of the grass seed shall be the responsibility of the property owners. 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.

**5. Lawn Sod Restoration.**

**a. Preparation of Areas.** Cultivate the existing ground 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. Spread soil amendments and fertilizers evenly over the sod bed at the rates specified below, then thoroughly rototill into the upper 4 inches of the soil. After tilling, fine-grade and roll the area to provide a fine-textured, smooth, firm surface, free of any undulations or irregularities. 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:

<u>Material</u>	<u>Rate Per 1,000 Sq. Ft.</u>
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.

**c. Placing Sod.** Do not place sod until it has been approved. Immediately before placing sod, water the bed to prevent drying of grass roots. Lay the first row in a straight line and place subsequent rows parallel to and tightly against each

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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. After placing sod, diagonally roll and thoroughly water. Apply a second application of fertilizer (22-16-8) at the rate of 10 lbs per 1,000 square feet and thoroughly water.

**d. Sod Lawn Establishment.** 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 Engineer. During the established period, adequately water all lawn areas. Keep mowed to a height of 1-1/2 to 2 inches. 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. Acceptance of sod lawn will be contingent on the grass being uniform in color, density, and height.

**6. Erosion Control Matting.** Place matting as called for on the Drawings. Prepare site as specified for permanent seeding area preparation. Immediately following the establishment of the finished grade, matting shall be placed parallel to the flow of water. Where more than one strip of matting is required to cover the given area, it shall overlap the adjacent mat a minimum of 4 inches. The ends of the matting shall overlap at least 6 inches with the upgrade section on top. The upslope end of matting shall be staked and buried in a 6-inch deep trench with the soil firmly tamped against the mat. Three stakes per width of matting (one stake at each overlap) shall be driven below the finish ground line prior to backfilling of the trench.

The edges of matting shall be buried around the edges of catch basins and other structures. Matting must be spread evenly and smoothly and in contact with the soil at all points.

Matting shall be held in place by approved wire staples, pins, spikes, or wooden stakes driven vertically into the soil. The matting shall be fastened at intervals not more than 3 feet apart in three rows for each strip of the matting, with one row along each edge and one row alternately spaced in the middle. All ends of the matting and check slots shall be fastened at 6-inch intervals across their width. Length of fastening devices shall be sufficient to securely anchor the matting against the soil and driven flush with the finished grade.

**7. Mulch.** 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. Anchor using a crimping disc, an

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approved tackifier, or approved modified sheeps foot roller, or another method approved by the City Engineer.