

CHAPTER 11 - RESTORATION OF SURFACE IMPROVEMENTS

11.1 GENERAL

The Developer/Contractor shall be responsible for the protection and the restoration or replacement of any improvements existing on public or private property at the start of work or placed there during the progress of the work. Existing improvements shall include but not be limited to permanent surfacing, striping, curbs, gutters, sidewalks, driveways, planted areas, sprinkling systems, ditches, culverts, fences, walls, etc. All improvements shall be reconstructed to equal or better, in all respects, than the existing improvements removed.

Developer/Contractor shall document existing improvements and conditions (video, photo, etc.) prior to commencement of any construction activities. Where there are disputes regarding restoration of existing improvements, the City will side with the private property owner if no documentation to the contrary can be provided by the Developer/Contractor.

11.2 FIELD VERIFICATION OF IMPROVEMENTS

The Developer/Contractor shall carefully examine the site of the work and to acquaint itself with all conditions relating to the protection and restoration of existing improvements. The City Engineer / Public Works Representative does not guarantee that all improvements are shown on the Drawings, and it shall be the Developer/Contractor's responsibility to protect and restore all existing improvements whether or not each is provided for specifically on the Drawings.

11.3 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.

The pavement, sidewalk, curb and gutter, driveway, etc. shall be cut vertically along the limits of the improvements to be removed, or nearest full joint, in such a manner as to not cause damage to adjoining pavement, sidewalk, curb and gutter, driveway, etc. The portion to be removed shall be broken up in a manner that will not cause damage to the pavement or concrete outside the limits of the improvements to be removed; however, any pavement damaged by operations outside the limits of the work area shall be replaced at the Developer/Contractor's expense.

11.4 MATERIALS

Materials used for repair or replacement of surface improvements shall be equal to or better than the material removed. All materials shall meet or exceed Springville City Standards and Specifications.

11.5 RESTORING BITUMINOUS OR CONCRETE STREET SURFACES

Where trenches are in or cross bituminous or concrete surfaced roads, traffic lanes, driveways, parking areas, etc., the bituminous or concrete surface shall be restored as quickly as there is sufficient quantity to make it practical (weather permitting), and maintained as follows:

11.5.1 Before Excavation:

All existing asphalt or concrete surfaces shall be saw cut or roto-milled to a square edge before excavation.

11.5.2 Temporary Graded Surface:

Until resurfacing can be done in paved areas a temporary untreated base course surface shall be placed deep enough to provide a minimum of eight inches (8") below the bottom of the bituminous surface and shall be brought flush with the paved surface.

The untreated base shall be placed in the trench at the time it is backfilled. Excess material shall be removed

from the premises immediately. The Developer/Contractor will maintain the temporary untreated base course surface until the asphalt is placed.

11.5.3 Preparation for Paving:

The area over trenches to be resurfaced shall be graded to a smooth, uniform surface and compacted to not less than 95% (maximum dry density). Mud or other soft or spongy material shall be removed and the void filled with untreated base course and rolled and tamped thoroughly in layers not exceeding six inches in thickness. The edges of trenches, which are broken down during the making of subgrade, shall be removed and trimmed neatly before resurfacing.

Before any permanent resurfacing is placed, the Developer/Contractor shall trim the existing paving to clean straight lines as nearly parallel to the centerline of the trench as practicable. Said straight lines shall be established in thirty foot minimum lengths and no deviations from such lines shall be made except as specifically permitted by the City Engineer / Public Works Representative.

Existing paving shall be saw-cut back a minimum of twelve inches (12") beyond the limits of any excavation or cave-in along the trench, creating a T-patch. The existing base material shall be removed in the twelve inch (12") cut back area and new road base material placed and compacted so that the edges of the new trench paving will rest on a minimum of eight inches (8" depth) of newly placed and compacted road base material (refer to the trench detail in the Standard Drawings). **NOTE** - the depth of base material removed will need to be sufficient to allow for a minimum of four inches (4") of pavement (or the existing pavement thickness plus one inch whichever is greater), to be placed on a minimum of eight inches (8") of compacted road base.

The existing pavement from the edge of the newly created T-patch to the edge of asphalt / lip of gutter must be a minimum of 30" wide and be undisturbed in order to remain in place. If this width is less than 30", or has been disturbed, then the Developer/Contractor shall be responsible to remove and replace the exist asphalt.

A minimum of thirty (30) inches of existing undisturbed pavement is required between the edge of the newly created T-patch and any structure, concrete, or edge of existing pavement surface. If less than thirty (30) inches remains, the pavement shall be removed and permanent surfacing placed to the concrete or structure. If more than 50% of the permanent surfacing of a traveled lane is impacted by the excavation, the entire lane width will be required to be saw cut/milled, removed, and replaced to City standards. Trenching or excavation is not permissible within eighteen (18) inches of any concrete or structure, unless permitted by the City Engineer. Any surface or underlying pavement outside the trench which is undermined or damaged by the trenching operation shall be removed to a neat, straight line, and replaced. In areas where native, clean sands are present the City Engineer may require that trenching exceeding five (5) feet in depth be required to remove and replace surfacing for a minimum of two (2) times the depth unless direct contact shoring is provided to fully support the trench walls for full depth of the excavation.

11.5.4 Bituminous Surface:

The bituminous surface over trenches shall be restored by standard paving practices to a minimum thickness of four inches (4") or match existing asphalt thickness plus one inch, whichever is greater. Gradation of aggregate shall conform to the 1/2-inch gradation limits as defined in these Specifications, unless otherwise approved by the City Engineer. Asphalt specifications to meet Section 12.8.

Pavement restoration shall include priming of pavement edges with Type MC-70 bituminous material and placing rolled plant hot mix bituminous material to the level of the adjacent pavement surfaces.

11.5.5 Special Requirements for Longitudinal Trench Repair:

Trenching running parallel to the street (longitudinal) generally will have special mill and overlay repair requirements. This will need to be coordinated with the City and constructed as specified in the

“Excavation Permit” and as approved by the City Engineer.

11.6 UTILITY POTHoles-KEYHOLE METHOD

This specification covers the requirements for keyhole coring, vacuum excavation, backfilling, and reinstatement of the keyhole core in asphalt or concrete pavements to allow for underground utility repairs and underground exploratory potholing. **Keyhole coring** shall be defined as follows: *The operation of coring a circular hole through the roadway pavement using diamond tipped core drilling equipment.*

11.6.1 Pothole Excavation:

The vertical alignment of the keyhole coring shall be perpendicular to the horizon, and the cutting shall extend to the full depth of the existing pavement section.

Unless otherwise approved by the Engineer, keyhole cores shall be no less than 6 –inches and no greater than 18- inches in diameter. Adjacent cores shall not be closer than 3 feet from each other (edge to edge), shall not contain a joint or any pavement cracks greater than 1/8-inch wide, and shall not be performed in pavements where the section is less than 3-inches thick. Coring shall be performed with a keyhole coring saw with high strength steel diamond tipped core drill bits.

The Contractor shall place a temporary mark on the keyhole core prior to cutting to insure that the removed section is replaced in the same orientation as originally found in the pavement.

Soils within potholes shall be removed by air/vacuum extraction methods to expose utilities. The zone of soil removal shall remain essentially within a vertical plane extending below the edges of the removed pavement.

The Contractor shall remove all excess materials excavated from the site.

11.6.2 Pothole Backfill:

The Contractor shall use ½-sack CLSM as backfill in accordance with Chapter 16 – Flowable Fill (CLSM).

11.6.3 Bonding Agent:

The bonding agent is material required to bond asphalt pavement cores to the asphalt concrete pavement from which it was originally removed. Bonding material shall be a single component cementitious, rapid hardening, high strength, waterproof bonding agent conforming to the physical properties shown in Table-1 below.

TABLE-1

Bond Material Properties		
Property	ASTM Test Method	Requirements
Bond Strength, psi (70 degrees F., 30 minute cure)	C882	200 min.
Compressive Strength, psi (70 degrees F, 60 min cure)	C109	1500 min.

- 1) Bonding material shall be impervious to water penetration at the joint after curing.
- 2) Bonding material shall, within 30 minutes at minimum ambient temperature of 70 degrees F., allow an 18" diameter core to support a traffic load equivalent to at least three (3) times the AASHTO H-25 standard wheel load.
- 3) The bonding material is required to securely bond the asphalt concrete core to asphalt concrete pavement and to fill all voids between the core and pavement and within the core.

- 4) Specifications and test results for the bonding material shall be submitted to the City for review and approval before use.

11.6.4 Pavement Restoration:

The surface cut by keyhole coring restored to its original condition with the reinstated core flush with and in the original orientation as the existing surface, matching existing pavement surface appearance.

The bonding agent meeting the requirements of 11.6.3 shall be used for pavement core reinstatement. Excess bonding material shall be removed from the restored surface. A patched appearance shall be avoided in surface restoration wherever possible.

Unless otherwise approved by the Engineer, the Contractor shall reinstate the bonded keyhole core within 24 hours of cutting the pavement. Openings allowed to be left open greater than 24 hours shall be covered with an approved steel road plate capable of supporting traffic loads. The steel plate must be rounded with a fitted collar that, when inserted into the hole, will prevent the steel plate from tipping, tilting, bouncing or spinning out of the hole under traffic conditions. An asphalt mix shall be used to ramp pavement up to the steel plate along all edges.

Surface Tolerances: The reinstated core shall be flush and level with the adjacent pavement. Gaps attributable to the positioning of the core shall be less than 1/16-inch between the bottom of a minimum 3-foot long straightedge and the surface of the pavement in any direction on the surface of the keyhole core, except across the pavement crown or drainage gutters.

11.6.5 Deficiencies:

Where the pavement core is found to be fractured or defective upon removal, or becomes damaged after removal and prior to reinstating, the defective or damaged core shall not be used to reinstate the pavement. Pavement repair shall be performed in accordance with Section 11.5.

A pavement core is considered unacceptable when one of the following conditions exist:

- 1) The core contains any vertical cracks wider than 1/8-inch extending full depth or partial depth through the core; or
- 2) Any deteriorated piece of the core is larger than 10 percent of the overall area of the core.
- 3) Two or more successive layers of asphalt concrete in the core become horizontally delaminated and cannot be rebounded to each other with the bonding compound.

All unacceptable pavement cores shall be removed from the job site.

If another equivalent core of sound condition and matching existing pavement of the same diameter, depth and composition as the defective core is available, it may be reinstated in substitution of the defective core.

11.7 GRAVEL SURFACE

Where trenches are excavated through gravel-surfaced areas such as roads and shoulders, parking areas, unpaved driveways, etc., the gravel surface shall be restored and maintained as follows:

11.7.1 Layer Thickness:

Place a minimum of six inches of compacted material.

11.7.2 Placement:

The material shall be placed in the trench at the time it is backfilled. The surface shall be maintained by

blading, sprinkling, rolling, adding material, etc., to maintain a safe, uniform surface. Excess material shall be removed from the premises immediately.

11.7.3 Gradation:

Material for use on gravel surfaces shall be road base obtained from sound, tough, durable gravel or rock meeting the following requirements for gradation:

Passing 1-inch sieve	100%
Passing 1/2-inch sieve	79-91%
Passing No. 4 sieve	49-61%
Passing No. 16 sieve	27-35%
Passing No. 200 sieve	7-11%

11.8 MISCELLANEOUS IMPROVEMENTS

It shall be the Developer/Contractor's responsibility to restore to their original condition all irrigation canals, levees, culverts, gates, fences, drainage ditches, and all such improvements, which are cut or disturbed during construction. Topsoil in farming areas or along road edges shall be stored separate from subsoil during pipe trench excavation. Topsoil shall be replaced during backfill operations as nearly as possible to its original condition, thereby assuring suitable soil for reseeding.

11.9 RESTORATION OF SURFACES

Unless otherwise directed, all street surfacing, curbs, gutters, sidewalks, driveways, or other hard surface that must be removed in the performance of the work shall be restored in kind by the Developer/Contractor in accordance with the Specifications contained herein. Deviation of more than one-fourth inch (1/4") between old and new work or within new construction shall be corrected. Such measurement shall be made from a ten-foot (10') minimum length straight edge. Adjoining surfaces between old and new must be flush.

11.10 CLEANUP

At the completion of each area of work all equipment, barricades, and similar items shall be removed from the area. All excess material will be removed. Adjacent borrow pits and road shoulders used for storage of excavating materials will be smoothed and returned to their original condition.

11.11 PAVEMENT MARKINGS

The Developer/Contractor shall be responsible for restoration of pavement markings on all City and/or County roadways. Restoration of pavement markings shall conform to the applicable local and state specifications.

On roadways under UDOT jurisdiction temporary pavement markings shall be provided for any removed or obliterated markings. The temporary markings shall conform to UDOT standards and specifications. Permanent pavement markings will be replaced by UDOT.

11.12 LANDSCAPE RESTORATION

Areas of new construction that cover or disturb existing landscaped areas with fills and cuts or areas disturbed by construction of retaining walls shall have the landscape restored. Areas that have lawn or flower beds shall be restored including sprinkling systems that might be damaged or relocated because of construction. Lawn covered or removed shall be replaced by sod.

The topsoil shall be fertile, sandy loam topsoil, obtained from well-drained areas. It shall be without admixture of subsoil or slag and shall be free of stones, lumps, sticks, plants or their roots, toxic substances or other extraneous

matter that may be harmful to plant growth and would interfere with future maintenance. Topsoil pH range shall be 5.3 to 6.0.

The Contractor shall take a video of the construction area and perimeter thereof prior to commencing any construction activities to document existing conditions of all areas adjacent to the construction site. A copy of this video shall be made available to the City at the pre-construction meeting and will be referred to ensure the restoration of disturbed areas is equal to or better than prior to the construction.