



Chapter 7

Backfill and Temporary Restoration

General

All restoration shall be completed at the expense of the Applicant.

Where the Applicant has completed temporary restoration, the permanent repairs shall be completed by the General Manager with all costs charged to the Applicant including the City's administrative cost recovery and, where applicable, a pavement degradation fee. Additional charges shall apply to overdue accounts.

The City will carry out permanent repairs and invoice the Applicant within 18 months of the date of permit expiry. When the repair cannot be completed within 18 months, the City will notify the Applicant with an explanation and a revised completion date.

Submission and Permit Requirements

For submission and permit requirements to make an installation within the City of Hamilton's streets, refer to the current Municipal Consent Requirements, as amended.

Traffic Control

Compliance with all City traffic control standards, including the latest editions of the Ontario Traffic Manual (OTM) Book 7 and the Municipal Consent Requirements, is required. Please refer to [Appendix G, Traffic Control](#).

Materials

Supply of Materials

Unless otherwise specified, the Applicant shall supply all materials necessary for the execution and completion of the work.

Management and Disposal of Excess Materials

Management and disposal of excess material shall be according to [OPSS 180](#).

Installation of Plant

Sawcutting of Pavement, Sidewalk, Curb, and Driveway

Unless judged unfeasible, the sawcut area shall have a maximum of four sides that are all parallel or perpendicular to the direction of travel. Sawcuts shall be straight and vertical to the full depth of the asphalt and concrete layers of the pavement.

Sawcutting operations shall be performed with suitable equipment and methods and not with heavy machinery or jackhammers that may cause damage to the surrounding road.

Saw cutting shall stop at, or just short of, corners to avoid overcutting. After sawcutting the edges, removal of pavement materials shall be performed with care to avoid lifting and breaking the road pavement beyond the sawcut borders.

Excavation

During the installation of any Plant, excavation equipment with stabilizers shall be suitably outfitted to prevent damage to the pavement surface or else wood or rubber pads shall be placed on the road to support the stabilizers. Any damage to the Street attributable to the Applicant's work shall be repaired, at the Applicant's expense, in conjunction with the utility cut.

Excavation shall not extend beyond the limits of the sawcut area. Care is to be taken to ensure that undermining of the adjacent pavement, curb and sidewalk is minimized. Where the pavement, curb and/or sidewalk are undermined by construction activities or from other causes, these undermined areas shall be filled and the settled structures shall be restored to their original grades at the expense of the Applicant.

Where necessary, bracing, shoring and/or sheeting shall be used in accordance with the Occupational Health and Safety Regulations, to support the sides of the excavation and to prevent any movement that could damage other services, adjacent pavements, sidewalks, etc. This excavation support system shall be removed as backfilling proceeds to eliminate voids between the fill and adjacent soils. Appropriate restoration of all displaced services to their original positions is the responsibility of the Applicant.

The Applicant shall, at its own expense, provide adequate support and protection of the underground and above ground plant and structures that exist inside the excavation and in the vicinity of the excavated area. Any damage to plant or structures attributable to the Applicant's work shall be repaired to the satisfaction of the City and/or the owner(s) of the damaged plant or structures, at the Applicant's expense, in conjunction with the utility cut.

Except where native cohesive material is to be used for backfill, as permitted by the City and/or under the conditions of this specification, stockpiling of excavated material within City Streets is not permitted under any circumstances for any length of time. All excavated material shall be loaded directly into appropriate haulage trucks and disposed of off-site immediately upon removal. The Applicant shall remove, transport and dispose of all excavated materials in accordance with the latest Ontario Environment Protection Acts and, where appropriate, the Occupational Health and Safety Act.

Inspection of Excavation

Prior to backfilling, the Applicant shall inspect the utility cut excavation to ensure the following minimum requirements are met:

- the edges of the pavement have been saw cut in a straight line and to the full depth of the pavement, or if permitted, to partial depth in composite pavement
- the bottom of the trench has been compacted and is free of water before the bedding material is placed
- all loose or wet material at the bottom of the trench has been removed and replaced with suitable bedding materials
- pipe bedding, pipe cover and compaction to the bedding and cover have been carried out to City's or utility agency's requirements
- necessary shoring/bracing meeting Ontario Health and Safety Acts and Regulations has been used to prevent the trench from cave-in and to protect adjacent services, pavement and sidewalk
- undermining of the adjacent pavement and sidewalk has been prevented or repaired

Excavation near Trees

Please refer to [Appendix F, Tree Protection Policy](#), which includes a copy of SP-97.

Protection of Excavation

All excavations must be backfilled to match the adjacent grade or properly protected at the end of each working day.

When temporary plates are used to maintain vehicular, bicycle and pedestrian traffic flow, the plates shall have a skid resistant surface treatment and shall be fastened down to prevent moving. The plates shall be set flush with the surface of the pavement. The recessed plates should overlap the cut by no less than 300 mm on all sides. Asphalt mix shall be used to jam the plates tight into the pavement along all edges to eliminate any vertical edges.

Plates shall be used only as a temporary measure during construction and shall not be used for extended periods of time.

Existing Material in Trench

Materials excavated during trench construction may be considered for reuse as trench backfill where permitted as per [Appendix D, Temporary Backfill Restoration and Compaction Requirements](#). The materials shall have suitable physical and environmental properties; and the materials should be properly managed during construction.

The excavated materials that may be considered for reuse as backfill include either a suitable existing granular material or a suitable existing cohesive material. The physical properties of the materials shall meet the following requirements:

- the material is free of any obvious objectionable or deleterious materials such as topsoil, organics, wood chips and metal pieces if the material is to be used in trenches located under a pavement
 - **Note:** material containing topsoil, organics, or wood chips, is acceptable when backfilling within sodded or soil surfaces in the boulevard
- the material is free of large pieces of rock or boulders
- the material is free of shale pieces
- the compaction equipment deployed on site is able to compact the material to its required density
- the material is not considered to be frost susceptible
- the material is not wet, frozen or lumpy

All excavated materials to be reused as trench backfill shall be managed to prevent contamination, and shall be protected to preserve or maintain its moisture condition.

Contaminated Material

Where the excavated material has been identified to be contaminated, the Applicant shall comply with all applicable legislation. Contaminated soil must not be used as backfill and must be disposed of off-site according to the applicable requirements.

When the suitability of excavated material for reuse is in dispute, the City, in its sole discretion, shall determine the suitability of the material based on the physical properties mentioned in this section and as recommended in a report, submitted by the Applicant, from a geotechnical consultant.

Backfill

Backfilling, compaction, and restoration shall be carried out in accordance with the conditions of this document and [Appendix D, Temporary Backfill Restoration and Compaction Requirements](#).

Equipment

1. Vibratory Roller or Propane heated Roller (cold weather) – for compacting HL3 asphaltic concrete: and
2. Insulated Asphalt Hot Box – for transporting HL3 asphaltic concrete in cold weather

Suitable Backfill Materials

Unshrinkable Fill

Unshrinkable Fill shall meet the requirements of OPSS-1359, included in [Appendix E, Material Specifications for Unshrinkable Backfill](#). The supplied Unshrinkable Fill may be tested, and any material that does not meet the requirements will be removed and replaced at the Applicant's expense. All costs associated with the removal and replacement of deficient Unshrinkable Fill shall be borne by the Applicant, including the cost of administration and retesting.

Temporary plating shall be used to support loads from pedestrian and vehicular traffic until the temporary asphalt is laid. Traffic shall not be permitted to travel directly onto the surface of the Unshrinkable Fill.

Hot-Mix Asphalt

HL3 Hot-Mix Asphaltic Concrete shall meet the requirements of Form 800, *Specifications for Hot-Mix Asphalt*, in the Construction and Materials Specification Manual.

Note: Under no circumstances will temporary cut repairs be accepted if cold-mix asphalt has been used.

Imported Granular Materials

Granular materials may be imported for use as trench backfill provided the imported materials meet the requirements of Form 600, *Granular Fill Materials*, in the Construction and Materials Specification Manual.

Backfilling

Bedding and covering material shall be compacted to at least 98% of its Standard Proctor Maximum Dry Density, or in accordance with the Applicant's installation requirements, whichever is greater.

If Unshrinkable Fill is used, backfill trench with Unshrinkable Fill to within 75 mm of the top of the existing surface.

If temporary shoring/bracing has been used to support adjacent infrastructure, it shall be removed in a safe manner continuously as backfilling proceeds.

Backfilling in Pavements

If suitable backfill material is to be used, backfilling shall be carried out in uniform lifts not exceeding 150 mm loose thickness with the layer thickness decreased to 100 mm around obstacles. Each lift of suitable backfill material shall be compacted to a minimum of 98% of its Standard Proctor Maximum Dry Density, or in accordance with the Applicant's utility agency installation requirements, whichever is greater.

For temporary restoration of pavements, suitable backfill materials shall be brought to within 75 mm of the top of the existing surface.

The type of backfilling required in utility cuts made in road pavements shall be as follows:

Unshrinkable Fill shall be used for all cuts made in road pavements unless otherwise approved by the City.

The City, in its sole discretion, may allow an Applicant to apply, in writing, for an exemption from using Unshrinkable Fill where a utility cut is to be located at the



shoulder area or for backfilling of a wide and deep trench. No such exemptions will be granted on roads for reconstruction or resurfacing within the current construction season as advised by the City.

Where an exemption from using Unshrinkable Fill has been granted, the Applicant or its contractor shall provide Geo-technical Certificates from a geotechnical consultant within 30 days of completion of work certifying that the trench backfill meets the backfill materials requirements and compaction requirements as specified in this specification.

Where suitable native backfill is used, a 400 mm layer of Granular 'A', compacted to 98% of its Standard Proctor maximum dry density, shall be placed immediately below the asphalt in flexible pavements and immediately below the concrete base in composite pavements.

Backfilling in Boulevards

The use of unshrinkable fill is strictly prohibited for backfilling in boulevards except in the following two scenarios:

Where cuts are in close proximity to the road and the limits of the excavation encroach into the

1:1 structural prism commencing from the bottom of the adjacent curb, unshrinkable fill shall be used within the envelope of the structural prism.

Where cuts are made in hard surfaces (curbs, public sidewalks, concrete driveways, and interlocking bricks/flagstone on a concrete base) that are immediately adjacent to the road, unshrinkable fill shall be used under these hard surfaces.

Where an excavation extends beyond the areas described above, the Applicant shall ensure that the unshrinkable fill is contained within the appropriate area.

Note: Notwithstanding the above, unshrinkable fill is strictly prohibited for any excavation within a [Tree Protection Zone](#) regardless of the surface treatment.

For areas of sod or soil, refer to drawing in [Appendix D, Temporary Backfill Restoration and Compaction Requirements](#).

For the boulevard areas other than those specifically described above, only suitable native material or Granular B shall be used. Backfill materials shall be placed in lifts not exceeding 200 mm loose thickness and each lift shall be compacted to 95% of its Standard Proctor Maximum Dry Density.

Backfilling in Tunnels

Any facility that is placed underground in any method other than open cut trenching shall be considered as tunnelling.

In backfilling a tunnel, the final density of the backfill must match or exceed that of the surrounding soil. All voids resulted from tunnelling shall be completely backfilled using suitable materials as defined in this specification.

Restoration

Sodding and Top Soil

Sod shall not be laid when ground is in a frozen condition or when the site is in adverse conditions such as high wind, frozen soil or soil covered with snow, ice or standing water.

All topsoil and sod shall be in accordance with OPSS 802 and 803, as included in [Appendix H, Construction Specifications for Top Soil](#), and [Appendix I, Construction Specifications for Sodding](#), as amended by the Construction and Material Specifications Manual and this special provision.

This item shall include all costs to supply and place sod with a minimum 100 mm of topsoil and shall include stakes where required.

The Utility Company shall water and maintain sod for 30 consecutive days after placement to ensure root establishment and sufficient growth. The Utility Company shall have all work schedules for the placement of sod approved by the City prior to commencing work.

Where in the opinion of the City, the Utility Company has failed to provide the required maintenance to ensure root establishment and growth, the Utility Company shall remove, replace, and maintain all sod identified by the City.

Repair Responsibility According to Surface Types

Surface Type	Material	Repair Responsibility	
		Temporary Repair	Permanent Repair
Road Pavement	Asphalt	The Applicant	The City
	Concrete	The Applicant	The City
Sidewalk	Asphalt	The Applicant	The City
	Concrete	The Applicant	The City
Curb	Asphalt	The Applicant	The City
	Concrete	The Applicant	The City
Boulevard	Asphalt	The Applicant	The City
	Concrete	The Applicant	The City
	Interlocking bricks/flagstone on a granular base	---	The Applicant
	Interlocking bricks/flagstone on a concrete base	---	The Applicant
	Sod	---	The Applicant
	Gravel or Soil	---	The Applicant
Driveway	Asphalt with abutting concrete repair	The Applicant	The City
	Asphalt with no abutting concrete repair	The Applicant	The City
	Concrete	The Applicant	The City
	Interlocking bricks/flagstone on a granular base	---	The Applicant
	Interlocking bricks/flagstone on a concrete base	---	The Applicant

Notes: • Any repairs on private property shall be the responsibility of the Applicant. • All work performed by the Applicant or its contractor shall be carried out in accordance with the City standards and applicable specifications. • Permanent restoration of areas with decorative or specialized surfaces, landscaping, and subsurface treatments such as patterned/impressed concrete shall be the responsibility of the City at the Applicant's expense as part of the restoration of the work.

Temporary Repair

Unless otherwise specified, backfill material shall be brought to within 75 mm below the existing surface. The remainder of the trench shall be filled with compacted hot-mix asphalt as a mean for temporary pavement restoration.

Unless otherwise specified, all temporary repairs shall be **HL3 hot mix asphalt**. The **HL3** shall be mechanically compacted as per the requirements indicated in [Appendix D, Temporary Backfill Restoration and Compaction Requirements](#), and neatly match the finished grade of the existing pavement or sidewalk.

Temporary utility cut repairs shall be marked by Applicant using paint applied with a stencil. The marking shall bear the identified code and/or name assigned by the City to the Applicant and the calendar year that the temporary repair was performed. The marking shall be placed adjacent to the cut, outside the area of the temporary repair.

Deficiencies

Upon being notified that the temporary restoration has not been carried out to the satisfaction of the General Manager, the Applicant shall rectify the deficiencies immediately. The General Manager may, in its sole discretion, accept a request from the Applicant for another timeline where justified by the nature and extent of work required. If the deficiencies are not rectified by the required deadline, the General Manager may undertake remedial restoration, which may include complete excavation of the cut, and charge back all associated expenses, including mobilization costs, to the Applicant.

Emergency Repairs

Notwithstanding the above, if deficiencies in the temporary or permanent repair performed by the Applicant pose a safety hazard, the General Manager, in its sole discretion, may immediately undertake remedial restoration, which may include complete excavation of the cut, and charge back all associated expenses, including mobilization costs, to the Applicant.



Quality Assurance

Warranty

The Applicant will warrant the utility cut repairs it undertakes for 2 years in accordance with the Repair Responsibility table on page 50 of this chapter. The Applicant shall maintain a rigorous control and assurance program such that each utility cut repair will be inspected once every 12 months.