City of La Quinta

P.O. Box 1504
78-495 Calle Tampico
La Quinta, California 92253

(760) 777-7000
FAX (760) 777-7101

# ENGINEERING BULLETIN #98-07

**TO:** All Interested Parties

**FROM:** Chris A. Vogt, Public Works Director

**DATE:** February 13, 1998

**RE:** Transverse Trench, Longitudinal Trench, and Rectangular Street Cut Backfill and Pavement Restoration Requirements

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Effective immediately and pursuant to La Quinta Municipal Code Section 14.16.320 regarding encroachment permits, permit holders shall comply with transverse trench, longitudinal trench, and rectangular street cut backfill and pavement restoration requirements specified in this bulletin. Construction materials and construction methods shall meet the requirements of the City of La Quinta, and conform with the latest edition of the Standard Specifications for Public Works Construction (SSPWC) "Greenbook".

## General

This bulletin specifies the method for backfilling and restoring the pavement for transverse trenches, longitudinal trenches, and rectangular street cuts. Trench backfill and pavement restoration requirements are dependent upon the size of the excavation. The exact width of the excavated trench or street cut shall be determined by the City Inspector, and shall be measured at the widest point along the excavation. Sloughing of trench walls and/or undermining of the existing pavement shall be included in the determination of the width of the excavation.

## Specifications

### Section 1 Backfill

Backfill placement and compaction shall conform with the "Greenbook" and the following specification requirements whenever native or select backfill material is used.

1.01 Backfill Material

Native or select backfill material shall be used. Alternatively, trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, may be used. Should trench backfill slurry be used, the requirements of Sections 1.02, 1.03, and 1.04 shall not be required.

1.02 Geotechnical Supervision

Geotechnical supervision, testing, and inspection shall be provided during backfill placement. All costs incurred due to the geotechnical supervision shall be borne by the permit holder. Copies of all test results shall be furnished to the City Inspector.

1.03 Backfill Compaction

1.03.1 Minimum Relative Compaction

Trench backfill shall be densified to 90% relative compaction.

1.03.2 Compaction Test Frequency

In subsequent lengths of trench, the frequency of compaction tests shall equal one per each lift of backfill, per 300 linear feet of open trench, at randomly selected locations within the open length of trench.

The depth of the randomly selected compaction tests shall also be randomly selected except that where multiple tests are required in a given length of trench, the tests shall be no closer than three feet (vertically) from each other.

1.03.3 Failing Compaction Tests

If any compaction test fails, previously placed backfill (in the same length of open trench or previous lengths of trench) which is represented by the failing test (as determined by the City Inspector), shall be tested for compliance with compaction requirements.

1.04 Backfill Placement

1.04.1 Unsuitable material

When a firm foundation is not encountered due to soft, spongy or other unsuitable material, such material shall be removed to the limits directed by the Geotechnical Inspector and/or the City Inspector and the resulting excavation backfilled with pipe bedding material.

1.04.2 Moisture Content

Backfill materials shall be brought to or maintained at an appropriate moisture content for compaction. The appropriate moisture content range shall be established at the onset of the project and ensured prior to use of the materials through progress testing on the stockpiles.

1.04.3 Initial Backfill Lift

The first length of trench backfilled shall be backfilled in the presence of the City Inspector. Compaction shall be tested at random depths at approximate three-foot vertical intervals as backfill is placed to ensure the effectiveness of the compaction methods and to establish the depth of lift that can be compacted.

If lifts greater than one foot are attempted in this trial length of trench, compaction tests shall be taken within the lifts to ensure that the full depth of the lift is compacted. Upon satisfactory completion of this portion of trench, the City Inspector shall establish the maximum lift thickness to be compacted for the remainder of the project.

**Section 2 Transverse Trenches**

These specifications shall also apply for transverse trenches cut diagonally across City streets, however, as the angle of excavation decreases from 90° perpendicular to the curb and gutter, special backfill and pavement restoration requirements may be imposed as appropriate.

**2.1 Transverse Trenches less than Twelve Inches (12") in Width**

Trench backfill and pavement restoration shall conform with the drawing titled: "Transverse Trench Backfill & Paving Detail #1", and the following specification requirements.

2.1.01 Trench Backfill Section

2.1.01.1 Backfill Material

Native backfill material shall not be used. Trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, shall be used.

2.1.01.2 Backfill Depth

Trench backfill slurry shall be brought up to an elevation of three inches (3") below adjacent street pavement surfaces. The overall trench backfill slurry depth shall be independent of the existing street structural section, and shall extend to the bottom of the excavation, or to the top of the pipe zone, as appropriate.

2.1.01.3 Backfill Compaction

Compaction testing shall not be required, provided trench backfill slurry placement and conditions provide adequately compacted and suitable trench backfill. Trench backfill slurry shall be allowed to adequately cure prior to pavement restoration.

2.1.02 Trench Base Section

No base material shall be required in this trench.

2.1.03 Trench Pavement Section

2.1.03.1 Pavement Edges

A one-foot (1') saw cut shall not be required, provided that pavement edges are vertical, straight, and clean. Pavement edges and the top of the trench backfill slurry shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

2.1.03.2 Pavement Material

Pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in one, three inch (3") lift directly upon the trench backfill slurry.

2.1.03.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall not be required.

2.1.04 Final Pavement Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

2.1.05 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

**2.2 Transverse Trenches Twelve Inches (12") to Twenty-four Inches (24") in Width**

Trench backfill and pavement restoration shall conform with the drawing titled: "Transverse Trench Backfill & Paving Detail #2", and the following specification requirements.

2.2.01 Trench Backfill Section

Trench backfill shall meet the requirements of Section 1 and the following specifications.

2.2.01.1 Backfill Material

Native or select backfill material shall be used. Alternatively, trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, may be used, following the requirements of Section 2.1.01.

2.2.01.2 Backfill Depth

Trench backfill shall be brought up to subgrade elevation as required by the City Inspector. The depth of backfill shall be dependent upon the existing street structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, 4½" minimum, and a section of asphalt concrete material 1" thicker than the existing section, 4" minimum.

2.2.01.3 Backfill Compaction

Trench backfill compaction shall meet the requirements of Section 1.03.

2.2.02 Trench Base Section

2.2.02.1 Base Material

Base material shall be crushed aggregate base or crushed miscellaneous base, meeting the requirements of "Greenbook" Sections 200-2.2 and 200-2.4.

2.2.02.2 Base Material Depth

Base material shall be brought up to finish grade elevation as required by the City Inspector. The depth of base material shall be dependent upon the existing street structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, or 4½" minimum.

2.2.02.3 Base Material Compaction

Base material shall be compacted to 95% relative compaction. Compaction testing shall be required for each lift of base material and throughout the excavated trench as necessary to show conformance with these requirements.

2.2.03 Trench Pavement Section

2.2.03.1 Pavement Edges

A one-foot (1') saw shall be required adjacent to trench edges. Pavement edges shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

2.2.03.2 Pavement Material

Pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in at least two (2) lifts directly upon the base material.

2.2.03.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall be required for each lift of pavement material and throughout the excavated trench as necessary to show conformance with

these requirements.

2.2.04 Final Pavement Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

2.2.05 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

**2.3 Transverse Trenches Greater than Twenty-four Inches (24") in Width**

Trench backfill and pavement restoration shall conform with the drawing titled: "Transverse Trench Backfill & Paving Detail #3", and the following specification requirements.

2.3.01 Trench Backfill Section

Trench backfill shall meet the requirements of Section 1 and the following specifications.

2.3.01.1 Backfill Material

Native or select backfill material shall be used. Alternatively, trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, may be used, following the requirements of Section 2.1.01.

2.3.01.2 Backfill Depth

Trench backfill shall be brought up to subgrade elevation as required by the City Inspector. The depth of backfill shall be dependent upon the existing street pavement structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, 4½" minimum, and a section of asphalt concrete material 1" thicker than the existing section, 4" minimum.

2.3.01.3 Backfill Compaction

Trench backfill compaction shall meet the requirements of Section 1.03.

2.3.02 Trench Base Section

2.3.02.1 Base Material

Base material shall be crushed aggregate base or crushed miscellaneous base, meeting the

requirements of "Greenbook" Sections 200-2.2 and 200-2.4.

2.3.02.2 Base Material Depth

Base material shall be brought up to finish grade elevation as required by the City Inspector. The depth of base material shall be dependent upon the existing street pavement structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, or 4½" minimum.

2.3.02.3 Base Material Compaction

Base material shall be compacted to 95% relative compaction. Compaction testing shall be required for each lift of base material and throughout the excavated trench as necessary to show conformance with these requirements.

2.3.03 Trench Pavement Section

2.3.03.1 Pavement Edges

A one-foot (1') saw shall be required adjacent to trench edges. Pavement edges shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

2.3.03.2 Pavement Material

Pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in at least two (2) lifts directly upon the backfill material. Pavement shall be brought to an elevation one-tenth of one foot (0.10') below adjacent street pavement surfaces, provided all pavement restoration is completed within twenty-four (24) hours of base course paving. Otherwise, the pavement shall be brought to an elevation flush with adjacent street pavement surfaces.

2.3.03.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall be required for each lift of pavement material and throughout the excavated trench as necessary to show conformance with these requirements.

2.3.04 Final Pavement Surface

2.3.04.1 Pavement Grinding

The existing street pavement surface adjacent to the trench shall be cold-milled to a depth of one-tenth of one foot (0.10') a distance three feet (3') beyond the one foot (1') saw cut along both sides of the trench.

2.3.04.2 Pavement Capping

Finish pavement restoration shall be accomplished using a dense medium asphalt concrete,

meeting the requirements of a "Greenbook" class C2-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in a one-tenth of one foot (0.10') lift throughout the pavement grinding area using a Barber-Green paver or similar mechanical means.

2.3.04.3 Finish Compaction

Pavement material shall be adequately compacted throughout the grinding area to 95% relative compaction. Compaction testing shall not be required.

2.3.04.4 Finish Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

2.3.05 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

## 2.4 Multiple Transverse Trenches

In cases where there are multiple transverse trenches proposed on a City street, or should a transverse trench be proposed near an existing transverse trench, additional pavement restoration requirements shall be required.

Whenever the horizontal distance between proposed transverse trenches, or between an existing and proposed transverse trench, is less than twenty feet (20'), final pavement surface restoration between the transverse trenches shall conform with the following specifications.

2.4.01 Final Pavement Surface

The transverse trench pavement restoration requirements specified in Sections 2.1, 2.2, and 2.3, as appropriate, shall be required for each transverse trench; however, additional final pavement surface requirements shall be imposed, as follows.

2.4.01.1 Pavement Grinding

The existing street pavement surface shall be cold-milled to a depth of one-tenth of one foot (0.10') between proposed transverse trenches, or between a proposed transverse trench and an existing trench, to a point three feet (3') past each trench.

2.4.01.2 Pavement Capping

Finish pavement restoration shall be accomplished using a dense medium asphalt concrete, meeting the requirements of a "Greenbook" class C2-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in a one-tenth of one foot (0.10') lift throughout the pavement grinding area using a Barber-Green paver or similar mechanical means.

2.4.01.3 Finish Compaction

Pavement material shall be adequately compacted throughout the grinding area to 95% relative compaction. Compaction testing shall not be required.

2.4.01.4 Finish Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

## Section 3 Longitudinal Trenches

Longitudinal trench backfill and initial pavement restoration requirements shall depend upon the width of the excavated trench, and shall follow the transverse trench backfill and pavement restoration specifications set forth in Sections 1 and 2. However, final pavement surfacing requirements shall depend upon the location of the longitudinal trench, whether excavated within a "parking lane" or within a "travel lane".

### 3.1 Longitudinal Trenches within Parking Lanes

This Section shall apply to longitudinal trenches excavated entirely within the parking lane of City streets, as defined herein. As parking lane widths vary, generally, longitudinal trench widths shall be limited to twenty-four inches (24") and less. Should the trench excavation width extend past the parking lane and into the adjacent travel lane, the trench backfill and pavement restoration requirements for longitudinal trenches within travel lanes shall apply.

Longitudinal trench backfill and pavement restoration for trenches excavated within the parking lane along City streets shall conform with the drawing titled: "Longitudinal Trench Backfill & Paving Detail #1", and the following specification requirements.

3.1.01 Parking Lane Definition

A "parking lane" shall be defined as a striped or unstriped lane of varying width along arterial, collector, or local residential streets, as follows:

Along arterial streets, the width of the parking lane shall be determined by measuring from a point twelve feet (12') from the last striped lane line to the edge of pavement. A parking lane along arterial streets may also contain a striped bike lane, however, the parking lane may be wider than the designated bike lane.

Along collector and local residential streets, the width of the parking lane shall be determined by measuring from a point twelve feet (12') from the centerline (striped or unstriped) of the street to the edge of pavement.

In all cases, the City Inspector shall determine the limits of the parking lane, and shall direct longitudinal trench backfill and pavement restoration requirements appropriately.

3.1.02 Trench Backfill Section

Trench backfill shall meet the requirements of Sections 1. For trench widths less than twelve inches (12") in width, trench backfill shall also meet the requirements of Section 2.1.01. For trench widths twelve inches (12") to twenty-four inches (24") in width, trench backfill shall also meet the requirements of Section 2.2.01. For trench widths greater than twenty-four inches (24") in width, trench backfill shall also meet the requirements of Section 2.3.01.

3.1.03 Trench Base Section

For trench widths less than twelve inches (12") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.1.02. For trench widths twelve inches (12") to twenty-four inches (24") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.2.02. For trench widths greater than twenty-four inches (24") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.3.02.

3.1.04 Trench Pavement Section

For trench widths less than twelve inches (12") in width, the trench pavement section shall meet the requirements of Section 2.1.03. For trench widths twelve inches (12") to twenty-four inches (24") in width, the trench pavement section shall meet the requirements of Section 2.2.03. For trench widths greater than twenty-four inches (24") in width, the trench pavement section shall meet the requirements of Section 2.3.03.

3.1.05 Final Pavement Surface

3.1.05.1 Finish Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

3.1.05.2 Sealcoat

The finish pavement of the excavated trench and adjacent pavement surfaces, within the limits of the defined parking lane, shall be spread with a "Greenbook" sealcoat material.

3.1.06 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement

and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

## 3.2 Longitudinal Trenches within Travel Lanes

This Section shall apply to longitudinal trenches excavated entirely within the travel lane of City streets, as defined herein.

Longitudinal trench backfill and pavement restoration for trenches excavated within the travel lane along City streets shall conform with the drawing titled: "Longitudinal Trench Backfill & Paving Detail #2", and the following specification requirements.

### 3.2.01 Travel Lane Definition

A "travel lane" shall be defined as a striped or unstriped lane of varying width along arterial, collector, or local residential streets, as follows:

Along arterial streets, the width of the travel lane shall be determined by measuring between the existing striped lane lines; or, for the furthest right-hand travel lane, by measuring twelve feet (12') from the last striped lane line toward the edge of pavement.

Along collector and local residential streets, the width of the travel lane shall be determined by measuring twelve feet (12') from the centerline (striped or unstriped) of the street toward the edge of pavement.

In all cases, the City Inspector shall determine the limits of the travel lane, and shall direct longitudinal trench backfill and pavement restoration requirements appropriately.

### 3.2.02 Trench Backfill Section

Trench backfill shall meet the requirements of Sections 1. For trench widths less than twelve inches (12") in width, trench backfill shall also meet the requirements of Section 2.1.01. For trench widths twelve inches (12") to twenty-four inches (24") in width, trench backfill shall also meet the requirements of Section 2.2.01. For trench widths greater than twenty-four inches (24") in width, trench backfill shall also meet the requirements of Section 2.3.01.

### 3.2.03 Trench Base Section

For trench widths less than twelve inches (12") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.1.02. For trench widths twelve inches (12") to twenty-four inches (24") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.2.02. For trench widths greater than twenty-four inches (24") in width, trench base material, depth, and compaction shall meet the requirements of Section 2.3.02.

3.2.04 Trench Pavement Section

3.2.04.1 Pavement Edges

For trench widths less than twelve inches (12") in width, pavement edges shall meet the requirements of Section 2.1.03.1. For trench widths greater than twelve inches (12") in width, a one-foot (1') saw shall be required adjacent to trench edges. Pavement edges shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

3.2.04.2 Pavement Material

For trench widths less than twelve inches (12") in width, pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in one lift directly upon the trench backfill slurry.

For trench widths greater than twelve inches (12") in width, pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in at least two (2) lifts directly upon the base material.

For all trenches, the pavement shall be brought to an elevation one-tenth of one foot (0.10') below adjacent street pavement surfaces, provided all pavement restoration is completed within twenty-four (24) hours of base course paving. Otherwise, the pavement shall be brought to an elevation flush with adjacent street pavement surfaces.

3.2.04.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall be required for each lift of pavement material and throughout the excavated trench as necessary to show conformance with these requirements.

3.2.05 Final Pavement Surface

3.2.05.1 Pavement Grinding

The existing street pavement surface throughout the entire width of the affected travel lane shall be cold-milled to a depth of one-tenth of one foot (0.10'). Should the trench excavation extend into an adjacent travel lane, the existing street pavement surface within both affected travel lanes shall be cold-milled to a depth of one-tenth of one foot (0.10').

3.2.05.2 Pavement Capping

Finish pavement restoration shall be accomplished using a dense medium asphalt concrete, meeting the requirements of a "Greenbook" class C2-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in a one-tenth of one foot (0.10') lift throughout the pavement grinding area using a Barber-Green paver or similar mechanical

means.

3.2.05.3 Finish Compaction

Pavement material shall be adequately compacted throughout the grinding area to 95% relative compaction. Compaction testing shall not be required.

3.2.05.4 Finish Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

3.2.06 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

## Section 4 Rectangular Street Cuts

These specifications shall apply for rectangular street cuts, or potholes, excavated within City streets, and shall depend upon size, location, and number of rectangular cuts performed in any one area. As the size, location, and number of rectangular cuts performed in any one area can greatly vary, special backfill and pavement restoration requirements may be imposed as appropriate to meet field conditions.

### 4.1 Rectangular Street Cuts less than Twelve Inches (12") Wide

Trench backfill and pavement restoration shall conform with the drawing titled: "Rectangular Street Cut Backfill & Paving Detail #1", and the following specification requirements.

4.1.01 Trench Backfill Section

4.1.01.1 Backfill Material

Native backfill material shall not be used. Trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, shall be used.

4.1.01.2 Backfill Depth

Trench backfill shall be brought up to an elevation of three inches (3") below adjacent street pavement surfaces. The overall trench backfill slurry depth shall be independent of the existing street structural section, and shall extend to the bottom of the excavation, or to the top of the pipe zone, as appropriate.

4.1.01.3 Backfill Compaction

Compaction testing shall not be required, provided trench backfill slurry placement and conditions provide adequately compacted and suitable trench backfill. Trench backfill slurry shall be allowed to adequately cure prior to pavement restoration.

4.1.02 Trench Base Section

No base material shall be required in this trench.

4.1.03 Trench Pavement Section

4.1.03.1 Pavement Edges

A one-foot (1') saw cut shall not be required, provided that pavement edges are vertical, straight, and clean. Pavement edges and the top of the trench backfill slurry shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

4.1.03.2 Pavement Material

Pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in one, three inch (3") lift directly upon the trench backfill slurry.

4.1.03.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall not be required.

4.1.04 Final Pavement Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

4.1.05 Warranty

The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

**4.2 Rectangular Street Cuts Greater than Twelve Inches (12") Wide**

Trench backfill and pavement restoration shall conform with the drawing titled: "Rectangular Street Cut Backfill & Paving Detail #2", and the following specification requirements.

4.2.01 Trench Backfill Section

Trench backfill shall meet the requirements of Section 1 and the following specifications.

4.2.01.1 Backfill Material

Native or select backfill material shall be used. Alternatively, trench backfill slurry, meeting the requirements of "Greenbook" class 100-E-100 material, or other City-approved Controlled-Density-Fill (CDF) material, may be used, following the requirements of Section 2.1.01.

4.2.01.2 Backfill Depth

Trench backfill shall be brought up to subgrade elevation as required by the City Inspector. The depth of backfill shall be dependent upon the existing street structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, 4½" minimum, and a section of asphalt concrete material 1" thicker than the existing section, 4" minimum.

4.2.01.3 Backfill Compaction

Trench backfill compaction shall meet the requirements of Section 1.03.

4.2.02 Trench Base Section

4.2.02.1 Base Material

Base material shall be crushed aggregate base or crushed miscellaneous base, meeting the requirements of "Greenbook" Sections 200-2.2 and 200-2.4.

4.2.02.2 Base Material Depth

Base material shall be brought up to finish grade elevation as required by the City Inspector. The depth of base material shall be dependent upon the existing street structural section, and shall be brought up to an elevation which shall allow for a matching thickness of base material, or 4½" minimum.

4.2.02.3 Base Material Compaction

Base material shall be compacted to 95% relative compaction. Compaction testing shall be required for each lift of base material and throughout the excavated trench as necessary to show conformance with these requirements.

4.2.03 Trench Pavement Section

4.2.03.1 Pavement Edges

A one-foot (1') saw shall be required adjacent to trench edges. Pavement edges shall be coated with either AR 1000 paving asphalt or Grade SS-1h emulsified asphalt, as required by the "Greenbook".

4.2.03.2 Pavement Material

Pavement restoration shall be accomplished using a dense medium course asphalt concrete, meeting the requirements of a "Greenbook" class B-AR-4000 asphalt concrete mix design, or a City-approved equal, installed in at least two (2) lifts directly upon the base material.

4.2.03.3 Pavement Compaction

Pavement material shall be adequately compacted throughout the trench width to 95% relative compaction. Compaction testing shall be required for each lift of pavement material and throughout the excavated trench as necessary to show conformance with these requirements.

4.2.04 Final Pavement Surface

The restored pavement within the trench shall be flush with adjacent street pavement surfaces. If the restored pavement surface is found to vary from the adjacent street pavement surfaces, the restored pavement shall be made flush as determined by the City Inspector, which may require grinding and/or additional paving.

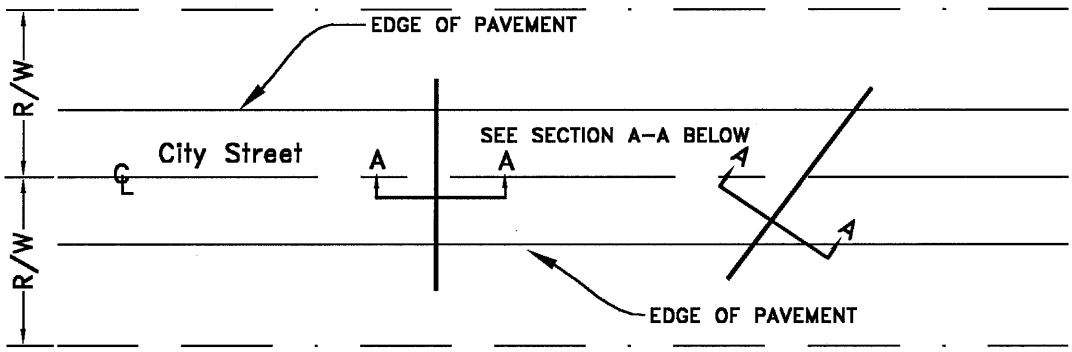
4.2.05 Warranty

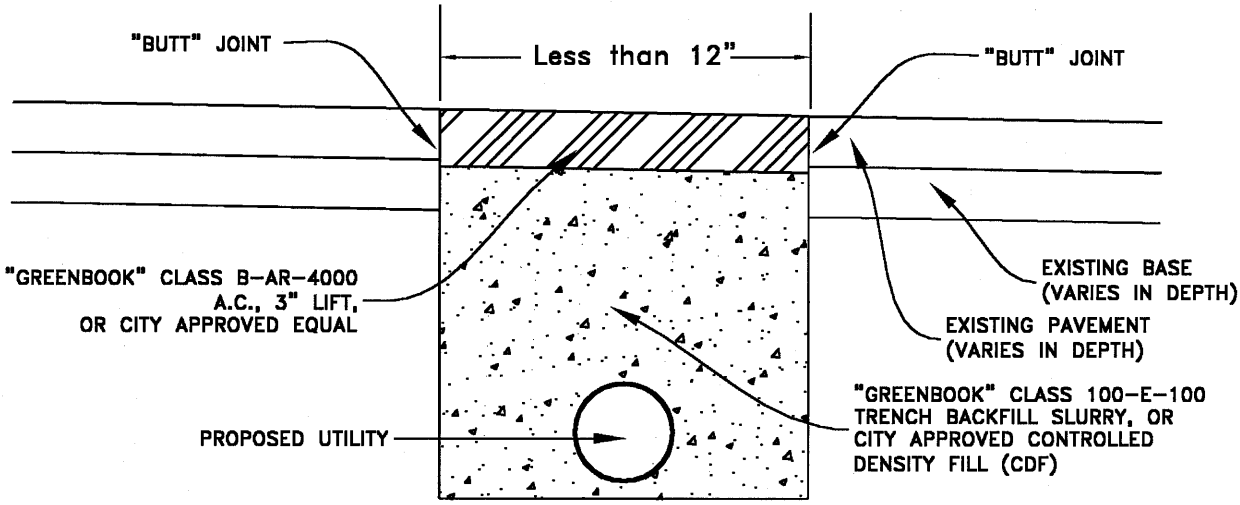
The trench backfill and pavement restoration shall be guaranteed against future settlement and/or pavement deterioration for a period of one (1) year from the acceptance of the work by the City Inspector. This warranty period does not limit the holder of the permit from the obligation to make appropriate repairs to the trench in the event the facility or utility within the trench should cause future trench settlement and/or pavement deterioration during the life and use of that facility or utility.

## 4.3 Multiple Rectangular Street Cuts

In cases where there are multiple rectangular street cuts proposed in a single location, or should a rectangular street cut be proposed near an existing trench or street cut, additional pavement restoration requirements shall be required.

It shall be required that additional grinding and capping, meeting the requirements of Section 2.4.01, be performed at a single location where numerous rectangular street cuts (potholes) are proposed. As the size, shape, location, and number of rectangular street cuts can vary, the additional pavement restoration requirements shall be site specific, and shall also depend upon the existence of existing trenches and street cuts. However, for all situations, it shall be expected that the resulting final pavement surface at a single location shall be consistent and uniform, and may result from substantial grinding and capping requirements beyond the proposed rectangular street cuts.




SECTION A–A

REVISIONS:

APPROVED
08/21/01

CHRIS A. VOGT
CITY ENGINEER
RCE 44250

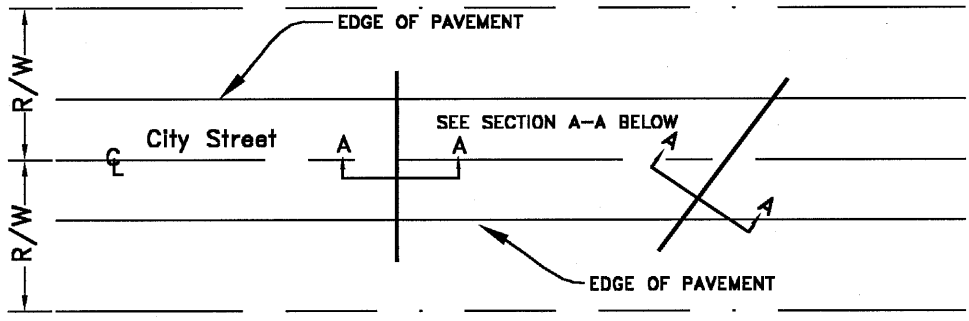
City of La Quinta

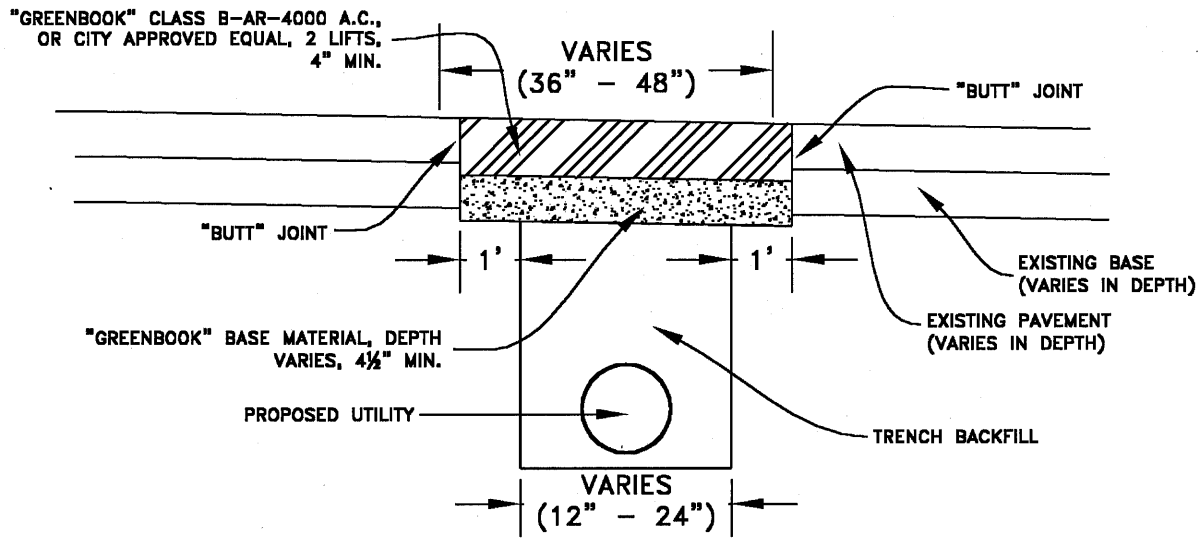
**TRANSVERSE TRENCH BACKFILL & PAVING DETAIL # 1**

STANDARD

600

SHEET 1 OF 7




SECTION A–A

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| | | |
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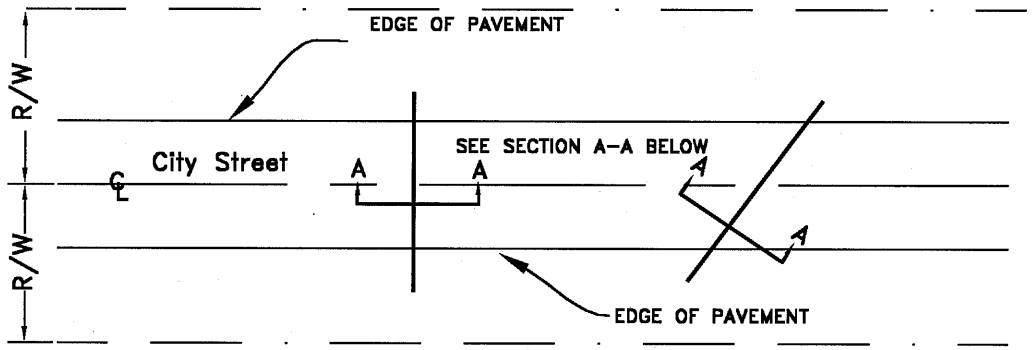
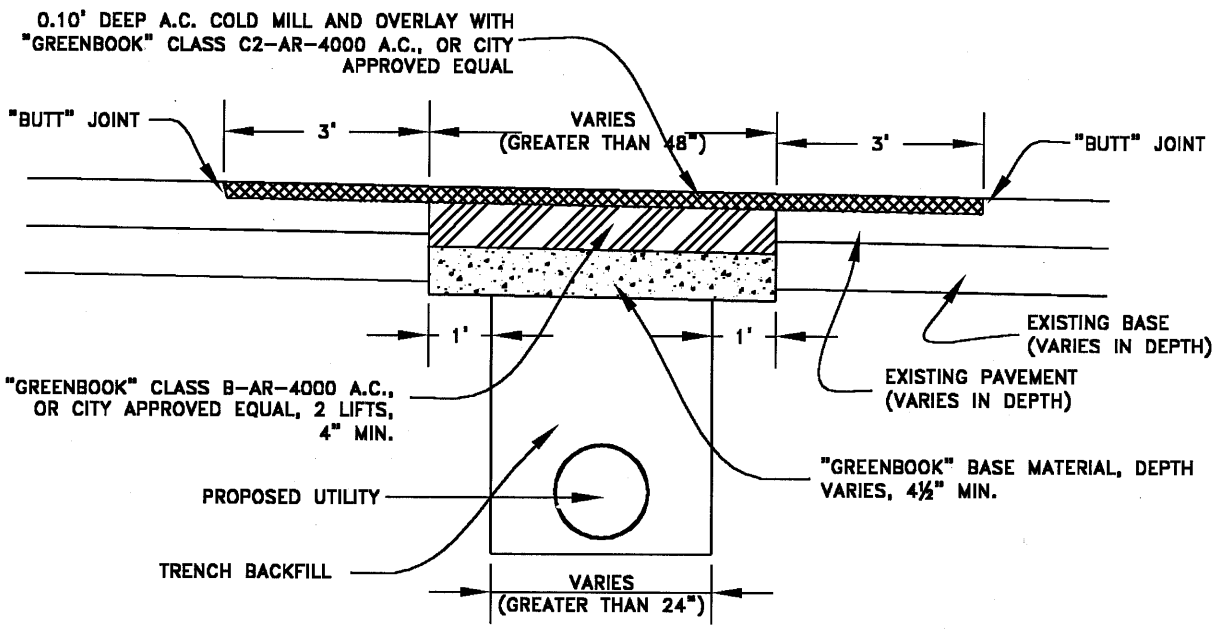
| CHRIS A. VOGT CITY ENGINEER RCE 44250 | **TRANSVERSE TRENCH BACKFILL & PAVING DETAIL # 2** | 600 |
| | | SHEET 2 OF 7 |




SECTION A–A

REVISIONS:

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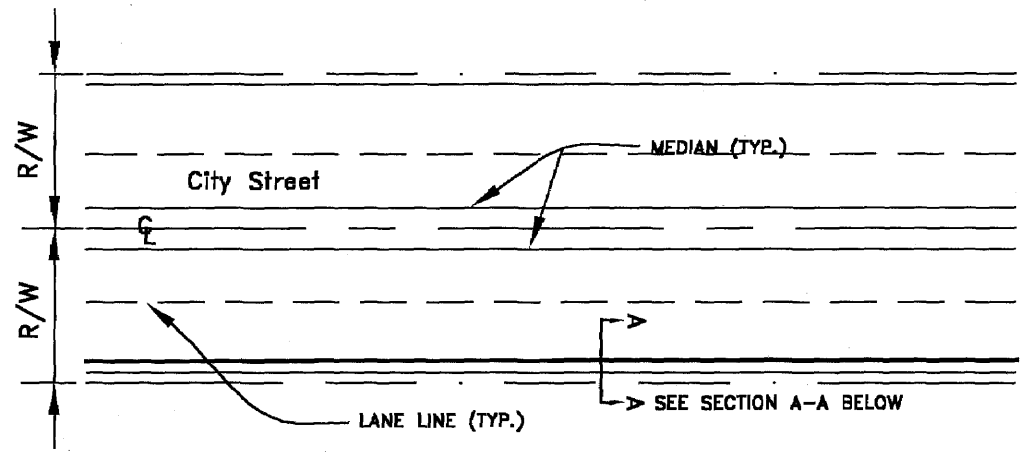


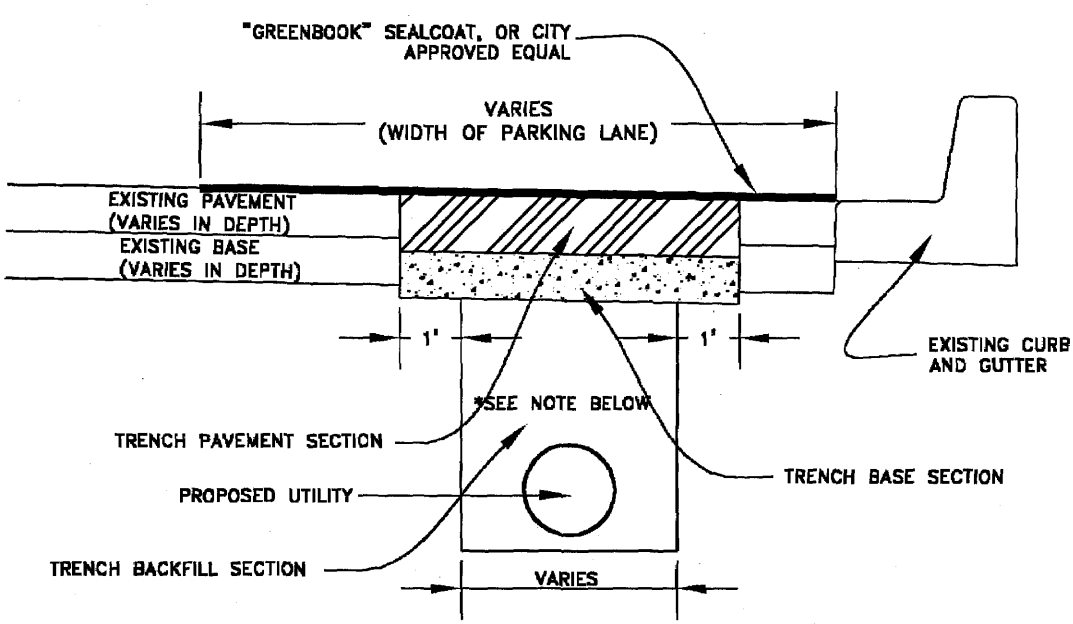


SECTION A-A

*NOTE: FOR SPECIFIC TRENCH BACKFILL AND INITIAL PAVING REQUIREMENTS, REFER TO THE TRANSVERSE TRENCH BACKFILL AND PAVING DETAILS, AS APPROPRIATE FOR THE TRENCH WIDTH.

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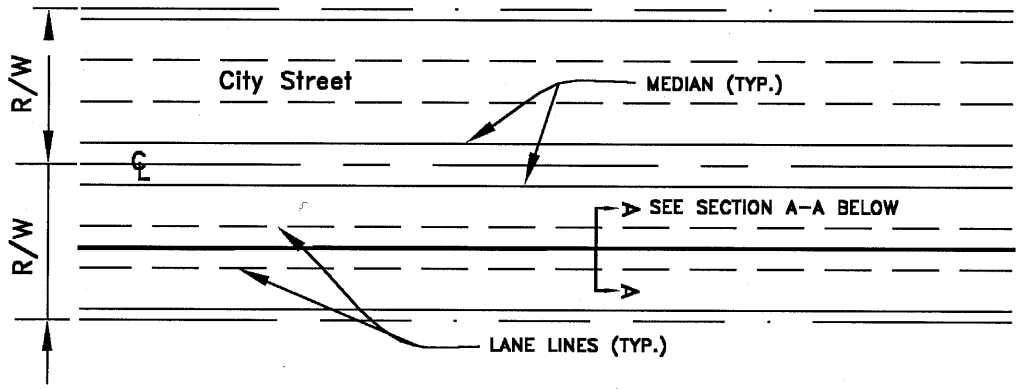
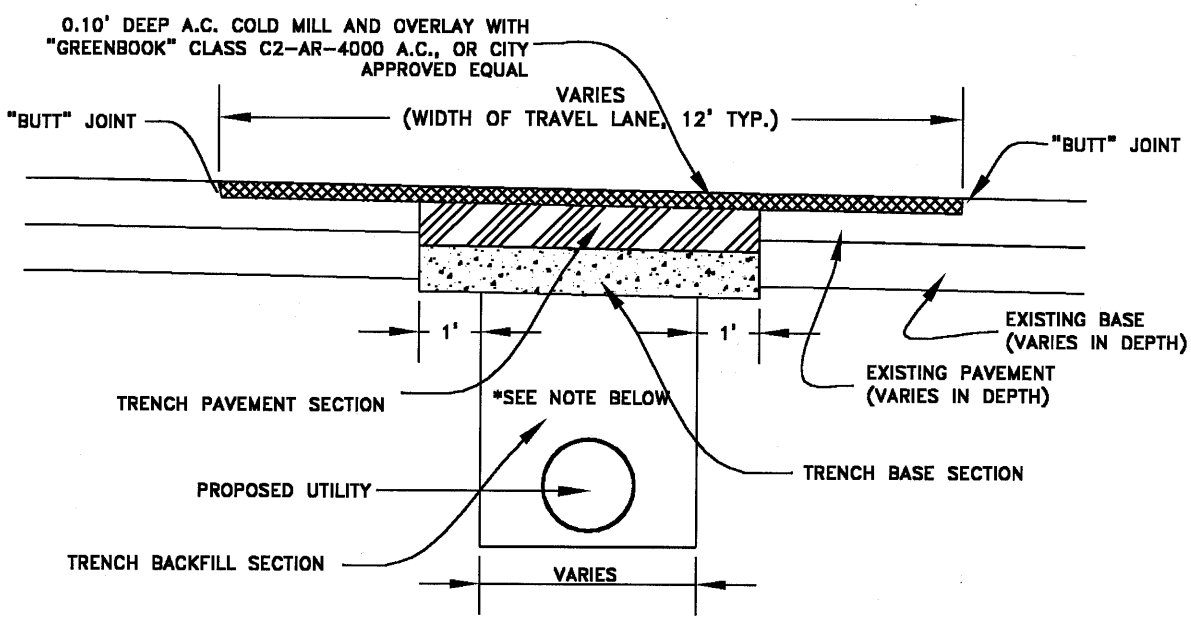
| | | SHEET 4 OF 7 |




SECTION A–A

*NOTE: FOR SPECIFIC TRENCH BACKFILL AND INITIAL PAVING REQUIREMENTS, REFER TO THE TRANSVERSE TRENCH BACKFILL AND PAVING DETAILS, AS APPROPRIATE FOR THE TRENCH WIDTH.

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| | | SHEET 5 OF 7 |

# TRENCH BACKFILL AND PAVEMENT RESTORATION REQUIREMENTS

(Requirements Vary Based on Excavated Width of Trench)

## 1. Trenches less than 12" wide (See Detail 1)

(Typically excavated with a rock saw or other similar methods.)

- Backfill Requirements:
  - CDF, or 1-sack slurry backfill ONLY
  - Backfill up to 3" below finish surface of street
  - Testing not required
  - Backfill depth independent of street structural section
- Resurfacing Requirements:
  - 1'-saw cut at trench edge is NOT REQUIRED if trench edges are vertical, straight, and stable.
  - Tack oil coat at edges
  - Paving with 3/8" A.C. material
    - In one lift
    - Depth of 3", flush with finish surface of street
    - Compaction via mechanical vibrating hand compactor or other mechanical means
    - Compaction to 95%
    - Testing not required
    - No grinding or capping with 1/2" A.C. material required

## 2. Trenches 12" to 24" Wide (See Detail 2)

(Typically excavated with backhoe bucket or other similar methods.)

- Backfill Requirements:
  - CDF or 1-sack slurry backfill (optional)
    - No testing required
  - Native or select material backfill
    - Compaction via special conditions to 90%
    - Backfill depth up to appropriate subgrade elevation
    - Testing required
  - Crushed Aggregate or Crushed Miscellaneous Base material backfill
    - Compaction to 95%
    - Backfill depth up to appropriate base grade elevation (4½" minimum)
    - Testing required
    - Backfill depths dependent upon street structural section

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| | | SHEET 6 OF 7 |

## 12" to 24" Trench (continued...)

- Resurfacing Requirements:
  - 1'-saw cut required at trench edges
  - Tack oil coat all saw-cut edges
  - Total section 1" thicker than existing A.C. section (4" minimum)
  - Two, or more, lifts
    - Base Course: 3/4" A.C. material
      - Compaction via vibroplate, tamper, or other mechanical means
      - Compaction to 95%
      - Testing required
    - Finish Paving/Cap Course, 1" Thick: 1/2" A.C. material
      - Compaction via roller
      - Compaction to 95%
      - Testing not required

## 3. Trenches More Than 24" Wide (See Detail 3)

(Typically excavated with a backhoe bucket or other similar methods.)

- Backfill Requirements:
  - CDF or 1-sack slurry backfill (optional)
    - No testing required
  - Native or select material backfill
    - Compaction via special conditions to 90%
    - Backfill depth up to appropriate sub grade elevation
    - Testing required
  - Crushed Aggregate or Crushed Miscellaneous Base material backfill
    - Compaction to 95%
    - Backfill depth up to appropriate base grade elevation (4½" minimum)
    - Testing required
    - Backfill depths dependent upon street structural section

- Resurfacing Requirements:
  - 1'-saw cut required at trench edges
  - Tack oil coat at all saw-cut edges Base paving with 3/4" A.C. material
  - Total Section 1" thicker than existing A.C. section (4" minimum)
  - Two, or more, lifts
    - Base Course: 3/4" A.C. material
      - Compaction via vibroplate, tamper, or other mechanical means
      - Compaction to 95%
      - Testing required
    - Finish Paving/Cap Course, 0.1' Thick: 1/2" A.C. material
      - Compaction via roller
      - Compaction to 95%
      - Testing not required
  - 3'-grind beyond 1'-saw cut at trench edges
    - Depth of grind to 0.10' below existing finish surface of street (grind after paving base lift)