

**CITY OF
SAN MARCOS
ENGINEERING DIVISION**

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**AN APPLICANT'S GUIDE
TO PROCEDURES FOR:**

BACKFILL REQUIREMENTS

(SECTION 14.12.340 OF STREET EXCAVATION ORDINANCE NO. 2003-1196)

A. BACKFILL WITHIN THE ULTIMATE PAVED AREAS:

1. Material for use as backfill shall have a sand equivalent of not less than twenty (20). The percentage composition by weight as determined by laboratory sieves shall conform to the following grading:

<u>Sieve Sizes</u>	<u>Percentage Passing Sieves</u>
3"	90-100
No. 4	35-100
No. 30	20-100

Excess excavated material shall be disposed of at an approved disposal site. Backfill material shall be placed in horizontal, uniform layers not exceeding eight (8) inches in thickness, before compacted to a relative compaction rate as determined by the requirements of the affected utility.

2. The restoration of the surface shall consist of "Hot Mix" asphalt concrete placed on compacted crushed aggregate base within a "T" style, saw cut and over excavated section (see figure 14.12-1). The asphalt concrete shall be placed at least one (1) inch thicker than the existing street section, but in no case less than six (6) inches thick, and a minimum of six (6) inches wider than the trench on each side. The crushed aggregate base shall be at least as thick as in the existing street, but no case less than six (6) inches. The upper portion of the trench fill from the pipe zone to the surface, including the asphalt concrete and the crushed aggregate base, shall be compacted to a relative compaction of no less than ninety-five (95) percent. The complete restoration to the street pavement shall be neat, straight and smooth with feathered edges.

B. BACKFILL WITHIN THE ULTIMATE RIGHT OF WAY (ROW) AREAS:

The backfill material may consist of material from the excavation that is free of stones or lumps exceeding two (2) inches and is free of vegetative or other unsatisfactory matter. The backfill shall be brought up uniformly and shall be compacted to ninety-five (95) percent of relative density. The backfill shall match the existing or proposed profile grade, as determined by the Director. When the material from excavation is unsuitable for use as backfill, it shall be disposed of and replaced with material meeting the above requirements of A.1. Excess material shall be disposed of at an approved disposal site.

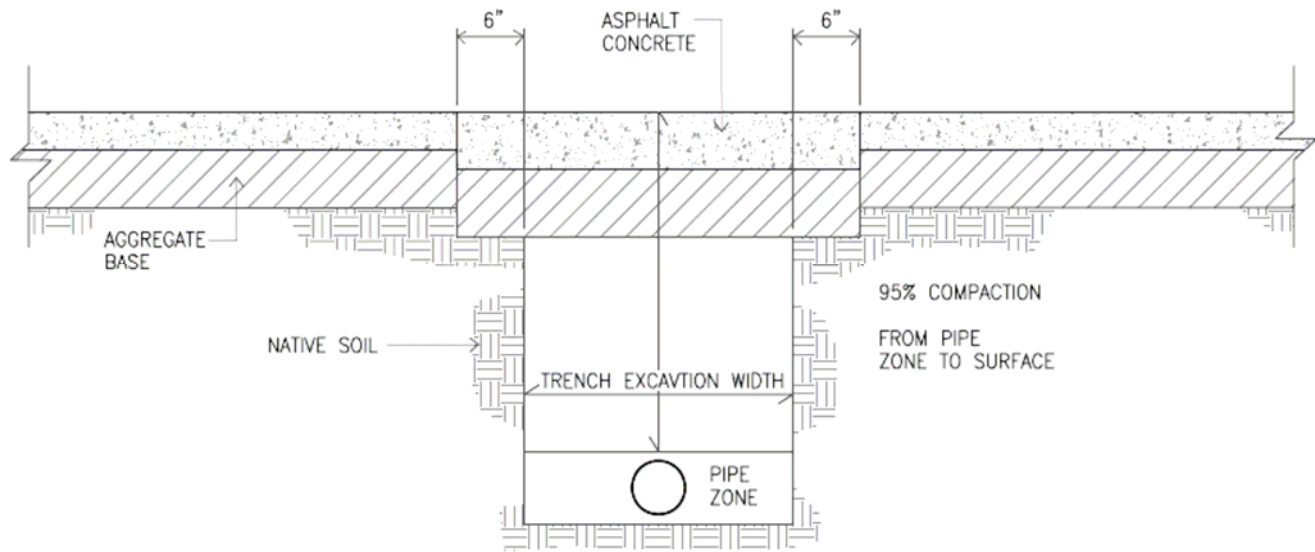


FIGURE 14.12-1

- Existing pavement shall be cut with concrete saw in a square or rectangular section and removed so as not to tear, bulge or displace the adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to the street centerline where possible.
- Temporary bituminous resurfacing shall have a minimum thickness of two inches (2") at streets, driveways and parking areas. Sidewalks shall have a minimum one-inch (1") thickness.
- The upper portion above the pipe zone of any trench or excavation within the ultimate paved areas shall be compacted to a minimum ninety-five percent (95%) of relative density. This requirement applies to backfill, aggregate base and asphalt concrete.
- Permanent resurfacing shall include asphalt concrete in a thickness one inch (1") greater than existing but in no case less than six inches (6") in residential, commercial and arterial roads and compacted class II aggregate base in a thickness equal to existing but in no case less than six inches (6").
- A binder or asphalt emulsion tack shall be applied to all contract surfaces prior to resurfacing. All resurfacing shall be sealed as directed by the Public Works Inspector. If the existing surface is chip sealed, chip sealing shall be applied to permanent resurfacing.
- The requirements for narrow rockwheel-style trenches may be different than those described above. Please see the Public Works Inspector to discuss slurry or alternative options for narrow trench backfill and resurfacing requirements.

NOTE:

At the option of the Public Works Director, wherever relative density is specified, it shall be determined by California Test Methods No. 216, 231, or 304, or by ASTM's No. D1556, D1557, D2922 or D3017.

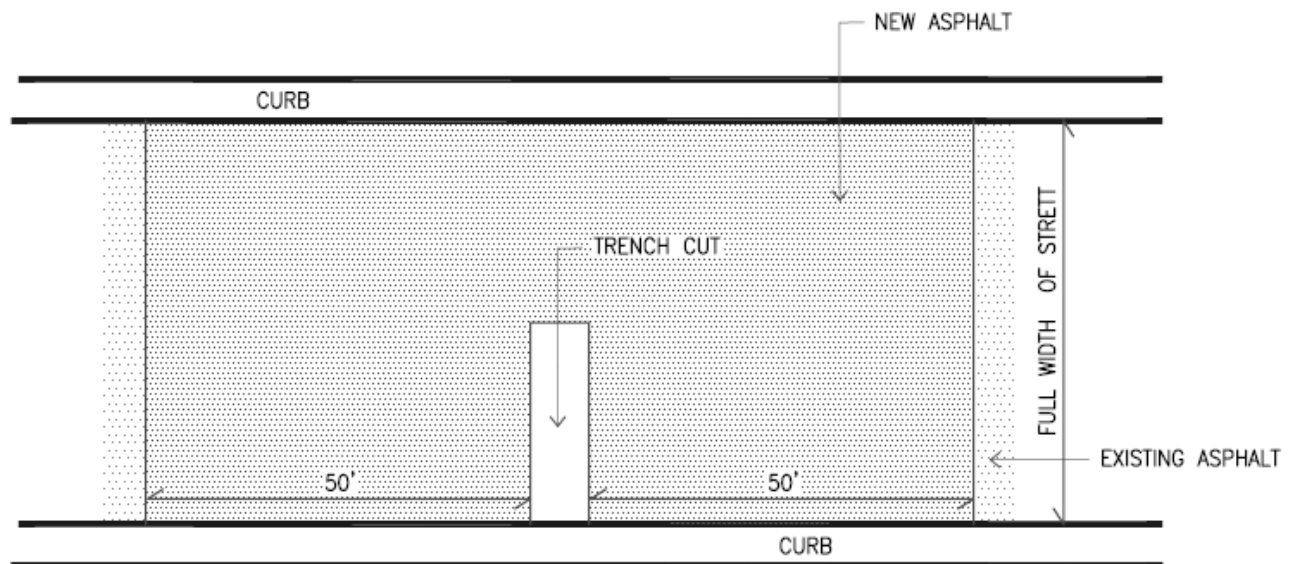


FIGURE 14.12-2

- Existing pavement shall be cut with a concrete saw in a square or rectangular section and removed so as not to tear, bulge or displace the adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to the street centerline where possible.
- Temporary bituminous resurfacing shall have a minimum thickness of two inches (2") at streets, driveways and parking areas. Sidewalks shall have a minimum one inch (1") thickness.
- The upper portion above the pipe zone of any trench or excavation within the ultimate paved areas shall be compacted to a minimum ninety-five percent (95%) of relative density. This requirement applies to backfill, aggregate base and asphalt concrete.
- Permanent resurfacing shall include asphalt concrete in a thickness one inch (1") greater than existing but in no case less than six inches (6") in residential, commercial and arterial roads and compacted class II aggregate base in a thickness equal to existing but in no case less than six inches (6").
- New asphalt overlay of one inch (1") shall extend the full width of the street and fifty feet (50') from each end of the trench cut ground and feathered in where it meets existing asphalt or curb.
- A binder or asphalt emulsion tack shall be applied to all contact surfaces prior to resurfacing. All resurfacing shall be sealed as directed by the Public Works Inspector. If the existing surface is chip sealed, chip sealing shall be applied to permanent resurfacing.

NOTE:

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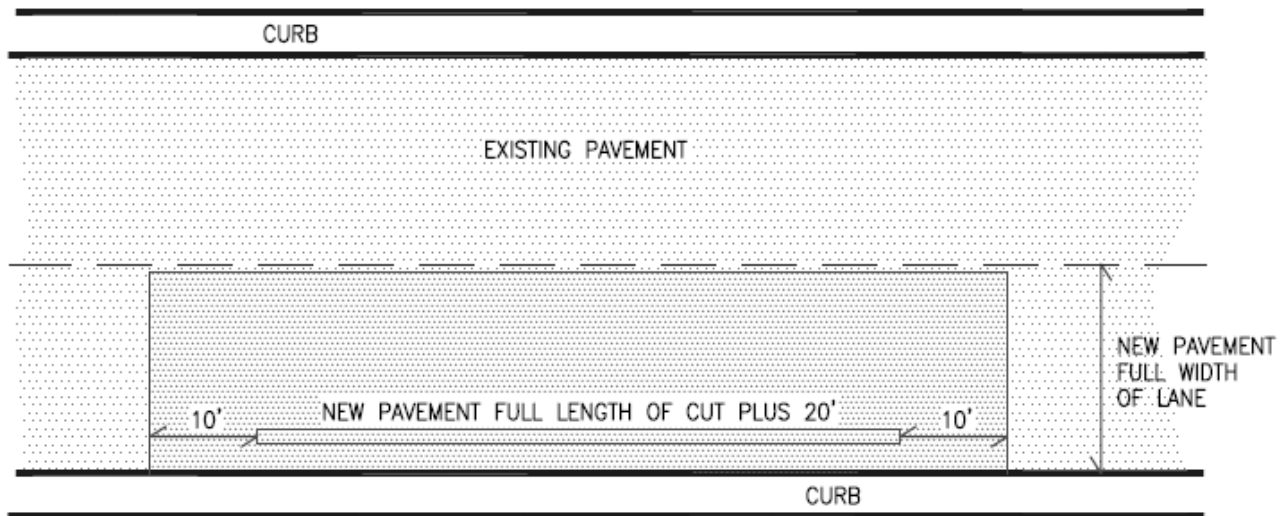


FIGURE 14.12-3

- Existing pavement shall be cut with a concrete saw in a square or rectangular section and removed so as not to tear, bulge or displace the adjacent pavement. Edges shall be clean and vertical. All cuts shall be parallel or perpendicular to the street centerline where possible.
- Temporary bituminous resurfacing shall have a minimum thickness of two inches (2") at streets, driveways and parking areas. Sidewalks shall have a minimum one inch (1") thickness.
- The upper portion above the pipe zone of any trench or excavation within the ultimate paved areas shall be compacted to a minimum ninety-five percent (95%) of relative density. This requirement applies to backfill, aggregate base and asphalt concrete.
- Permanent resurfacing shall include asphalt concrete in a thickness one inch (1") greater than existing but in no case less than six inches (6") in residential, commercial and arterial roads and compacted class II aggregate base in a thickness equal to existing but in no case less than six inches (6").
- New asphalt overlay of one inch (1") shall extend the full width of the street and 10 feet (10') from each end of the trench cut ground and feathered in where it meets existing asphalt or curb.
- A binder or asphalt emulsion tack shall be applied to all contact surfaces prior to resurfacing. All resurfacing shall be sealed as directed by the Public Works Inspector. If the existing surface is chip sealed, chip sealing shall be applied to permanent resurfacing.

NOTE:

At the option of the Public Works Director, wherever relative density is specified, it shall be determined by California Test Methods No. 216, 231, or 304, or by ASTM's No. D1556, D1557, D2922 or D3017.