

TO: James L. App, City Manager
FROM: Ed Gallagher, Community Development Director
SUBJECT: Update of Standard Street Cross Sections and Amend the Pavement Management Program
DATE: August 20, 2013

Needs: That the City Council adopt updated Standard Street Cross Sections, and amend the Pavement Management Program consistent with terminology outlined in the 2011 Circulation Element of the General Plan.

- Facts:**
1. The 2011 Circulation Element advances policy for street design to account for all users including pedestrians, children, persons with disabilities, seniors and bicyclists along with typical auto traffic.
 2. Key principles of the 2006 Economic Strategy include maintaining safe, healthy and attractive physical environments. Action items include creating streetscapes of beauty, interest and functional benefit to pedestrians.
 3. People desire narrower streets that are safe to cross or walk along; streets that calm traffic, offer places to meet people, link neighborhoods and are comfortable for bicycles. The Circulation Element advances street design to maintain a small town character. Attractive street design will add value to adjacent properties.
 4. Updated street cross sections with narrower lane widths are needed to allow new development to implement “Low Impact Development” storm water management strategies consistent with the City’s Storm Water Control Ordinance and the Water Board’s post –construction regulations which must be implemented prior to March, 2014.
 5. The 2011 Circulation Element reclassifies streets and abandons the term “collector” street. The Pavement Management Program adopted in 2006 must be amended to align with terminology in the new Circulation Element.
 6. The 2011 Circulation Element expands the use of the term “arterial street”. The 2006 Pavement Management Program designated all arterial streets as truck routes. The new Pavement Management Program must be amended to specifically identify which arterials will be truck routes to remain consistent with the 2006 program.

**Analysis
and**

Conclusion: **Purpose and Need**

Updated standard street cross sections are introduced to align with the policies advanced in the 2011 Circulation Element. The overriding concept in all of the details is to tighten the roadway, decrease design speeds, include bike lanes in accordance with the Bike Master Plan, and widen sidewalks and parkways to encourage walking. Reducing

pavement widths will result in reduced construction cost, land demand, grading disturbance, storm water run-off and long-term maintenance costs.

Advantages of spreading less pavement include slower traffic, safer streets, more attractive environments, pleasant neighborhoods, nicer walking and biking environments, higher property values, less heat retention, fuel economy, and a host similar ancillary outcomes. Adding pavement where it is not necessary promotes the antithesis of all of the above.

New Street Classifications

4-Lane Arterial Streets

The only examples we have are Spring Street, 1st to 4th Street; Niblick Road; S. River Road from Navajo to Serenade; Creston Road from Rolling Hills Road to Sherwood Road; and Golden Hill Road from Rolling Hills Road to Dallons Drive. We have developed a new standard, but it will serve only as a guide in rehabilitation projects as most every section of 4-lane arterial in the City has been built out.

2-Lane Divided Arterial Streets

This is the primary detail that will be used in the new specific plans for the development of new sections of Airport Road and Sherwood Road in the Chandler and Beechwood Specific Plans and for the new connection road that will provide direct access to the airport from the future 46E-Union Road interchange.

2-Lane Un-Divided Arterial Streets

The “un-divided” arterials generally refer to existing two-lane arterials in place. Examples being North and South River Roads, River Oaks Drive, Airport Road and Dry Creek Road. The standard is provided for guidance in rehabilitation projects associated with some of these streets. Parking and bike lanes may be optional depending upon the specific circumstances.

Local Streets with and without Bike Lanes

Standards are provided for local streets for those with bike lanes as recommended by the Bike Master Plan and for those without. These standards will be relied upon for both new development and as a guide when rehabilitating existing streets.

Paver Block Alleys

We have successfully completed a couple of sections of paver block alleys. This design is not appropriate in all cases, but in some cases is preferable to the center gutter standard. The paver block standard does not require the deep compaction of sub-grade which can be damaging to below grade utilities common in alleys. Paver blocks are an effective treatment for draining puddles on flat grades.

Pavement Management Program Amendments and Truck Routes

The reclassification of streets through the updated Circulation Element creates the need to update the Pavement Management Program. The 2006 Pavement Management Program designated “Arterial Streets” as “Truck Routes”. The 2011 Circulation Element broadens the term “Arterial” so we need to specifically modify the language in the Program so it is clear which streets will be defined as Truck Routes.

Section 12.46.010 of the Municipal Code provides the framework for the Council to establish certain streets as “Truck Routes”. Once truck routes are established trucks are then restricted from using other streets except for deliveries. The Code gives the authority for public works staff to place signs identifying certain streets as Truck Routes. If requested, signs advising trucks away from certain streets may be placed as well.

Enforcement of truck routes is only feasible on a complaint basis. A public outreach and education program dedicated to local truckers would likely gain a more receptive response.

Arterial streets designated as truck routes include: Creston Road, Union Road, Niblick Road, Golden Hill Road, Spring Street, North and South River Roads, Charolais Road, Sherwood Road, Airport Road, Dry Creek Road, Dallons Drive, Buena Vista Drive, Wisteria Lane and South Vine Street.

Policy

Reference: Municipal Code Section 12.46.010; Circulation Element of the General Plan

Fiscal

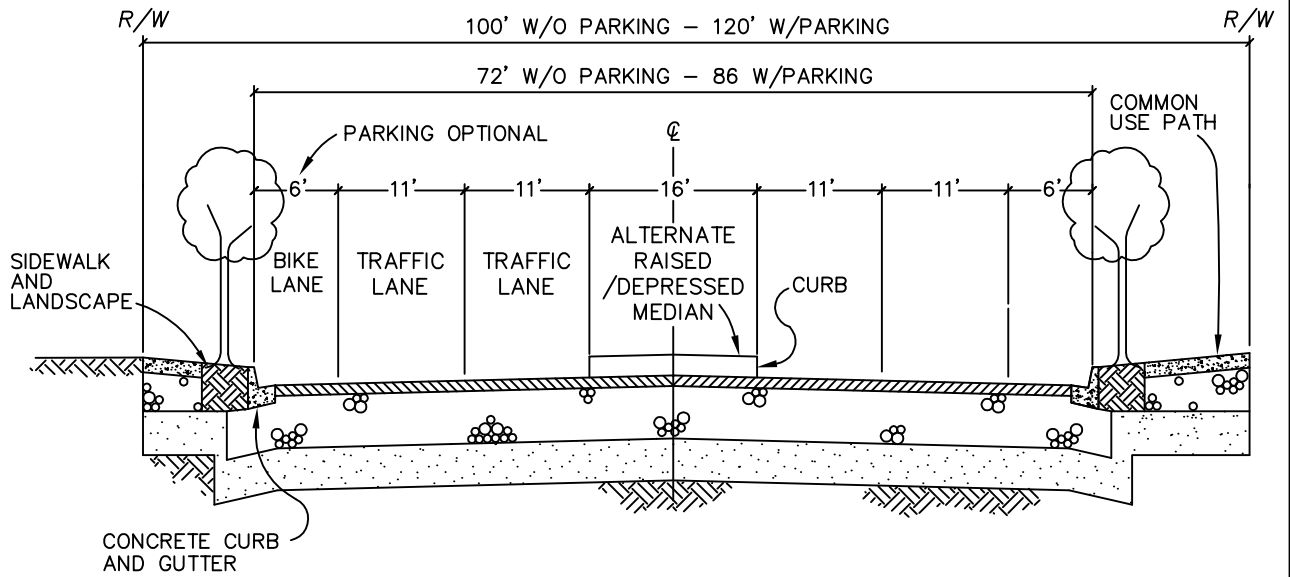
Impact: None

Options:

- a1.** Adopt Resolution No. 13-xxx amending 2012 Department of Public Works Standard Details and Specifications by adding new street standards A-1 through A-8.
- a2.** Amend the Pavement Management Program to align with terminology of the Circulation Element and specifically identify truck routes as: Creston Road, Union Road, Niblick Road, Golden Hill Road, Spring Street, North and South River Roads, Charolais Road, Sherwood Road, Airport Road, Dry Creek Road, Dallons Drive, Buena Vista Drive, Wisteria Lane and South Vine Street.
- b.** Amend, modify or reject the above options.

Attachments: (4)

- (1) Standard Details A-1 through A-8
- (2) Circulation Element Figure CE-1
- (3) Resolution
- (4) Amended Pavement Management Program

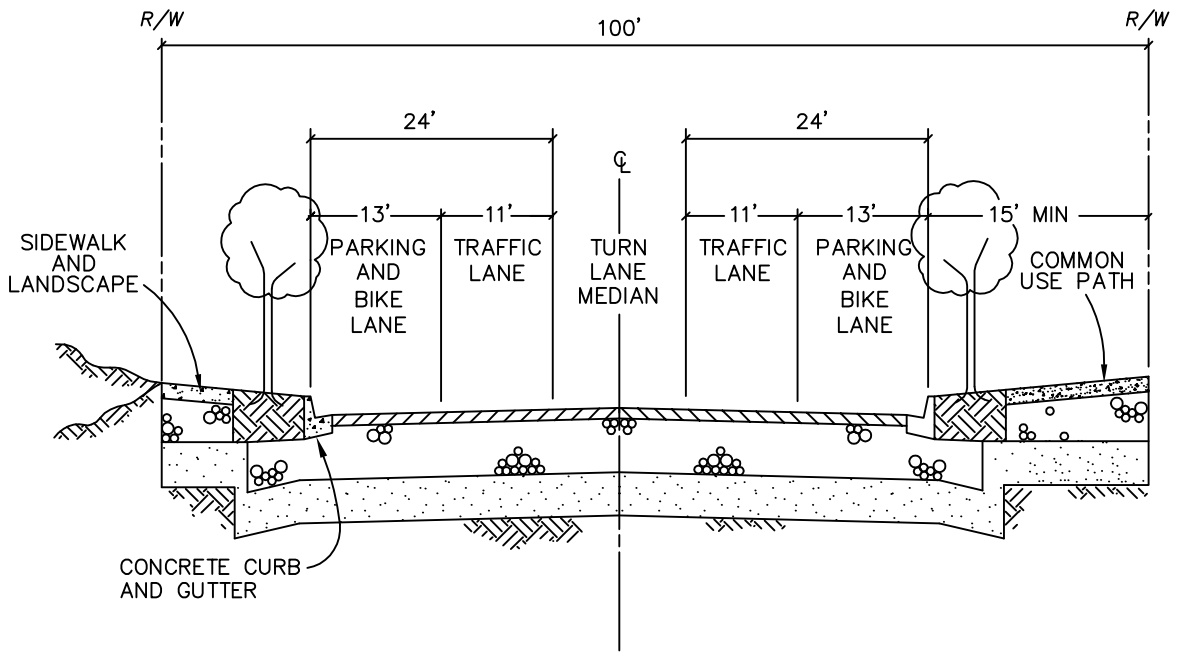


4 LANE ARTERIAL

TRAFFIC INDEX: 8.0

DESIGN SPEED: 35.0 MPH

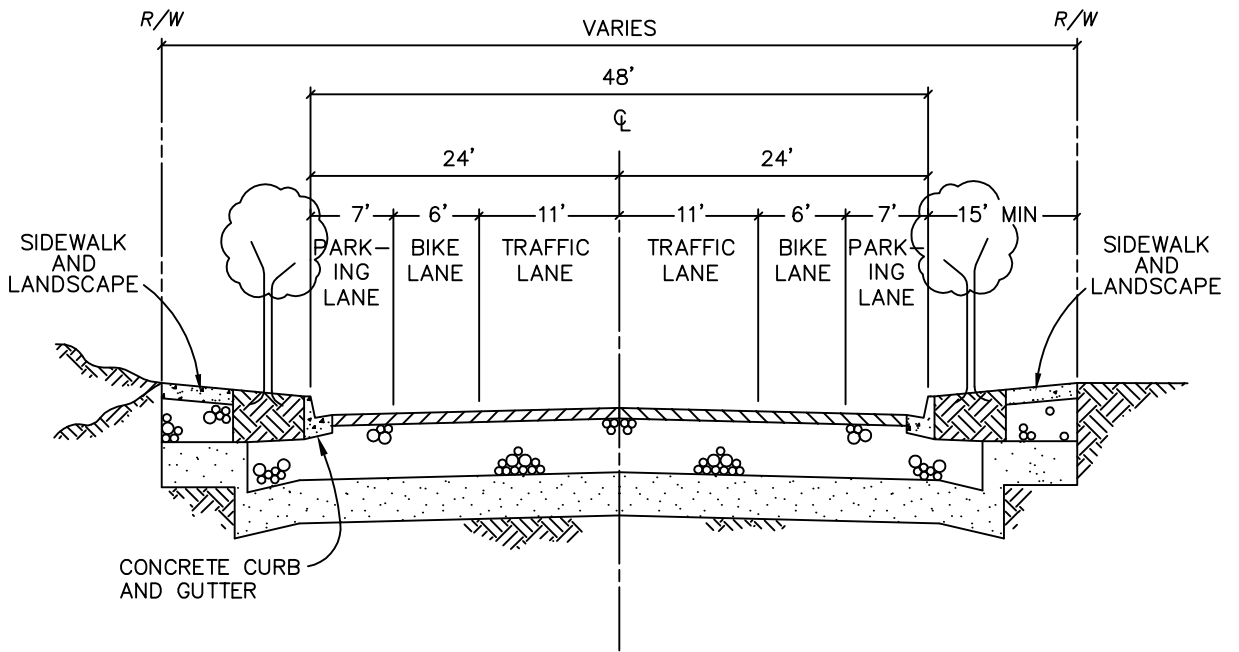
| | | |
|--------------------------|---|-------------|
| DRAWN BY: KGE | CITY OF PASO ROBLES ENGINEERING DIVISION | DRAWING NO. |
| DESIGNED BY: JF | | A-1 |
| DATE: 08/13 | 4 LANE ARTERIAL (DIVIDED) | |
| FILE NAME: PR-A-1.DWG | | |



2-LANE DIVIDED ARTERIAL

TRAFFIC INDEX: 8.0
 DESIGN SPEED: 35 MPH

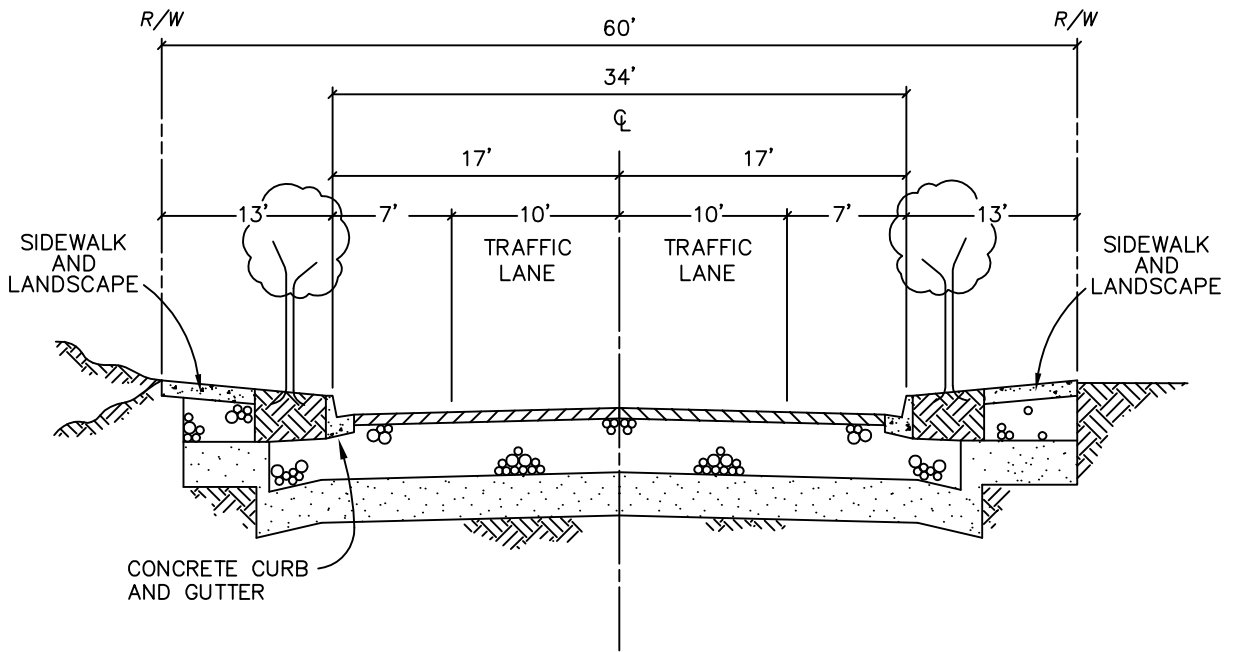
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| DESIGNED BY: JF | | |
| DATE: 08/13 | 2-LANE DIVIDED ARTERIAL | A-2 |
| FILE NAME: PR-A-2.DWG | | |



2-LANE UNDIVIDED ARTERIAL

TRAFFIC INDEX: 7.0
 DESIGN SPEED: 35 MPH

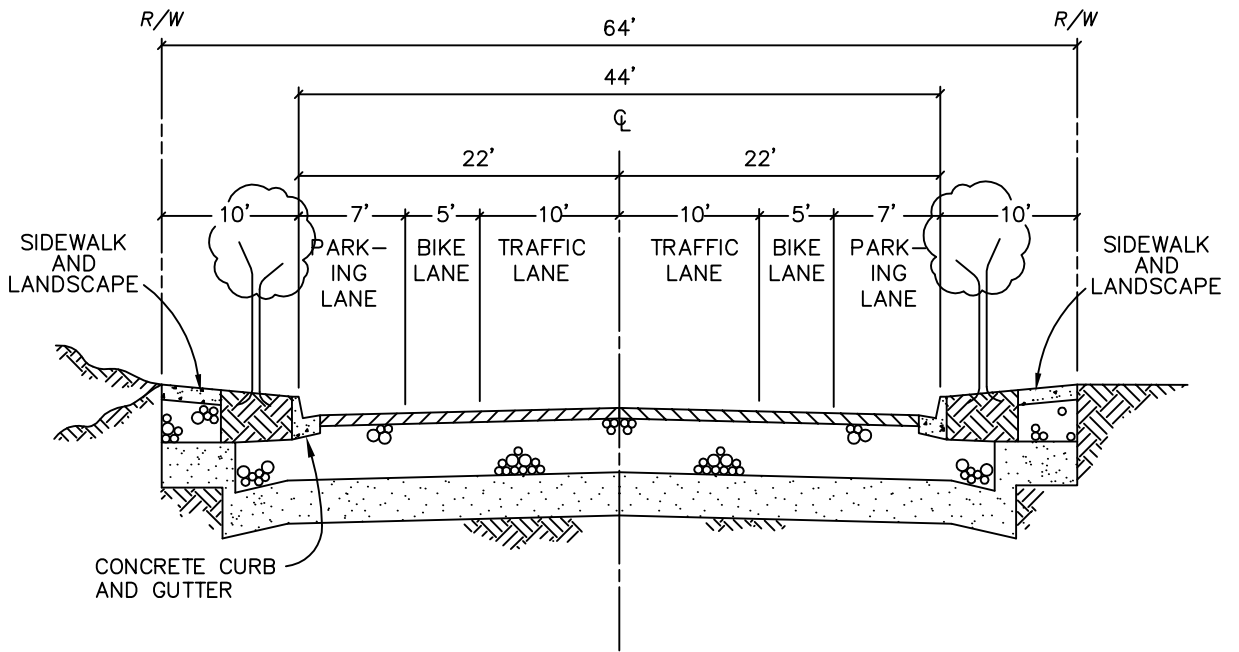
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| DESIGNED BY: JF | | |
| DATE: 08/13 | 2-LANE UNDIVIDED ARTERIAL | A-3 |
| FILE NAME: PR-A-3.DWG | | |



LOCAL STREET

TRAFFIC INDEX: 6.0
 DESIGN SPEED: 25 MPH

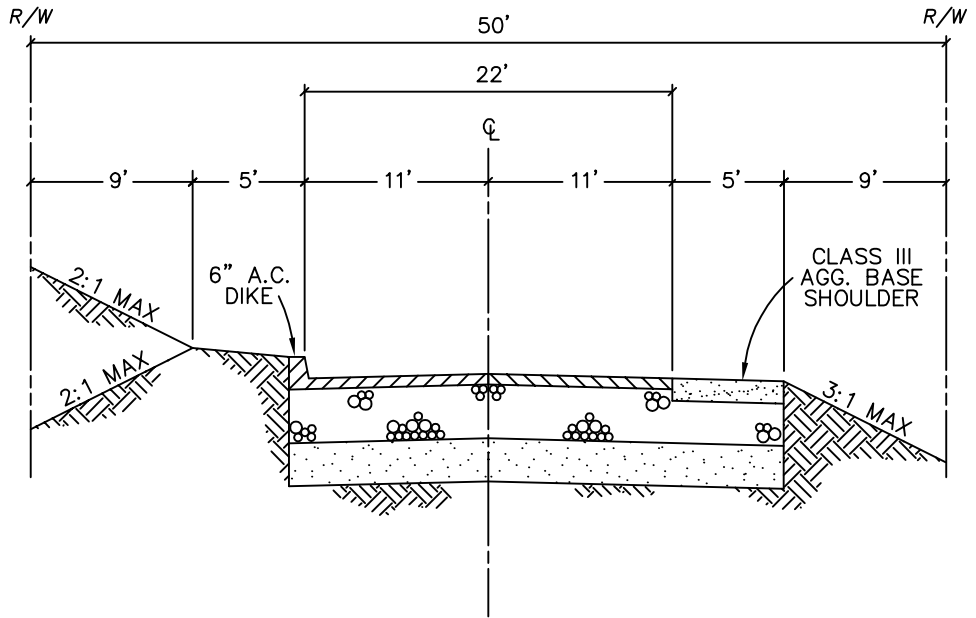
| | | |
|--------------------------|---|-------------|
| DRAWN BY: KGE | CITY OF PASO ROBLES ENGINEERING DIVISION | DRAWING NO. |
| DESIGNED BY: JF | | A-4 |
| DATE: 08/13 | LOCAL STREET | |
| FILE NAME: PR-A-4.DWG | | |



LOCAL STREET
WITH CLASS II BIKE LANES

TRAFFIC INDEX: 6.0
DESIGN SPEED: 25 MPH

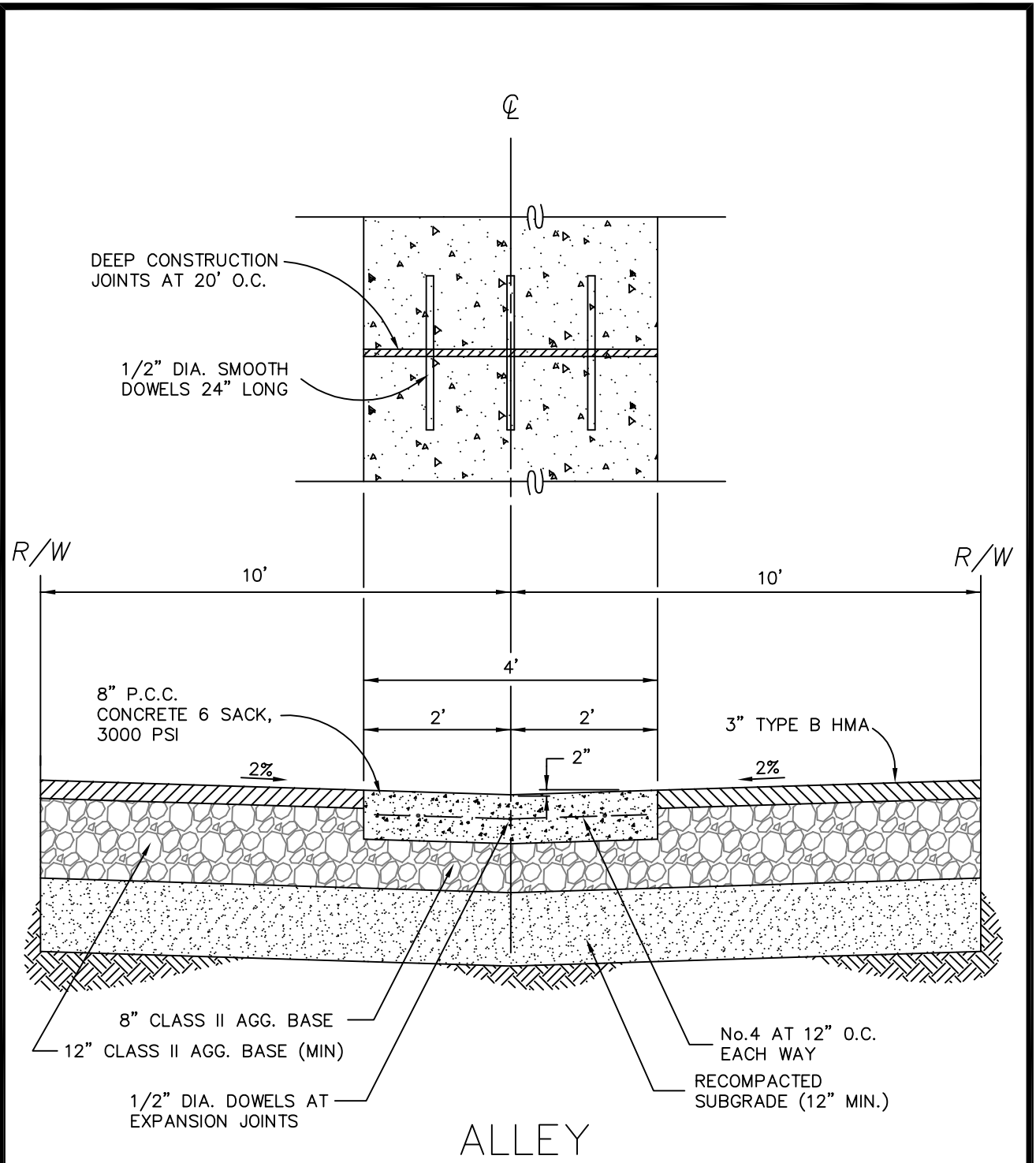
| | | |
|--|---|------------------------|
| DRAWN BY: KGE DESIGNED BY: JF DATE: 08/13 FILE NAME: PR-A-5.DWG | CITY OF PASO ROBLES ENGINEERING DIVISION LOCAL STREET WITH CLASS II BIKE LANES | DRAWING NO. A-5 |
|--|---|------------------------|



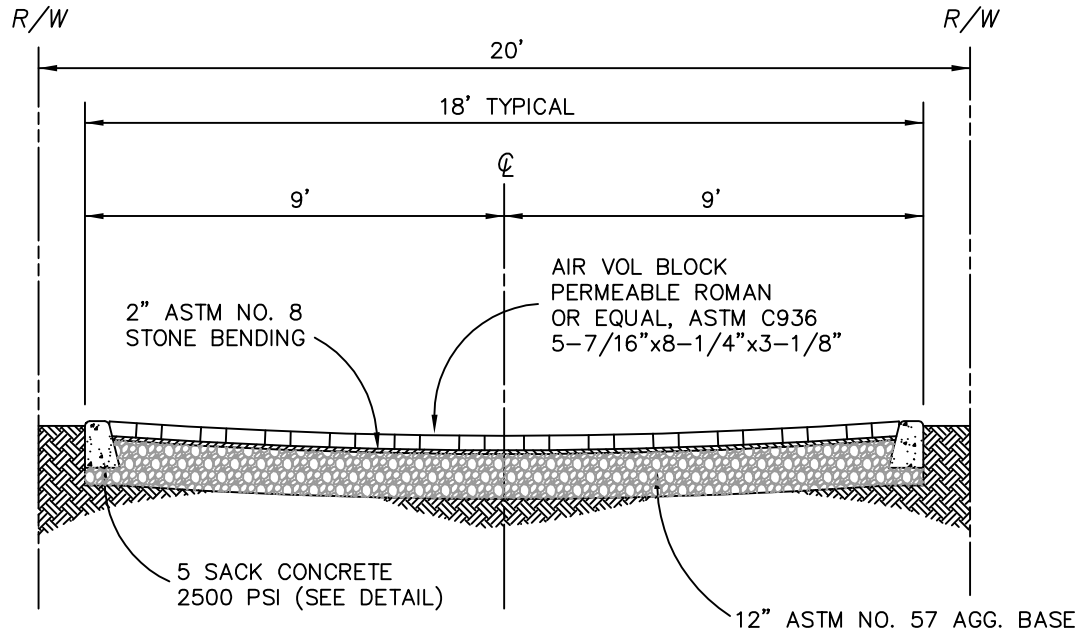
RURAL LOCAL STREET

TRAFFIC INDEX: 6.0
 DESIGN SPEED: 25 MPH

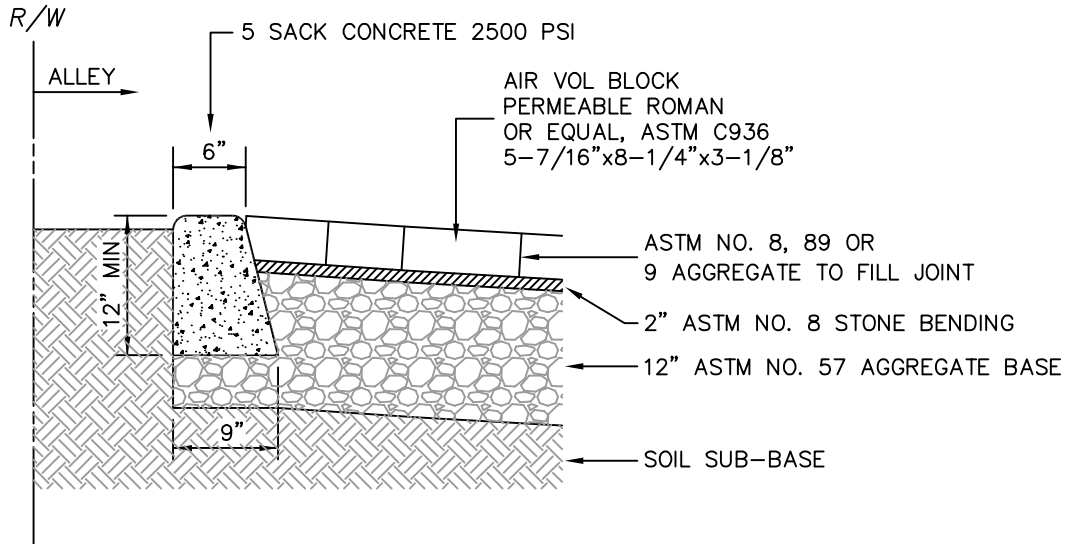
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| DRAWN BY: KGE | CITY OF PASO ROBLES ENGINEERING DIVISION | DRAWING NO. |
| DESIGNED BY: JF | | A-6 |
| DATE: 08/13 | RURAL LOCAL STREET | |
| FILE NAME: PR-A-6.DWG | | |



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|--------------------------|---|-------------|
| DRAWN BY: KGE | CITY OF PASO ROBLES ENGINEERING DIVISION | DRAWING NO. |
| DESIGNED BY: JF | | A-7 |
| DATE: 08/13 | ALLEY | |
| FILE NAME: PR-A-7.DWG | | |



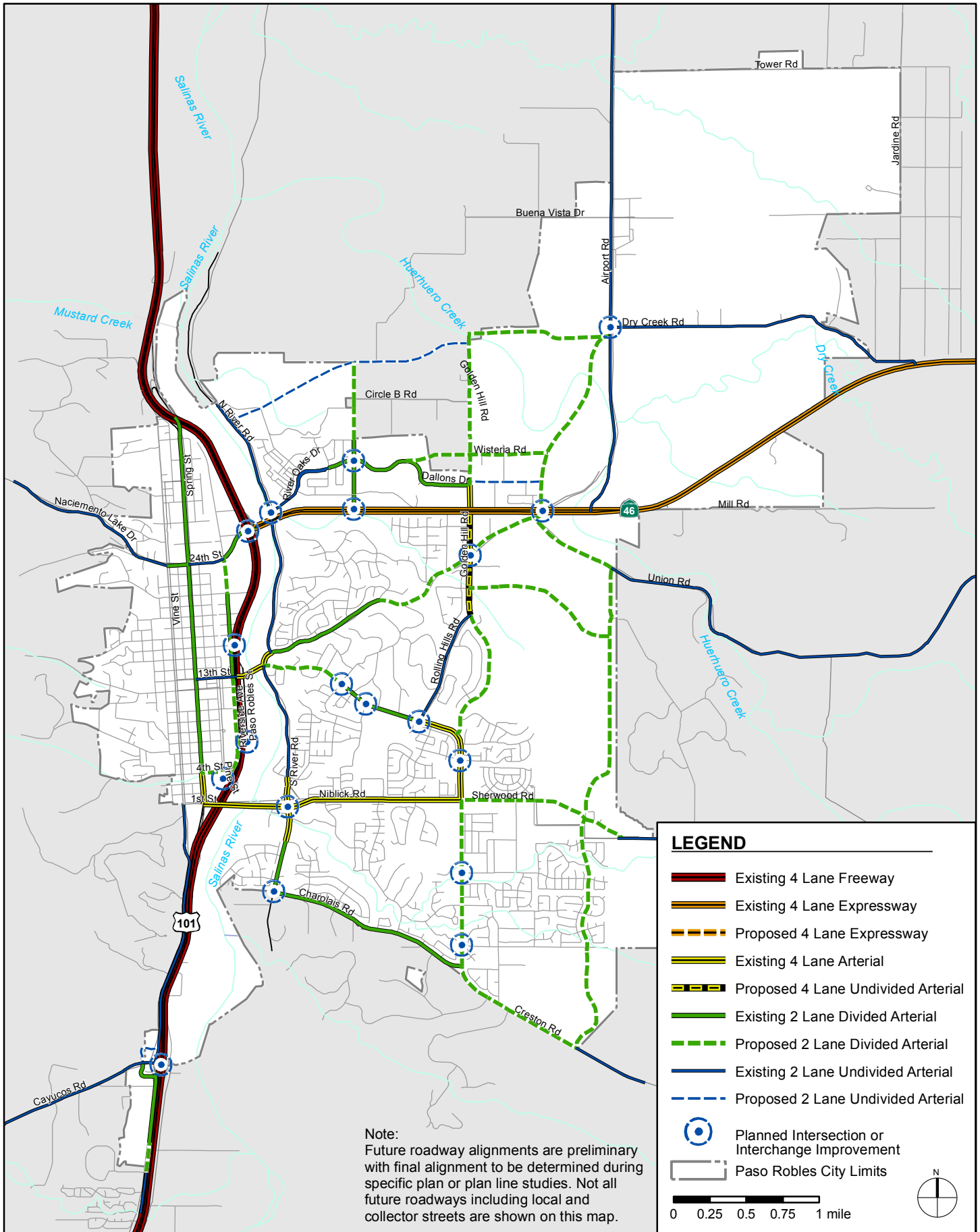
ALLEY



DETAIL

PAVER BLOCK ALLEY

| | | |
|--------------------------|---|-------------------|
| DRAWN BY: KGE | CITY OF PASO ROBLES ENGINEERING DIVISION | DRAWING NO. |
| DESIGNED BY: JF | | PAVER BLOCK ALLEY |
| DATE: 02/13 | | |
| FILE NAME: PR-A-8.DWG | | |



RESOLUTION NO. 13-
A RESOLUTION OF THE CITY COUNCIL OF THE CITY
OF PASO ROBLES ADOPTING AMENDMENTS TO DEPARTMENT
OF PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS

WHEREAS, the Circulation Element advances policy for street design to account for all users including pedestrians, children, persons with disabilities, seniors and bicyclists along with typical auto traffic; and

WHEREAS, the Circulation Element advances the concept of narrower streets that are safe to cross or walk along, that calm traffic, offer places to meet people, link neighborhoods and generally maintain a small town character; and

WHEREAS, key principles of the Economic Strategy include maintaining safe, healthy, and attractive physical environments including streetscapes.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

That the City Council of the City of Paso Robles does hereby approve and adopt Standard Drawings A – 1 through A – 8 attached hereon as exhibits to the Department of Public Works Standard Details and Specifications.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 20th day of August, 2013 by the following vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

Duane Picanco, Mayor

ATTEST:

Caryn Jackson, Deputy City Clerk

PROPOSED PAVEMENT MANAGEMENT PROGRAM

ANALYSIS OF THE CITY’S STREET SYSTEM

The City of Paso Robles currently maintains approximately 148.3 centerline miles of roadways. Of the 148.3 centerline miles, 31.8 are arterials and 18.8 are collectors. This represents 7,428,956 square feet of arterial pavement, 3,638,702 square feet of collector pavement, 16,818,281 square feet of residential pavement, and 461,178 square feet of alleys in the Business District, for a total system of 28,347,117 square feet.

The City engaged the services of Pavement Engineering Inc. to perform evaluation of all the streets in the City’s system to establish a Pavement Condition Index (PCI) for each road segment and is summarized below:

| | Area (SF) | Centerline Miles | Weighted PCI |
|-------------|------------|------------------|--------------|
| Arterials | 7,428,956 | 31.8 | 69.2 |
| Collectors | 3,638,702 | 18.8 | 55.4 |
| Residential | 16,818,281 | 93.5 | 63.8 |
| Alleys | 461,178 | 4.3 | 48.6 |
| | 28,347,117 | 148.3 | 63.9 |

The overall current weighted average PCI for the City’s streets is 63.9. Most cities in California try to maintain an average PCI of 70 or above. It is recommended that the City adopt a policy to maintain its residential streets at a PCI level of 70, its alleys at a PCI level of 65, and its arterials and collectors at 80.

RECOMMENDED PROGRAM

Staff recommends a Pavement Maintenance Program to address the City’s street system in three categories: Design of New Streets, Construction of New Streets, and Maintenance and Protection of Existing Streets.

A. Design of New Streets

It is critical that streets are designed adequately for the volume of traffic and type of vehicle that is expected to use the roads. In other words, the street structure for arterials and collectors should be designed to accommodate heavy trucks and large volumes of traffic. Residential street design standards can be a little less stringent since these streets typically are limited only to neighborhood traffic.

The structural section (aggregate base and asphalt concrete) required to be installed for new streets is contingent on two factors: traffic index (TI) which is an indication of future truck loading and is a function of the volume and type of traffic that will be using the street, and soils resistivity (R-value) which is the in situ soils characteristic that can withstand the anticipated long-term weight that the street will experience.

PROPOSED PAVEMENT MANAGEMENT PROGRAM

1. Traffic Index

Traffic Index (TI) is based on the expected number of vehicles and the type of vehicles to travel the streets in the design life. Heavier vehicles have more impact on pavement. Prior to December, 2006, the City’s standards were as follows:

| | |
|---------------------------------|----------|
| Arterial streets | TI = 7.0 |
| Collector and west side streets | TI = 6.0 |
| Local and rural streets | TI = 5.0 |
| Cul-de-sac and hillside streets | TI = 4.0 |

In December, 2006 the City Council updated this Plan so that streets be designed with the following Traffic Index:

| | |
|--|----------|
| Arterial Streets (which would also serve as truck routes) | TI = 8.0 |
| Commercial streets and Collectors | TI = 7.0 |
| All other streets including alleys | TI = 6.0 |

The 2011 Circulation Element eliminates the term “Collector” street so the table must be updated as follows:

| | |
|---|----------|
| 4-Lane and 2-Lane Divided Arterial Streets | TI = 8.0 |
| 2-Lane Undivided Arterials and Commercial Streets | TI = 7.0 |
| All other streets including alleys | TI = 6.0 |

2. Soil Resistivity (R-value)

Soil strength is measured in the lab and a number (the R-value) that represents the soil strength is established. In San Luis Obispo County, where poor soils are common, this number can be as low as 5 (the lowest possible). The roadway designer shall have soil samples tested for actual value and the measured R-value shall be used in the calculation of the pavement design. However, if no test is performed, the R-value can be assumed to be 5 and the structural section can be calculated accordingly to include a minimum of 12 inches of aggregate base material. The lower 6 inches may be a Class III sub-base material in accordance with Caltrans Standards.

B. Construction of New Streets

Two policies are proposed for consideration with regards to the construction and acceptance of new streets as part of the City’s network of streets as outlined below.

1. Developers to Install Full Street Structure

In a multiphased subdivision or during the initial stages of construction, residential roads are used by concrete trucks and construction vehicles which accelerate the deterioration of these roads and decrease their life expectancy as these roads were neither designed nor constructed to receive this type of traffic. Therefore, the life expectancy of roads in these tracts, which would normally be 20 years, is drastically reduced.

It is proposed that the City adopt a policy to require developers to install **the full structure section prior to acceptance** of public improvements.

In addition, it is also proposed that the aggregate base below the curb be at the same depth as the roadbed.

2. Compaction of New Streets

It has been proven that proper compaction of asphalt concrete has a direct relation to the construction life of a street. Currently the City requires that asphalt concrete be compacted at 95% minimum. It is proposed that the City require that the compaction after rolling shall have an average of 96.5% with no one test below 96%. All testing shall conform to Caltrans Testing Methods and Specifications.

C. Maintenance and Protection of Existing Streets

The following policies are proposed to address the maintenance and protection of the City's existing streets: adopt utility trench repair standards, establish a truck route street system, and establish a specific budget to maintain the City streets.

1. Utility Repair Standards

The trench repair standards proposed are designed to mitigate the impact of utility trenches on the life and durability of streets. The implementation of these standards will result in longer paving life of streets and therefore neutralize the costs driven by premature repair of asphalt that has been trenched and patched inadequately.

Nearly all complaints regarding rough patches in streets are in reference to temporary repairs. Temporary repairs are typically comprised of cutting back the asphalt or a cold patch. Cold asphalt has lower stability and is compacted by on-going traffic and therefore is left a little higher than adjacent grade. Cold asphalt may compact below adjacent grade resulting in annoying bumps. Temporary repairs need to be monitored in order to be effective and to limit disruption and traffic comfort. A temporary trench repair standard is also included for consideration in addition to a monitoring program to assign responsibility for on-going maintenance and timely permanent pavement replacement.

Research by the University of Cincinnati indicates that the area of impact to an existing street extends to three feet outside the edge of the trench. A trench repair standard that accounts for these impacts is proposed.

Appendix A attached includes exhibits and details which are proposed to address utility trench repairs.

2. Truck Route

The wear factor to a road's surface caused by a single large truck is equal to 15,000 automobiles traveling over the same road surface. Arterial road structures are designed to accommodate large volumes of traffic and large, heavy trucks. It is recommended that the City adopt a Traffic Index of 8.0 for all streets expected to accommodate trucks. Four-lane arterial streets, 2-lane divided arterial streets and other selected 2-lane undivided arterials will become the City's designated "Truck Routes."

3. Protection of Existing Streets

Good pavement management means that the cost to maintain pavement in a good or excellent condition is relatively low, as long as work is done before the condition of rapid deterioration begins. Once pavement has begun to deteriorate rapidly, the cost to restore the pavement to excellent condition increases rapidly to the point where it may not make economic sense to spend money on routine maintenance. It is proposed that the City adopt a policy to use its annual street maintenance budget towards preventive maintenance and the remainder towards heavy maintenance or reconstruction. These policies that are proposed would allow the citizens of Paso Robles to have streets that are well maintained and last a long time.

The attached chart illustrates that the City should appropriate 2.5 million dollars annually in order to maintain its street system at a level that will extend the life of the streets. Two scenarios are proposed on how this annual budget should be used.

a) Worst case first

As has been past practice, the City could continue to fund major rehabilitation of its streets by performing work on its worst streets first. However, as has been noted, this is costly and while the worst streets are being repaired, other streets which are in fairly good condition could deteriorate rapidly beyond the point where it is possible to extend their design life.

b) Expenditure by categories

A second scenario that could be implemented is to apply certain percentages of its annual budget as follows:

- 20% towards slurry seal or light overlay to maintain arterials and collectors at a PCI level of 80 and residential streets at 70
- 70% towards major reconstruction of streets
- 10% towards maintenance of the City's downtown alleys