

City of Seal Beach



Final Pavement Management Program Report

May 2012

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**Pavement Management Program
Final Report**

Submitted to:

City of Seal Beach

**211 8th Street
Seal Beach, CA 90740**

May 2012

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EXECUTIVE SUMMARY

The City of Seal Beach has a substantial investment in their street network as evidenced by the replacement cost of approximately \$109.2 million. The network average PCI of the City is 85. Overall, 80% of the City's street network is in the "Good" and "Very Good" condition category. In the meantime, about 15% of the streets are in "Poor" or "Very Poor" condition category. This requires a significant amount of money to bring them into the "Good" condition category. If sufficient funding is unavailable for street maintenance, the average PCI of the network is expected to decrease and the unfunded backlog will increase. The higher backlog will result in increased future costs as more capital intensive treatments (such as reconstruction) will be necessary as streets are deferred where less expensive treatments (such as surface seals or overlays) are currently feasible.

Our analysis indicates that the City needs to spend \$11.8 million in pavement maintenance and rehabilitation in the next seven years, in order to eliminate the unfunded backlog. By doing so, many streets then can be maintained in good condition with on-going preventive maintenance. This will eventually save money by avoiding reaching the level of major rehabilitation (such as reconstruction) until the end of the pavement's service life.

Pavement Budget

The City's current budget for pavement maintenance and rehabilitation is \$4.03 million for next seven years. At this budget level, the network average PCI is expected to decrease from the current level of 85, which is in "Good" condition category, to 79. In addition, 13% of the network will fall in the "Poor" and "Very Poor" category.

As a minimum, we suggest that the City of Seal Beach consider increasing pavement expenditures to achieve the following objectives:

- To preserve and improve pavements in the "Good" category
- Reduce the percentage of pavements in the "Poor" and "Very Poor" categories
- Maintain the average PCI at 80

The City's PCI rating continues to comply with the Measure M2 subtext "b" which keeps the City eligible for M2 funding. Since 2008 the City has maintained a PCI greater than the OCTA required condition of 75. Even though the analysis for this update shows the potential decrease in the overall PCI from 85 to 79, the City will still remain eligible for the 10% reduction in local matching fund requirement.

The current budget of \$4.03 million for seven years is \$1.57 million short of the budget needed in order to maintain the PCI at 80. This equates to approximately \$225,000 per year.

In terms of priorities, the City should:

- a. Fully fund all preventive maintenance activities.
- b. "Package" surface seal projects to produce cost effective bids.
- c. Apply sufficient stop gap funds to streets that are deferred.
- d. Continue to use the seven year maintenance cycle. This will allow the City to package rehabilitation projects in a cost effective manner. Mobilization costs will be cut to a minimum thus enabling the City to stretch its limited funds.

Examples of other sources of funding include:

- Assessment districts
- Local Transportation Bond
- Developers' fees
- Parking fees
- Truck impact fees
- Federal & State Grants



Pavement Maintenance Strategies

The City's pavement maintenance strategies include slurry seals, overlays and reconstruction. It is tempting to invest in the worst streets and only fund overlay or reconstruction projects. However, it is equally important to preserve good pavements. Crack sealing, one of the least expensive treatments, can keep moisture out of pavements and prevent the underlying aggregate base from premature failures. Surface seals are also cost-effective for pavements currently in good condition. Therefore, we recommend that the City continues its preventive maintenance program to preserve the good pavements.

In addition, other strategies such as cold-in-place recycling or full depth reclamation should be considered when considering rehabilitation treatments. These may save the city significant amounts over more conventional treatments.

The City of Seal Beach is approaching the minimum condition level set by OCTA. Attention needs to be made to ensure the City does not fall below the minimum which could happen in the next seven year cycle.



Introduction

The City of Seal Beach has utilized a Pavement Management Program (PMP) to manage its street network since 2004. The first PMP software used was the StreetSaver® program, but in 2010, the City converted to the MicroPAVER software to be compliant with the requirements of the Orange County Transportation Authority (OCTA). Both programs are similar and rate pavements on a 0-100 Pavement Condition Index (PCI) scale.

Nichols Consulting Engineers, Chtd. (NCE) was selected by the City of Seal Beach to update the City's pavement management system in 2012. The entire network (approximately 41 centerline miles or 212 pavement sections) were surveyed. The surveys were completed in March 2012, and all survey data were entered into MicroPAVER database.

During this round of inspections NCE was directed by City Staff to re-segment Elder Avenue from E/Fuchsia Street to W/Ironwood Avenue to better reflect the maintenance treatments that had been and were being done to the street. Additionally, NCE was asked to rename the street segments that involved Beverly Manor Drive to North Gate Road. Also, Ironwood Avenue from S Candleberry to N Heather Street was split into two sections (section ID: 050 - S Candleberry Avenue to N Elder Avenue/ section ID:100 - S Elder Avenue to N Heather Street). Finally, Anderson Street was added into MicroPAVER database. These bring the total sections for the City to 212.

The table below summarizes the lengths and area of the pavement network by functional class:

Table 1. Network Summary Statistics by Functional Class

Functional Class	Sections	Centerline Miles	Lane Miles	Area (sf)
Arterial	18	8.9	38.5	3,567,019
Collector	38	8.5	15.9	1,731,708
Residential	156	23.8	46.4	4,145,363
Totals	212	41.2	100.8	9,444,090

As part of this project, a pavement needs analysis was performed on the pavement network. Four budgetary scenarios were also analyzed.

Purpose

The purpose of this report is to assist policy makers in utilizing the results of the PMP. Specifically, this report links the PMP recommended repair program costs to the City of Seal Beach's current and projected budgets and identifies various maintenance and rehabilitation strategies. The analysis assesses the adequacy of current and projected revenues to meet the maintenance needs recommended by the PMP program. It also maximizes the return from pavement funding by:

- (1) Implementing a multi-year road rehabilitation and maintenance program;
- (2) Developing a preventative maintenance program; and
- (3) Prioritizing and selecting the most cost effective repairs.

This study determines the overall condition of the pavement network and highlights options for improving the current network-level PCI. These options are developed by conducting "what-if" analyses. By varying the budget amounts available for pavement maintenance and repair, one can see how different funding strategies can impact the City's streets over the next seven years.



City's Street Network

The City of Seal Beach was incorporated in 1915 and has been in operation under its own charter since 1964. It covers an area of 11.6 square miles in the western corner of Orange County. The City's total population in 2010 was 24,168. Originally called Bay City, Seal Beach was developed in the early 1900's as a resort destination for residents of the Los Angeles area. Its early growth was accelerated by the construction of the Pacific Electric Railway Trolley, which reached the City in 1906. In 1926, oil was discovered in the City and the oil boom that followed resulted in the development of Seal Beach into the mainly residential community it is today.

The City is divided into several distinct communities, each of which is described in detail in the following paragraphs.

Old Town comprises the area south of Pacific Coast Highway (PCH) and Marina Drive, between 1st Street and Seal Beach Boulevard, and was developed in the 1920's. It is the oldest area within the City's corporate limits. High density residential and commercial land uses are prevalent in this area. Large single-family residential lots located directly on the beach are found in the Gold Coast District. The City's mile long beach in Old Town is used for surfing and swimming. The Seal Beach Pier, located at the end of Main Street, provides fishing facilities and a restaurant.

Much of Old Town dates back to the 1920's. The original street network was laid out in a grid formation and constructed of concrete. Over the years, many of these streets have been overlaid with asphalt.

Bridgeport is the area located west of PCH, north of Marina Drive and southwesterly of San Gabriel River. It was primarily developed in the 1960's and consists of medium and high density residential land uses.

Marina Hill was developed in the 1950's and consists of single-family homes. This area is located north of PCH and west of Seal Beach Boulevard, adjacent to the southerly edge of the Hellman Ranch property. It is further divided into Marina Hill-North and Marina Hill-South with Bolsa Avenue forming the boundary.

Surfside, a colony which was incorporated in the 1930's, consists of single-family homes located on the south portion of Anaheim Bay. Although a gated community, pedestrian and bicycle access to the beach is available.

Leisure World covers the portion of the City between Westminster Boulevard and the San Diego Freeway westerly of Seal Beach Boulevard. It was built in 1961. It is a gated retirement community of 600 acres. Leisure World provides a secure, serene environment for seniors 55 and older. Medical, religious, commercial and recreational facilities are all provided within the compound limits.

College Park East is a single-family residential area developed in the late 1960's. It is located between the San Diego Freeway and Lampson Avenue, west of the Bolsa Chica Channel in the northeast section of the City. Streets within this community were constructed in the late sixties. The original thickness of the asphalt concrete was only 2 inches and too thin to accommodate the traffic loads.

College Park West is a small neighborhood bordering Long Beach. It is located in North West of the City. Its streets are named after colleges.

Private Streets

The following neighborhoods have private streets and are maintained by an association and no City funds go toward their maintenance.

- Leisure World
- Centex Homes
- Riverbeach Condominiums
- Surfside
- Heron Pointe



Existing Pavement Condition

As previously noted, the City of Seal Beach is responsible for the repair and maintenance of approximately 41 centerline miles of streets. The surface area of the network is approximately 9.4 million square feet or 1 million square yards. **The replacement value of the City's streets is approximately \$109.3 million.** (This is the cost to replace the pavement and does not include sidewalk, ramps, curb & gutter etc.)

The Pavement Condition Index (PCI) is a measurement of pavement grade or condition and ranges from 0 to 100. A newly constructed road would have a PCI of 100, while very poor streets would have a PCI of 40 or less.

Table 2 provides pavement condition breakdowns by PCI ranges or condition category and summarizes the condition of the network in the City of Seal Beach. A large portion of the City's streets are in "Good" or "Very Good" condition category, as shown in Figure 1. Table 3 provides the pavement condition by Functional Class.

Table 2. Percent of Pavement Area by Condition (2012)

Pavement Rating	PCI Range	% of Pavement Area	Description of Pavement Condition
Very Good	86-100	69%	The pavement is new or almost new and will not require significant improvement for some time, but may require localized minor repairs. The pavement is structurally sound and has very little or no roughness.
Good	75-85	11%	The pavement is in good shape but has some surface defects indicating the need for routine maintenance. The pavement is generally structurally sound and has only minor roughness.
Fair	60-74	5%	The pavement has a fair number of defects such as cracking, material loss, depressions, etc. indicating the need for maintenance or repair. The pavement is beginning to become structurally deficient and may have noticeable roughness.
Poor	41-59	11%	The pavement has significant defects such as major cracking, significant surface distortions and material loss indicating a need for rehabilitation (i.e. structural improvement). The pavement is structurally deficient and has noticeable roughness.
Very Poor	0-40	4%	The pavement has major defects indicating the need for major rehabilitation or reconstruction. The pavement is structurally inadequate.



Figure 1. Current Pavement Condition by % of Network Area

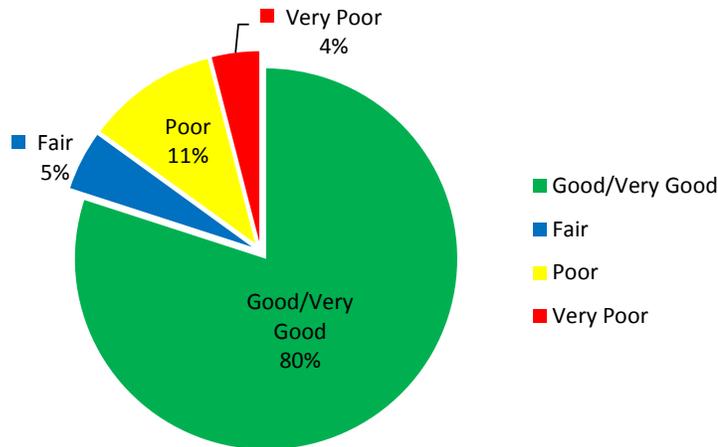


Table 3. Pavement Condition by Functional Class (2012)

Functional Class	Average PCI (weighted by area)
Arterial	82
Collector	83
Residential	89
All	85

The City of Seal Beach’s current weighted average PCI for roadways is 85 or in the “Good” condition category. The weighted average is determined as follows:

$$PCI_a = \frac{\sum_{i=1}^N (PCI_i \times A_i)}{\sum_{i=1}^N A_i}$$

Where

- PCI_a = area weighted average PCI of pavement network
- PCI_i = PCI of pavement section number i
- A_i = area of section number i
- N = total number of section in City’s network

This average PCI of 85 is a 1-point increase from the last update in 2010 (This needs to reflect the increase from 2010) and is largely due to the significant amount of maintenance activities that have occurred in the past three years. The street inventory and PCI report is included in Appendix A. A summary of the maintenance and rehabilitation history is included in Appendix B.

Table 4 summarizes the condition of the road network from 2004-2012. The percentages of pavements in good and very good condition have significantly increased since 2008. Conversely, the percentage of pavements in poor to very poor condition has gradually decreased over time.



Table 4. Pavement Condition Category Breakdown for 2004-2012

Condition Category	PCI Range	Percent of Network Area				
		2004	2006	2008	2010	2012
Very Good	86-100	46%	54%	41%	69%	69%
Good	75-85	13%	7%	20%	6%	11%
Fair	60-74	11%	16%	17%	8%	5%
Poor	41-59	12%	14%	12%	6%	11%
Very Poor	0-40	18%	9%	10%	11%	4%

Table 5 below shows the network average PCI in the past 7 years. As can be seen, the weighted average condition of the pavement network has improved since 2006, with the highest increase in the last two years. Again, this is attributable to the significant repairs that have occurred in this period.

Table 5. Average Network Condition for 2004-2012

Year	2004	2006	2008	2010	2012
Average Network PCI	79	74	76	84	85

The improvement in the pavement condition continues to keep the City eligible for a 10% reduction in local matching fund requirements for the renewed Measure M2 competitive grant. This is a new incentive approved as part of the Renewed Measure M2; specifically, the Measure M2 Regional Capacity Program - which will provide Measure M2 grant funding for arterial, intersection, and freeway/arterial improvements - includes an incentive for successful implementation of pavement management programs. The incentive is a 10% reduction in local matching fund requirements, if either of the following conditions apply i.e.

- a. Show measurable improvement of paved road conditions during the previous reporting period defined as an overall weighted (by area) average system improvement of one PCI point with no reduction in the overall weighted (by area) average PCI in the Master Plan of Arterial Highways (MPAH) or local street categories; or
- b. Have road pavement conditions during the previous reporting period within the highest 20% of the scale for road pavement conditions in conformance with OCTA Ordinance No. 3, defined as a PCI of 75 or higher.

The City's PCI rating continues to comply with the Measure M2 subtext "b" mentioned above. Since 2008, the City has maintained a PCI greater than the OCTA required condition of 75. Even though the analysis for this update shows the potential decrease in the overall PCI from 85 to 79, the City will still remain eligible for the 10% reduction in local matching fund requirement.

No two inspectors will arrive at the exact same PCI on a given street segment. There is a level of subjectivity to all survey data collection. As inspection data is gathered by different inspectors there can be small variances to what they see, measure and record. The accepted industry standard deviation for inspected Pavement Condition Index (PCI) numbers is ± 10 points.

Maintenance & Rehabilitation Strategies

A variety of Maintenance and Rehabilitation (M&R) strategies may be applied to maintain pavements. They include slurry seals, asphalt concrete overlays and reconstruction, all of which extend the pavement life. The following paragraphs briefly describe the various strategies that are utilized in the City.



Slurry Seals are a mixture of slow setting asphalt emulsion, fine aggregate (sand-like), and water. This mixture is spread over the entire pavement surface and is about 3/8" thick. In addition to protecting the asphalt concrete surface and subgrade from water damage, the slurry seal provides a new wearing surface. This type of treatment is analogous to oil changes for a car i.e. necessary maintenance that increases the life of a car (or, in this case, increases the life of the pavement so they do not prematurely require more costly repairs).

Asphalt Concrete (AC) Overlays typically involves placing 1.5 to 4 inches of asphalt concrete over the existing surface. Overlays are placed when the pavement has deteriorated to a point that a seal coat will not bring the pavement back to an acceptable level of service, usually because of structural inadequacy. This may be caused by:

- Age
- Climate
- Air & water penetrating the pavement through cracks
- Aggregate base or subgrade soil failures
- Heavier traffic loads than anticipated in the original design

Reconstruction involves removing the existing layers of asphalt concrete and base and reconstructing an entirely new pavement section.

Maintenance Intervals

A seal coat is applied at regular intervals, usually 5 to 7 years. After several intervals of seal coats, an overlay is typically required to address structural issues. The intervals between overlays and reconstruction depend upon the road classification as well as the original design life. Major roads have higher traffic volumes, speeds, and loads, which increases pavement wear and demand a higher level of service for safety reasons. Every street eventually fails or reaches a point where it is cheaper to reconstruct than to repair.

Pay Now or Pay More Later

The PMP is designed to achieve an optimal network PCI somewhere between the low to mid 80's, which brings the network into a "good" condition category. In other words, the system will recommend priority list of maintenance treatments in an attempt to bring all the streets in the City of Seal Beach to a good condition, with the majority of the roads falling in the mid 80's.

The cost to repair and maintain a pavement depends on its current PCI. In the "good" category, preventive maintenance treatments such as slurry seals have minimal costs. They are applied before pavement deterioration has become severe and usually cost approximately \$0.30/sq. ft. About 80% of the City's streets would benefit from these relatively inexpensive, life-extending treatments.

As noted in Table 4, approximately 5% of the City's streets fall into the "fair" condition category. Pavements in this range show some form of distress or wear that require more than a life-extending treatment. The pavements typically require a thin overlay, with costs in the range of \$2.08/sq. ft.

The remaining 15% of the City of Seal Beach's streets fall below a PCI of 60. The City's policies indicate that a thick overlay or reconstruction is the most appropriate treatment. The costs for these treatments range from \$4.40 to \$9.26/ sq. ft.

Figure 2 demonstrates that pavement maintenance follows the old colloquial saying of "pay me now, or pay me more later." History has shown that it costs less to maintain roads in good condition than to repair roads that have failed. By allowing pavements to deteriorate, roads that once cost only \$0.30/sq. ft. to slurry seal may soon cost \$2.08 to \$4.40/sq. ft. to overlay and upwards of \$9.26/sq. ft. to reconstruct.



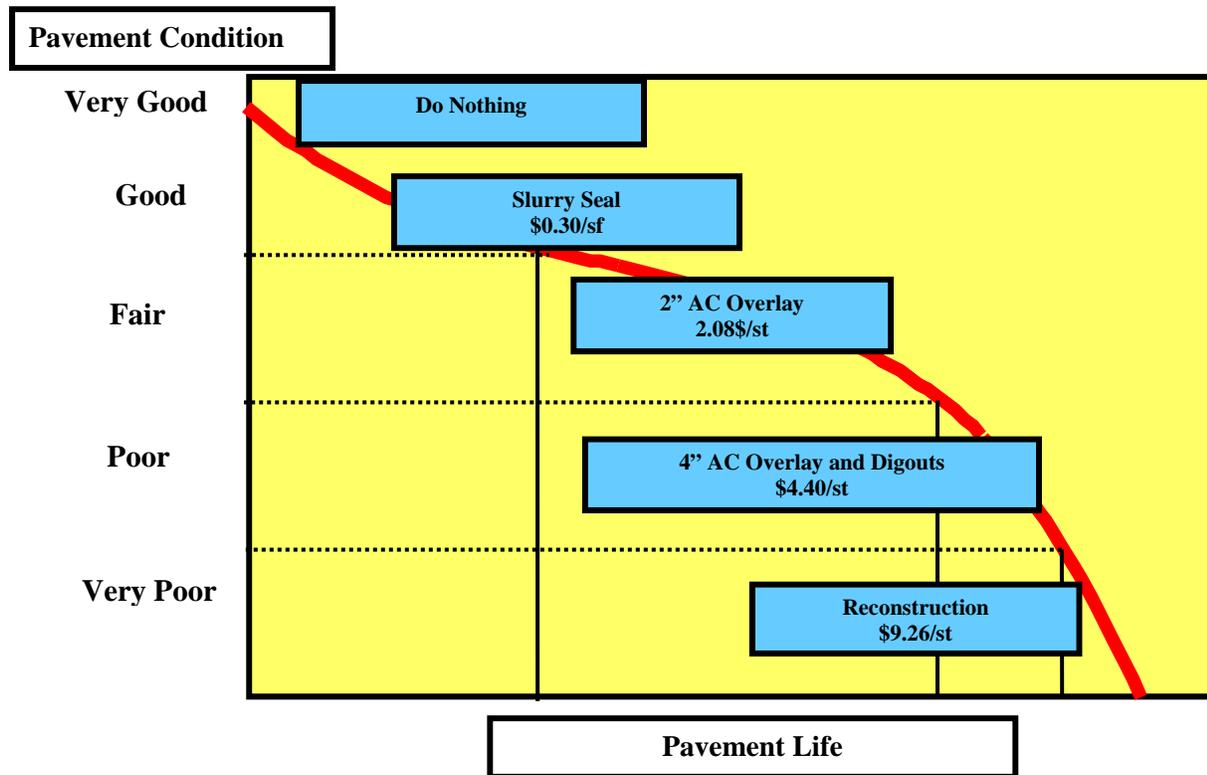


Figure 2. Costs to Maintain Pavements Over Time

One of the key elements of a pavement management repair strategy is to keep roads in the “good” and “fair” categories from deteriorating. This is particularly true for roads in the “fair” range, due to the fact that they are at the point where pavement deterioration accelerates if left untreated.

Expenditures for Pavement Maintenance

It is estimated that the City of Seal Beach will have funds of \$575,000/year for pavement expenditures for the next seven years. Table 6 summarizes the past and future estimated budget amounts. Three continuing funding programs have been allocated to meet the needs of preventative maintenance and rehabilitation.

- Arterial Rehabilitation Program
- Local Street Rehabilitation Program
- Preventative Program (Slurry Seal)

Table 6. Pavement Budgets (2004 to 2018)

Year	2004	2006	2008	2010	2012-2018
Arterial Rehabilitation (\$ Million)*	0.3	1.13	0.35	0.50	0.20
Preventative Program (\$ Million)	0.08	0.1	0.15	0.15	0.10
Local Street Rehabilitation (\$ Million)	1.41	1.86	0.4	5.05	0.28

* Arterial rehabilitation has been funded with Measure M2 grants which augment City funds.



Note that the City currently has \$575,000 a year budgeted for the seven-year Capital Improvement Program (CIP). This includes \$100,000 for slurry seals, \$200,000 for arterial rehabilitation, and \$275,000 for local rehabilitation. Historically, Seal Beach has been successful at obtaining additional funds and receiving Measure M competitive grants. Therefore, this report assumes that, on average, \$575,000 a year will be spent on paving.

The City has established a seven year cycle to address the needs of the Preventative Program. Each year the City will be focusing maintenance efforts in a different area of the City. There are many advantages in this strategy. A more cost-effective mobilization from a chosen contractor is the largest monetary benefit. Table 7 shown below reflects the various areas of the City along with the year in which that area is scheduled for treatments. This report finds the City ready to perform maintenance work for year 3 of this cycle.

Table 7. 7-Year Preventative Program Cycle

Year	Zone
1	Hill/Cove
2	Old Town
3	CPE Phase I
4	CPE Phase II
5	CPE Phase III
6	CPE Phase IV
7	CPW /Bridgeport

Funding Sources

The following is a discussion of future revenues available to the City for street maintenance.

Measure M2 Turnback

Measure M2 is the ½-cent local retail sales tax approved by voters in November 1990 and renewed in 2006 until 2040. The program will provide \$450 million to local agencies for street maintenance and local traffic improvements. These funds are used alone or in conjunction with other sources to address transportation improvements such as rehabilitation, signals, street widening, etc. The City's share is approximately \$400,000 per year and will be used to fund resurfacing projects.

Measure M2 Competitive Grants

In addition to the Turnback funds, the Comprehensive Transportation Program (CTP) also includes a competitive grant process for projects such as capacity program, signal synchronization and transit. The Arterial Highway Rehabilitation Program (AHRP) will fund projects such as overlays and reconstruction. Eligible expenditures include bike lanes, bus turnouts/pads, and replacement of parking lanes, curbs, gutters, catch basins, curb ramps and some sidewalks. City streets that are included in the Master Plan of Arterial Highway (MPAH) system are eligible.

Local Revenues/General Funds

Local revenues that may be used for street rehabilitation include retail sales tax, redevelopment fees, assessment districts and property taxes. These revenue sources are also used for vital city activities such as police, fire and administrative services. In 2010, the City budgeted and expended more than \$1.2 million on local paving projects.

Gas Tax

California, like the rest of the nation, built its interstate system primarily with federal and state funds derived from per gallon gasoline and diesel fuel excise taxes, commonly called the gas tax. Being a fixed amount, the excise tax needs periodic increases to maintain buying power and to keep up with the effects



of inflation, a politically difficult sell. By the 1980's it became apparent that the gas tax was not keeping up with inflation and that other revenue would be needed to continue to fund transportation improvements.

Budget Needs

Based on the principle that it costs less to maintain roads in good condition than bad, the PMP strives to develop a maintenance strategy that will first improve the overall condition of the arterials to an optimal PCI somewhere between the mid and upper 80's, and then maintain it at that level. The average PCI for the City's streets is 85, which is in the "Good" condition category, but there is still a portion of the streets that exhibit load-related distresses. In addition, there is currently a significant unfunded backlog of several million dollars. If these issues are not addressed, the quality of the arterials will inevitably decline. In order to correct these deficiencies, a cost-effective funding and maintenance and rehabilitation strategy must be implemented.

The first step in developing a cost-effective maintenance and rehabilitation strategy is to determine the maintenance "needs" of the City of Seal Beach's streets. Using the budget needs module, maintenance needs over the next seven years were estimated at \$11.8 million. These costs significantly exceed the City's current funding levels of \$4.03 million. If the City of Seal Beach rehabilitated every street within the City, the average PCI will be 93 in 2018. If, however, no maintenance is applied over the next seven years, already distressed roads will continue to deteriorate, and the PCI will drop to 73 by 2018.

The results of the budget needs analysis are shown in Table 8 below. Of the \$11.8 million in maintenance needs shown, approximately \$1.1 million (9 percent) is earmarked for preventative maintenance, while \$10.7 million (91 percent) is allocated for more costly rehabilitation and reconstruction treatments.

Table 8. Summary of Results from Needs Analysis

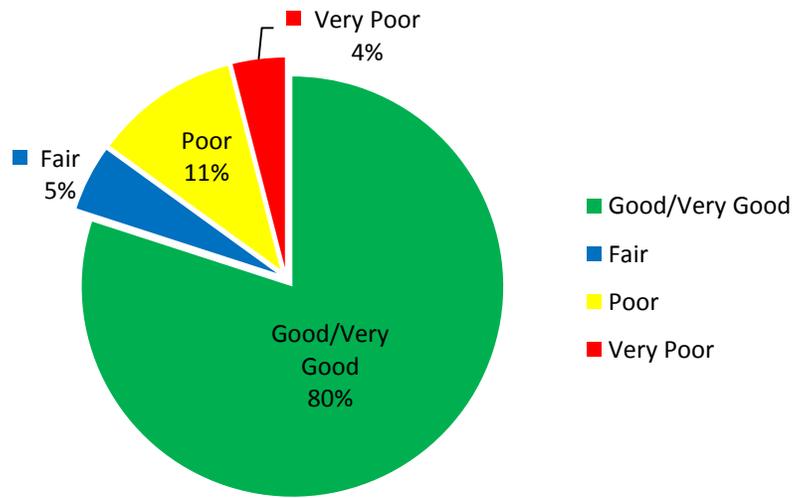
Year	2012	2013	2014	2015	2016	2017	2018
PCI with Treatment	98	97	95	95	93	95	93
PCI without Treatment	85	83	81	79	77	75	73
Budget Needs (\$ million)	6.9	0.5	0.2	1.0	0.2	2.2	0.8
Preventive Maintenance	12%	100%	100%	100%	100%	100%	100%
Rehabilitation	88%	-	-	-	-	-	-

It is important to note that these budgetary numbers have been compiled using current projects as a basis for construction costs. An inflation factor of 5% was used for this analysis.

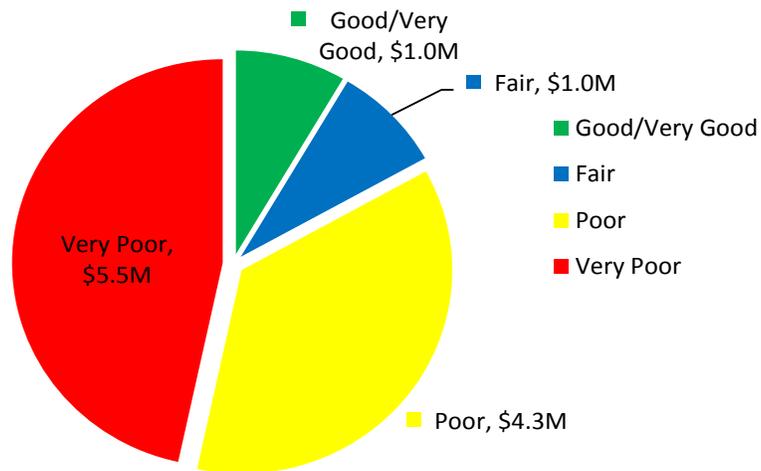
The cost-effectiveness of preventative maintenance treatments is demonstrated in Figure 3 which compares the current condition of the network and the maintenance needs estimated. The portion of the network in good and very good condition (80% of the City's streets) requires only \$1.0 million over the next seven years, whereas the 20% in the "fair" to "very poor" condition needs approximately \$10.8 million.



Figure 3. Cost Effectiveness of Treatments



Network Area by Condition



Budget Scenarios

Having determined the maintenance needs of the City's street, the next step is to conduct what-if analysis. The program projects the consequences of different scenarios on PCI and unfunded backlog. By examining the effects on these indicators, the advantages and disadvantages of different funding levels and maintenance strategies become clear. The following scenarios were analyzed for this report:

Scenario 1: Unconstrained Budget (\$11.8 million) - the total amount for the next seven years and the budget for each year are the same as identified in the budget needs analysis, i.e. \$11.8 million. This scenario will spend \$6.9 million in 2012 to rehabilitate the City's entire pavement. It will improve the condition of the streets to a PCI of 93 by 2018 and eliminate the unfunded backlog.

Scenario 2: Maintain PCI at 80 (\$800,000/year) - The budget required to maintain the City's streets at a PCI of 80 would be \$800,000/year. In the meantime, the unfunded backlog will grow from \$5.3 million to \$7.9 million by 2018.

Current PMP software is not designed to achieve an overall PCI of 100. The program will "defer" streets until they reach a condition that is prescribed by the maintenance policies for that functional classification. Streets are continually degrading based on time and traffic loading. Hence pavement management programs are set up to recommend pavement conditions that will bring the overall condition of the network to the mid 80's.

The result of the Maintain PCI shows that there will be a 5 point decline in the PCI to 80. Based on the treatments that the City uses and the where the PMS program triggers maintenance treatments the current PCI cannot be maintained. As noted in the Unconstrained Budget the PCI can be increased but the 85 PCI cannot be maintained.

Scenario 3: Existing Budget (\$575,000/year) - This scenario illustrates the impacts of the City's current budget on the network. The PCI of the network will deteriorate to 79, and the unfunded backlog will grow from \$5.3 million to \$9.3 million by 2018.

Scenario 4 Do Nothing - This Scenario illustrates that a zero budget will increase the unfunded backlog to \$26.9 million after seven years and the pavement condition will deteriorate from a PCI of 85 to 73 by 2018.

Note that the unfunded backlog consists of pavement maintenance that is needed, but which cannot be accomplished due to lack of funding. Shrinking budgets have forced many California cities and counties to defer much-needed road maintenance. By deferring maintenance, not only does the frequency of citizens' complaints about the condition of the network increase, but the cost to repair these roads rises as well.



Scenario 1: Unconstrained Budget (\$11.8 million)

To eliminate the unfunded backlog will require \$11.8 million for the next seven years. The average PCI will increase to 93 from its current level of 85 by 2018.

Table 9. Summary of Results for Scenario 1 - Unconstrained Budget

Year	2012	2013	2014	2015	2016	2017	2018	Total
Budget (\$ million)	6.9	0.5	0.2	1.0	0.2	2.2	0.8	11.8
Rehabilitation (\$ million)	6.79	0.40	0.13	0.85	0.00	2.00	0.52	10.69
Preventive Maintenance (\$ million)	0.08	0.08	0.12	0.16	0.15	0.25	0.24	1.07
Unfunded Backlog (\$ million)	-	-	-	-	-	-	-	
PCI	98	97	95	95	93	94	93	

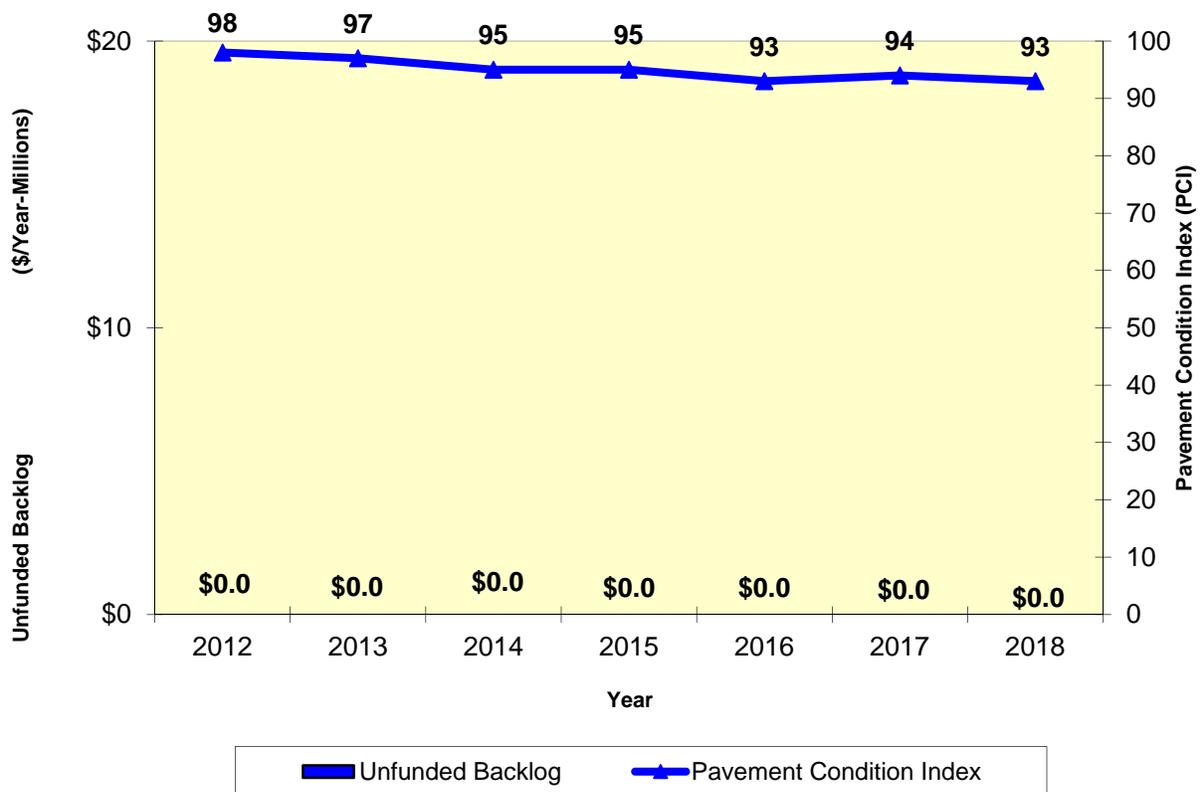


Figure 4. PCI vs. Unfunded Backlog for Unconstrained Budget (\$11.8 million)



Scenario 2: Maintain PCI at 80 (\$800,000/year)

The budget required for maintaining the City’s network at an average PCI of 80 will be \$800,000/year. In the meantime, the unfunded backlog will increase from \$5.3 million to \$7.9 million by 2018

Table 10. Summary of Results for Scenario 2 - Maintain PCI at 80

Year	2012	2013	2014	2015	2016	2017	2018	Total
Budget (\$ million)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	5.6
Rehabilitation (\$ million)	0.71	0.69	0.62	0.55	0.42	0.20	0.00	3.19
Preventive Maintenance (\$ million)	0.08	0.11	0.18	0.24	0.36	0.57	0.80	2.34
Unfunded Backlog (\$ million)	5.3	5.3	5.4	5.5	5.7	6.3	7.9	
PCI	87	86	86	85	83	81	80	

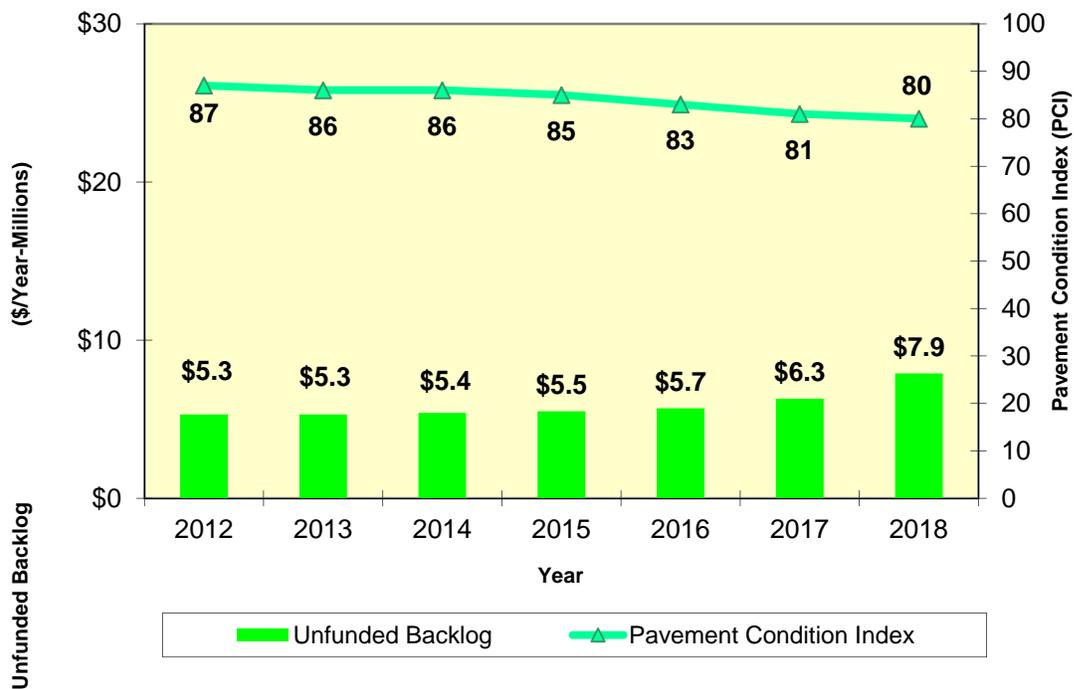


Figure 5. PCI vs. Unfunded Backlog for Maintain PCI at 80 (\$0.8 million/year)



Scenario 3: Existing Budget (\$575,000/year)

In this scenario, the average PCI will deteriorate to approximately 79 from its current level of 85. Pavements in this category are still in “Good” condition. Not only does the pavement condition deteriorate, but the unfunded backlog grows from \$5.9 million to \$9.3 million by 2018. What this implies is that the City is “falling behind” with the increased number of streets that are deteriorating.

Table 11. Summary of Results for Scenario 3 - Existing Budget

Year	2012	2013	2014	2015	2016	2017	2018	Total
Budget (\$ million)	0.58	0.58	0.58	0.58	0.58	0.58	0.58	4.03
Rehabilitation (\$ thousand)	0.47	0.47	0.47	0.47	0.47	0.47	0.47	3.30
Preventive Maintenance (\$ million)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.70
Unfunded Backlog (\$ million)	5.9	6.2	6.5	6.9	7.3	8.0	9.3	
PCI	87	86	84	83	82	81	79	
PCI (MPAH)	88	87	85	84	83	82	80	
PCI (Local)	86	85	83	80	81	80	78	

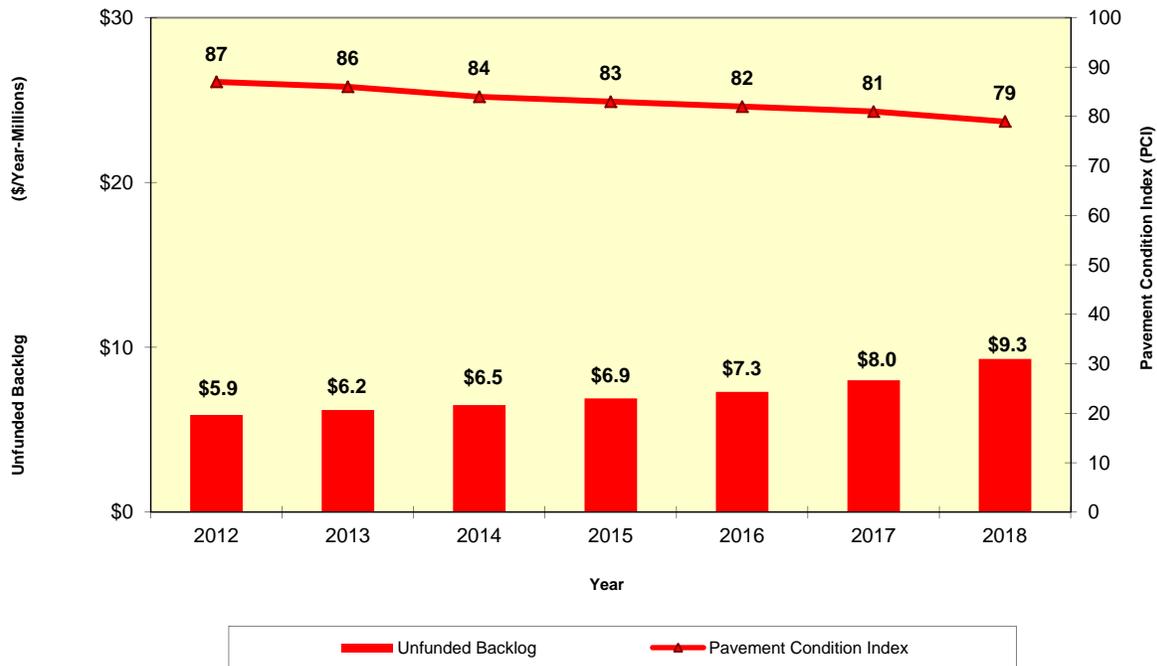


Figure 6. PCI vs. Unfunded Backlog for Existing Budget (\$575,000/year)



Scenario 4: Do Nothing

In this scenario, the average PCI will deteriorate to approximately 73 from its current level of 85. Pavements in this category are in “Fair” condition. Not only does the pavement condition deteriorate, but the unfunded backlog grows from \$12.1 million to \$26.9 million by 2018.

Table 12. Summary of Results for Scenario 4 - Do Nothing

Year	2012	2013	2014	2015	2016	2017	2018	Total
Budget (\$ million)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rehabilitation (\$ K)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Preventive Maintenance (\$ million)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unfunded Backlog (\$ million)	12.1	13.7	15.6	17.6	19.8	22.6	26.9	
PCI	85	83	81	79	77	75	73	

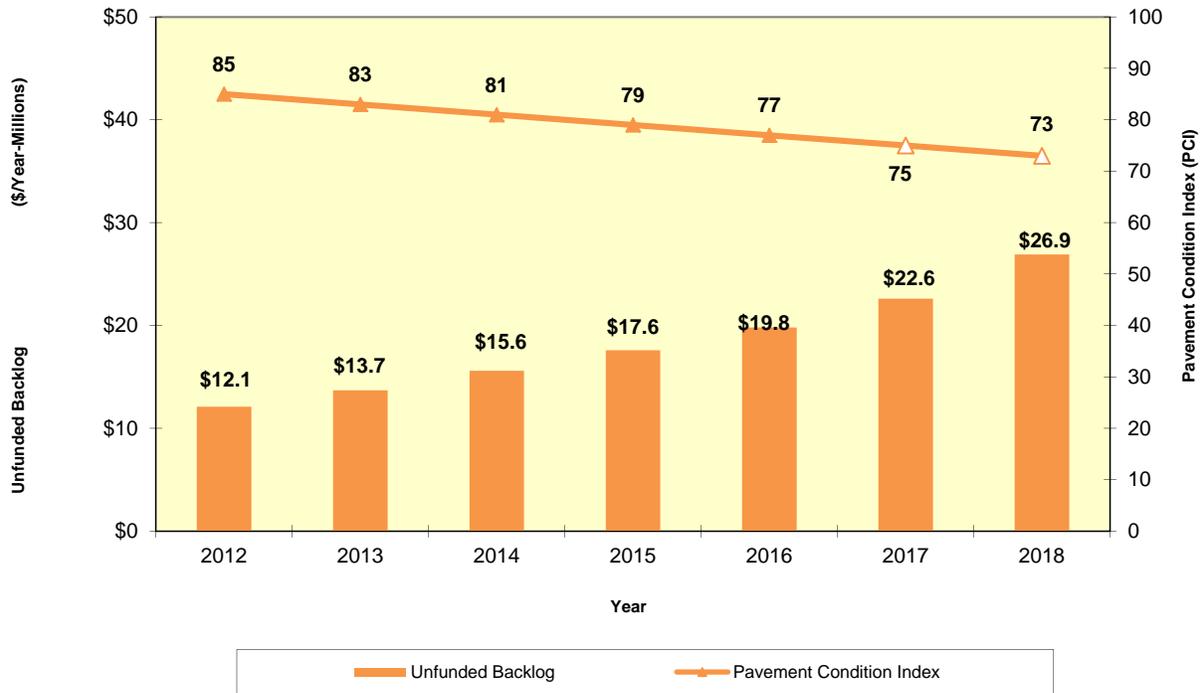


Figure 7. PCI vs. Unfunded Backlog for Zero Budget



Discussion

Figure 8 illustrates the change in PCI over time for the different budget scenarios. Note that in the unconstrained funding scenario, the PCI will reach 93 after seven years. This is due to the cyclical nature of preventative maintenance treatments that are applied once every 5 to 7 years. By comparison, the existing budget will result in a drop of the PCI to 79 by 2018.

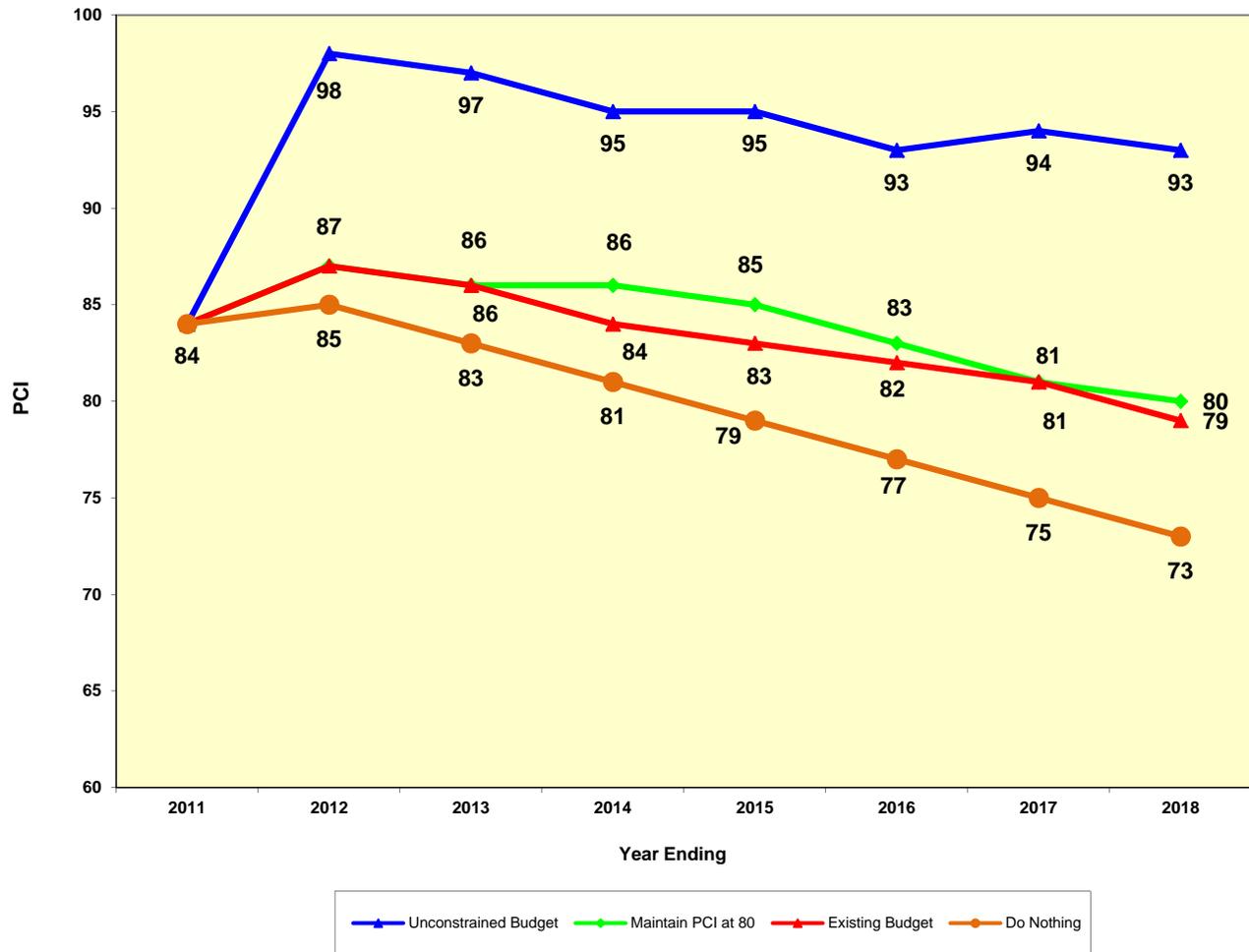


Figure 8. Pavement Condition Index for Each Scenario

On the following page, Figure 9 illustrates the change in unfunded backlog over time for the different budget scenarios. Note that the unconstrained budget has no unfunded backlog.



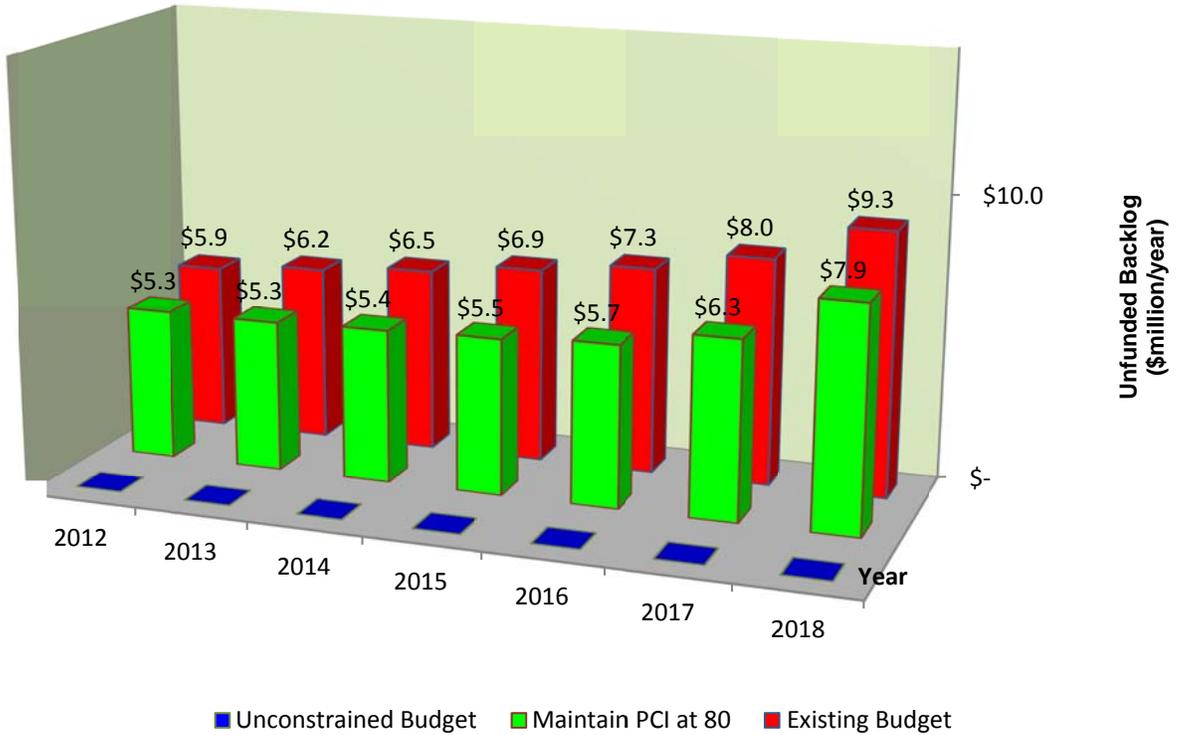
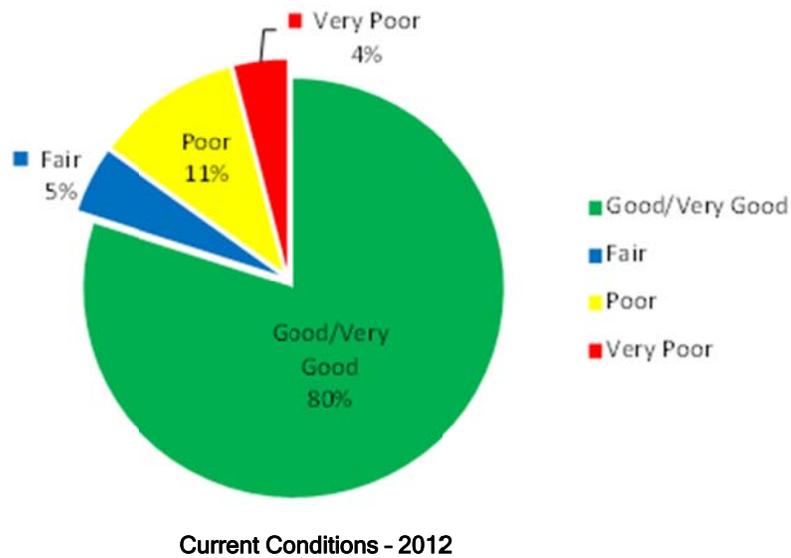
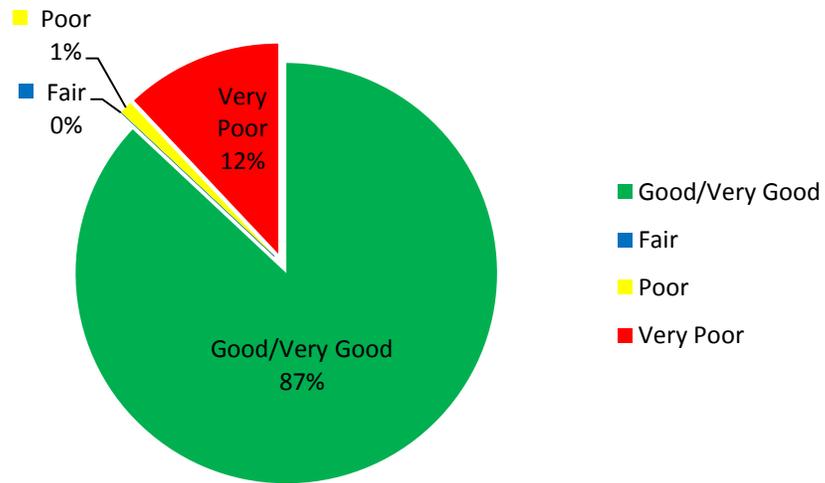
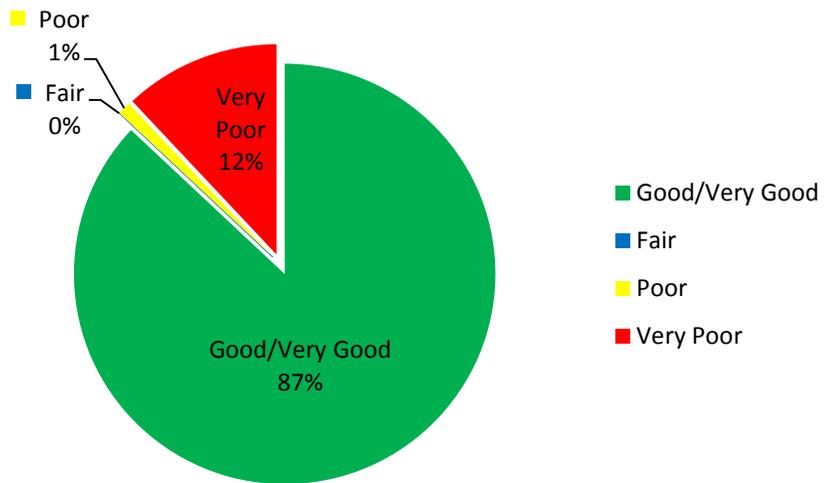


Figure 10 (below) illustrates the change in the percentage of the road area with each condition category for the different budget scenarios. With Scenario 3 (Existing Budget), the “Very Poor” category increases to 12% from the current 4%. But with \$800,000/year (Maintain PCI at 80), the “Good” and “Very Good” category increase to 87% from the current 80%.





Scenario 3: Existing Budget - 2018



Scenario 2: Maintain PCI at 80 - 2018

Figure 10. Percentage of Road Network Area of Each Condition Category for Different Budget Scenarios

Conclusions

The City of Seal Beach has a substantial investment in their street network as evidenced by the replacement cost of approximately \$109.2 million. The network average PCI of the City is 85. Overall, 80% of the City's street network is in the "Good" and "Very Good" condition category. In the meantime, about 15% of the streets are in "Poor" or "Very Poor" condition category. This requires a significant amount of money to bring them into the "Good" condition category. If sufficient funding is unavailable for street maintenance, the average PCI of the network is expected to decrease and the unfunded backlog will increase. The higher backlog will result in increased future costs as more capital intensive treatments (such as reconstruction) will be necessary as streets are deferred where less expensive treatments (such as surface seals or overlays) are currently feasible.

Our analysis indicates that the City needs to spend \$11.8 million in pavement maintenance and rehabilitation in the next seven years, in order to eliminate the unfunded backlog. By doing so, many streets then can be maintained in good condition with on-going preventive maintenance. This will eventually save money by avoiding reaching the level of major rehabilitation (such as reconstruction) until the end of the pavement's service life.

Pavement Budget

The City's current budget for pavement maintenance and rehabilitation is \$4.03 million for next seven years. At this budget level, the network average PCI is expected to decrease from the current level of 85, which is in "Good" condition category, to 79. In addition, 13% of the network will fall in the "Poor" and "Very Poor" category.

As a minimum, we suggest that the City of Seal Beach consider increasing pavement expenditures to achieve the following objectives:

- To preserve and improve pavements in the "Good" category
- Reduce the percentage of pavements in the "Poor" and "Very Poor" categories
- Maintain the average PCI at 80

Note too that the new Measure M2 guidelines recently adopted by OCTA allow for a 10% reduction in matching funds if one of the following conditions are met:

- a. Shows measurable improvement of paved road conditions during the previous reporting period defined as an overall weighted (by area) average system improvement of one Pavement Condition Index (PCI) point with no reduction in the overall weighted (by area) average PCI in the Master Plan of Arterial Highways (MPAH) or local street categories;*
- or -
- b. Have road pavement conditions during the previous reporting period within the highest 20% of the scale for road pavement conditions in conformance with OCTA Ordinance No. 3, defined as a PCI of 75 or higher.*

The City's PCI rating continues to comply with the Measure M2 subtext "b" mentioned above. Since 2008 the City has maintained a PCI greater than the OCTA required condition of 75. Even though the analysis for this update shows the potential decrease in the overall PCI from 85 to 79, the City will still remain eligible for the 10% reduction in local matching fund requirement.

In terms of priorities, the City should:

- e. Fully fund all preventive maintenance activities.
- f. "Package" surface seal projects to produce cost effective bids.
- g. Apply sufficient stop gap funds to streets that are deferred.

Examples of other sources of funding include:

- Assessment districts
- Local Transportation Bond



- Developers' fees
- Parking fees
- Truck impact fees
- Federal & State Grants

Pavement Maintenance Strategies

The City's pavement maintenance strategies include slurry seals, overlays and reconstruction. It is tempting to invest in the worst streets and only fund overlay or reconstruction projects. However, it is equally important to preserve good pavements. Crack sealing, one of the least expensive treatments, can keep moisture out of pavements and prevent the underlying aggregate base from premature failures. Surface seals are also cost-effective for pavements currently in good condition. Therefore, we recommend that the City continues its preventive maintenance program to preserve the good pavements.

In addition, other strategies such as cold-in-place recycling or full depth reclamation should be considered when considering rehabilitation treatments. These may save the city significant amounts over more conventional treatments.

Maintenance and Rehabilitation Decision Trees

The maintenance and rehabilitation decision trees and the associated unit costs should be reviewed and updated annually to reflect new construction techniques/repairs and changing costs so the budget analysis results can be reliable and accurate.

Pavement Management Program Update

OCTA requires cities submitting pavement rehabilitation projects for Measure M2 funding to utilize a PMP. This includes updating the condition for all MPAH streets every two years, and non-MPAH streets every six years.

We recommend that the City of Seal Beach comply with the above requirements so as not to jeopardize any federal, state or local transportation funds. This is particularly critical since significant funding increases are needed to maintain the pavement network in "good" condition.



Appendix A
Street Inventory and PCI Report

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
10TH	100	S/ELECTRIC	N/PCH	2	660	40	26,400	E	AC	1/9/2012	99
10TH	200	S/OCEAN	N/ELECTRIC	2	950	40	38,000	E	AC	1/9/2012	98
10TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	1/9/2012	63
11TH	200	S/ELECTRIC	N/LANDING	2	210	37	7,770	E	AC	1/9/2012	44
11TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	1/9/2012	48
11TH	400	S/OCEAN	N/ ELECTRIC	2	900	40	36,000	E	AC	1/9/2012	99
12TH	100	S/ELECTRIC	N/PCH	2	860	37	31,820	C	AC	1/9/2012	99
12TH	200	S/ OCEAN	N/ ELECTRIC	2	810	40	32,400	E	PCC	1/8/2012	100
12TH	300	S/SEAL	N/OCEAN	2	210	24	5,040	E	AC	1/9/2012	83
13TH	100	S/ELECTRIC	N/PCH	1	960	21	20,160	E	AC	1/9/2012	41
13TH	200	S/ OCEAN	N/ ELECTRIC	2	710	40	28,400	E	AC	1/8/2012	99
13TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	1/9/2012	87
14TH	100	S/ELECTRIC	N/PCH	2	1,010	21	21,210	E	AC	1/9/2012	38
14TH	200	S/ OCEAN	N/ ELECTRIC	2	660	40	26,400	E	AC	1/8/2012	100
14TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	1/9/2012	63
15TH	100	S/ELECTRIC	N/PCH	1	1,110	21	23,310	E	AC	1/9/2012	24
16TH	100	S/ELECTRIC	N/PCH	2	1,160	21	24,360	E	AC	1/9/2012	52
17TH	100	S/ELECTRIC	N/PCH	1	1,260	21	26,460	E	AC	1/9/2012	60
1ST	100	S/OCEAN	N/MARINA	2	887	40	35,480	E	AC	1/8/2012	100
1ST	300	N/PCH	597NE/PCH	2	597	24	14,328	E	AC	1/10/2012	59
1ST	200E	S/MARINA	N/PCH	2	2,172	23	49,956	E	AC	1/10/2012	68
1ST	200W	S/ PCH	N/ MARINA	2	2,172	22	47,784	E	AC	1/10/2012	72
2ND	100	S/ OCEAN	N/ CENTRAL	2	860	40	34,400	E	AC	1/10/2012	99
3RD ST	100	S/ OCEAN	N/ CENTRAL	2	760	40	30,400	E	AC	1/10/2012	99
4TH ST	100	S/ OCEAN	N/ MARINA	2	1,200	40	48,000	E	AC	1/10/2012	99
5TH	100	S/MARINA	N/PCH	4	660	60	39,600	C	AC	1/10/2012	95
5TH	200	S/OCEAN	N/MARINA	2	1,400	40	56,000	E	AC	1/10/2012	99
6TH	100	S/OCEAN	N/ELECTRIC	2	1,300	40	52,000	E	AC	1/10/2012	100
7TH	100	S/ELECTRIC	N/MARINA	2	210	40	8,400	E	AC	1/10/2012	99
7TH	200	S/OCEAN	N/ELECTRIC	2	1,280	40	51,200	E	AC	1/10/2012	100
8TH	100	S/ELECTRIC	N/PCH	2	460	40	18,400	E	AC	1/10/2012	100
8TH	200	S/OCEAN	N/ELECTRIC	2	1,150	40	46,000	E	AC	1/10/2012	100

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
ADOLFO LOPEZ	100	W/END	425 E/SEAL BEACH	2	800	60	48,000	E	AC	1/11/2012	84
ADOLFO LOPEZ	200	W/SEAL BEACH	425 W/SEAL BEACH	2	425	60	25,500	E	AC	1/11/2012	68
AGUA	100	S/ MARLIN	N/ END	2	220	27	5,940	E	AC	1/8/2012	98
ALMOND	100	E/OLEANDER	W/ASTER	2	4,390	36	158,040	C	AC	1/3/2012	95
ALMOND	200	E/ VIOLET	ROSE CIR	2	765	37	28,305	C	AC	1/3/2012	100
ALMOND	300	ROSE CIR	W/ OLEANDER	2	705	37	26,085	C	AC	1/3/2012	99
ANDERSON	100	W/S PCH	END CDS	2	255	38	9,690	E	AC	4/9/2012	57
ASTER	100	S/ ALMOND	N/ BIRCHWOOD	2	1,239	37	45,843	E	AC	1/5/2012	86
ASTER	200	N/ BIRCHWOOD	N/ CANDLEBERRY	2	206	37	7,622	E	AC	1/5/2012	99
AVALON	100	S/ CATALINA	N/ END	2	430	33	14,190	E	AC	1/12/2012	98
BALBOA	100	S/BOLSA	N/CATALINA	2	1,060	37	39,220	C	AC	1/11/2012	31
BALBOA	200	S/PCH	N/BOLSA	2	660	37	24,420	E	AC	1/11/2012	50
BANYAN	100	E/CAMELIA	W/COLUMBINE	2	600	33	19,800	E	AC	1/3/2012	97
BASSWOOD	100	E/ASTER	W/LAMPSON	2	410	36	14,760	C	AC	1/5/2012	100
BAYOU	100	E/BAYSIDE	W/HARBOR	2	630	33	20,790	E	AC	1/12/2012	100
BAYSIDE	100	S/BOLSA	N/CRESTVIEW	2	1,410	33	46,530	E	AC	1/12/2012	98
BEACHCOMBER	100	S/BOLSA	N/SEA BREEZE	2	1,160	33	38,280	E	AC	1/12/2012	100
BERYL COVE	100	S/ EMERALD COVE	N/ MARLIN	2	360	33	11,880	E	AC	1/8/2012	98
BIRCHWOOD	100	E/ OLEANDER	W/ ASTER	2	3,660	33	120,780	E	AC	1/3/2012	98
BLUE BELL	100	S/ALMOND	N/BIRCHWOOD	2	710	33	23,430	E	AC	1/3/2012	79
BOLSA	100	E/SEAL BEACH	W/MAIN	2	2,810	37	103,970	C	AC	1/11/2012	57
CAMELIA	100	S/ALMOND	N/BANYAN	2	590	33	19,470	E	AC	1/3/2012	90
CANDLEBERRY	100	E/FUCHSIA	W/LAMPSON	2	2,210	36	79,560	E	AC	1/5/2012	100
CANDLEBERRY	200	E/MARIGOLD	W/FUCHSIA	2	1,560	37	57,720	E	AC	1/5/2012	100
CANDLEBERRY	300	E/WISTERIA	W/OLEANDER	2	1,660	33	54,780	E	AC	1/4/2012	97
CARAVEL	100	S/ MARINA	N/ CORSAIR	2	360	37	13,320	E	AC	1/10/2012	99
CARMEL	100	E/ SURF	W/ COASTLINE	2	360	37	13,320	E	AC	1/11/2012	97
CARNATION	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	86
CATALINA	100	E/BALBOA	W/COASTLINE	2	1,910	37	70,670	E	AC	1/11/2012	98
CATALINA	200	E/END	W/BALBOA	2	2,470	37	91,390	E	AC	1/11/2012	98
CENTRAL	100	E/12TH	W/MAIN	2	860	40	34,400	C	AC	1/8/2012	100
CENTRAL	200	E/1ST	W/2ND	1	260	20	5,200	C	AC	1/8/2012	100

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
CENTRAL	300	E/2ND	W/MAIN	2	2,160	40	86,400	C	AC	1/8/2012	100
CENTRAL WY	100	E/ 2ND	W/ 1ST	2	260	40	10,400	E	AC	1/10/2012	99
CENTRAL WY	200	E/ 4TH	W/ 2ND	2	560	38	21,280	E	AC	1/10/2012	99
CENTRAL WY	300	E/ 5TH	W/ 4TH	2	260	38	9,880	E	AC	1/10/2012	100
CLIPPER	100	E/ CARAVEL	W/ ELECTRIC	2	910	33	30,030	E	AC	1/10/2012	87
CLOVER	100	S/ALMOND	N/END	2	130	33	4,290	E	AC	1/3/2012	75
COASTLINE	100	S/CARMEL	N/END	2	480	27	12,960	E	AC	1/11/2012	98
COASTLINE	200	E/CARMEL	W/BALBOA	2	2,380	33	78,540	E	AC	1/11/2012	97
COLLEGE PARK	100	E/HARVARD	W/HARVARD	2	2,590	37	95,830	C	AC	1/6/2012	97
COLLEGE PARK	200	E/HARVARD	W/CITY LIMIT	2	940	44	41,360	C	AC	1/6/2012	96
COLUMBINE	100	S/ALMOND	N/BANYAN	2	210	33	6,930	E	AC	1/3/2012	97
CORAL	100	E/ END	W/ BAY VIEW	2	230	27	6,210	E	AC	1/12/2012	98
CORSAIR	100	S/CARAVEL	N/SCHOONER	2	1,020	33	33,660	E	AC	1/10/2012	97
CREST	100	S/CATALINA	N/CRESTVIEW	2	210	33	6,930	E	AC	1/12/2012	98
CRESTVIEW	100	E/ CATALINA	W/ AVALON	2	3,060	33	100,980	E	AC	1/12/2012	98
CRYSTAL	100	S/ CRYSTAL COVE	N/ END	2	240	27	6,480	A	AC	1/8/2012	98
CRYSTAL COVE	100	E/ MARBLE COVE	W/ OPAL COVE	2	520	33	17,160	E	AC	1/8/2012	98
DAFFODIL	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	90
DAHLIA	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	97
DAISY	100	S/ALMOND	N/BIRCHWOOD	2	410	33	13,530	E	AC	1/3/2012	67
DAISY	200	S/CANDLEBERRY	N/DOGWOOD	2	210	33	6,930	E	AC	1/6/2012	87
DAISY CIRCLE	100	S/FIR	N/END	2	230	33	7,590	E	AC	1/6/2012	79
DARTMOUTH	100	E/END	W/HARVARD	2	180	34	6,120	E	AC	1/6/2012	81
DOGWOOD	100	E/DAISY	W/IRONWOOD	2	1,470	33	48,510	E	AC	1/6/2012	84
DOGWOOD	200	E/MARIGOLD	W/FUCHSIA	2	1,520	33	50,160	E	AC	1/6/2012	94
DOGWOOD	300	E/WISTERIA	W/OLEANDER	2	1,710	33	56,430	E	AC	1/4/2012	83
DOLPHIN	100	S/SEAL WAY	N/ OCEAN	2	226	24	5,424	E	AC	1/11/2012	64
DOLPHIN	200	N/ OCEAN	N/ ELECTRIC	2	582	24	13,968	E	AC	1/8/2012	99
DORY	100	S/GALLEON	N/SCHOONER	2	360	28	10,080	E	AC	1/10/2012	94
DRIFTWOOD	100	E/BALBOA	W/COASTLINE	2	1,460	33	48,180	E	AC	1/8/2012	100
EBBTIDE	100	S/ COASTLINE	N/ END	2	230	27	6,210	E	AC	1/11/2012	99
ELDER	100	HEATHER	W/IRONWOOD	2	2,002	36	72,072	E	AC	3/9/2012	100

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
ELDER	200	E/OLEANDER	HEATHER	2	1,130	36	40,680	E	AC	1/6/2012	80
ELDER	300	E/VIOLET	W/PRIMROSE	2	1,380	33	45,540	E	AC	1/4/2012	96
ELECTRIC	100	E/ 5TH	W/ CORSAIR	2	510	37	18,870	C	AC	1/10/2012	98
ELECTRIC	200	E/CORSAIR	W/END	2	380	33	12,540	C	AC	1/10/2012	97
ELECTRIC	300	E/SEAL BEACH	19 W/SEAL BEACH	2	190	34	6,460	C	AC	1/8/2012	98
ELECTRIC N	100	E/MAIN	W/6TH	1	960	27	25,920	C	AC	1/16/2012	46
ELECTRIC N	200	E/SEAL BEACH	14TH	1	820	27	22,140	C	AC	1/8/2012	100
ELECTRIC N	300	14TH	W/MAIN	1	1,590	27	42,930	C	AC	1/8/2012	99
ELECTRIC S	100	E/6TH	W/MAIN	1	910	27	24,570	C	AC	1/16/2012	81
ELECTRIC S	200	E/SEAL BEACH	14TH	1	755	27	20,385	C	AC	1/16/2012	100
ELECTRIC S	300	14TH	W/MAIN	1	1,605	27	43,335	C	AC	1/16/2012	45
EMERALD COVE	100	E/ BERYL COVE	W/ JADE COVE	2	580	33	19,140	E	AC	1/8/2012	99
EMERALD PL	100	S/ EMERALD COVE	N/ END	2	230	27	6,210	E	AC	1/8/2012	98
FATHOM	100	E/SILVER SHOALS	W/BALBOA	2	810	33	26,730	E	AC	1/8/2012	100
FERN	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	96
FIR	100	E/GOLDENROD	W/IRONWOOD	2	1,460	33	48,180	E	AC	1/4/2012	100
FIR	200	E/ROSE	W/HEATHER	2	1,260	33	41,580	E	AC	1/4/2012	75
FIR	300	E/SUNFLOWER	W/ROSE	2	330	33	10,890	E	AC	1/4/2012	100
FIR	400	E/WISTERIA	W/SUNFLOWER	2	1,220	33	40,260	E	AC	1/4/2012	100
FIR CIRCLE	100	S/FIR	N/END	2	130	60	7,800	E	AC	1/4/2012	79
FUCHSIA	100	S/BIRCHWOOD	N/ELDER	2	640	33	21,120	E	AC	1/5/2012	100
FUCHSIA CIRCLE	100	S/FIR	N/END	2	330	33	10,890	E	AC	1/5/2012	100
GALLEON	100	S/ELECTRIC	N/DORY	2	970	33	32,010	E	AC	1/10/2012	86
GOLDENROD	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	96
GOLDENROD	200	S/ELDER	N/END	2	610	33	20,130	E	AC	1/8/2012	100
GUAVA	100	E/IRONWOOD	W/END	2	530	33	17,490	E	AC	1/4/2012	100
GUAVA	200	E/PANSY	W/HEATHER	2	1,360	33	44,880	E	AC	1/6/2012	78
HARBOR	100	S/BAYSIDE	N/BAYOU	2	760	33	25,080	E	AC	1/12/2012	24
HARVARD	100	S/COLLEGE PARK	W/END	2	3,310	37	122,470	E	AC	1/6/2012	97
HAZELNUT	100	S/GUAVA	N/HEATHER	2	1,210	33	39,930	E	AC	1/4/2012	100
HAZELNUT	200	E/HEATHER	W/ROSE	2	1,610	33	53,130	E	AC	1/4/2012	74
HAZELNUT	300	E/WISTERIA	W/SUNFLOWER	2	1,310	33	43,230	E	AC	1/4/2012	58

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
HEATHER	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	97
HEATHER	200	S/ELDER	N/HAZELNUT	2	790	37	29,230	C	AC	1/5/2012	63
HEATHER	300	S/HAZELNUT	N/LAMPSON	2	490	37	18,130	C	AC	1/5/2012	99
IRIS	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	86
IRIS	200	HAZELNUT AVE	IRONWOOD AVE	2	226	32	7,232	E	AC	1/5/2012	44
IRONWOOD	50	S/CANDLEBERRY	ELDER	0	524	33	17,292	C	AC	1/5/2012	100
IRONWOOD	100	ELDER	N/HEATHER	2	1,967	33	64,911	C	AC	1/5/2012	39
IRONWOOD	200	E/ROSE	W/IRIS	2	1,420	33	46,860	C	AC	1/5/2012	62
IRONWOOD	300	E/ WISTERIA	W/ TULIP	2	322	37	11,914	C	AC	1/3/2012	32
IRONWOOD	400	W/ TULIP	W/ SUNFLOWER	2	1,020	37	37,740	C	AC	1/4/2012	54
ISLAND VIEW	100	S/BOLSA	N/SEA BREEZE	2	1,110	33	36,630	E	AC	1/12/2012	100
JADE COVE	100	S/ EMERALD COVE	N/ MARLIN	2	360	33	11,880	E	AC	1/8/2012	99
JASMIN	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	1/3/2012	97
LAGUNA	100	O S/ MARLIN	O N/ END	2	380	27	10,260	E	AC	1/8/2012	98
LAMPSON	200	E/BASSWOOD	W/ SEAL BEACH	4	3,300	60	198,000	A	AC	1/4/2012	88
LAMPSON	300	E/ E CITY LIMIT	E/ BASSWOOD	4	7,400	60	444,000	A	AC	1/5/2012	91
LANDING	100	E/12TH	W/11TH	2	260	42	10,920	E	AC	1/10/2012	52
LANDING	200	E/SEAL BEACH	W/12TH	2	1,210	21	25,410	E	AC	1/9/2012	25
LOYOLA PLAZA	100	S/COLLEGE PARK	N/END	2	330	25	8,250	E	AC	1/6/2012	85
MAIN	100	S/ELECTRIC	N/PCH	2	690	55	37,950	C	AC	1/12/2012	50
MAIN	200	S/OCEAN AVE	N/ELECTRIC	2	1,190	57	67,830	C	AC	1/12/2012	84
MAR VISTA	100	E/ CATALINA	W/ COASTLINE	2	1,610	33	53,130	E	AC	1/8/2012	100
MAR VISTA	200	W/COASTLINE	PCH	2	123	36	4,428	E	AC	1/11/2012	100
MARBLE COVE	100	S/ CRYSTAL COVE	N/ MARLIN	2	360	33	11,880	E	AC	1/8/2012	98
MARIGOLD	100	S/BIRCHWOOD	N/CANDLEBERRY	2	160	33	5,280	E	AC	1/6/2012	78
MARIGOLD	200	S/CANDLEBERRY	N/DOGWOOD	2	160	33	5,280	E	AC	1/6/2012	87
MARINA	100	E/PCH	6TH	3	629	61	38,369	C	AC	1/12/2012	37
MARINA	200	E/ 6TH	W/ W CITY LIMIT	2	2,219	50	110,950	C	AC	1/12/2012	85
MARINE	100	E/ELECTRIC	W/DOLPHIN	1	320	24	7,680	E	AC	1/8/2012	99
MARLIN	100	E/SEAL BEACH	W/BALBOA	2	1,610	37	59,570	E	AC	1/12/2012	98
NEPTUNE	100	S/SEAL	N/OCEAN	2	210	24	5,040	E	AC	1/11/2012	84
NORTH GATE	100	W/SEAL BEACH	76 W/SEAL BEACH	2	760	42	31,920	E	AC	1/16/2012	99

City of Seal Beach
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Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
NORTH GATE	200	76 E/SEAL BEACH	W/END	2	3,300	25	82,500	E	AC	1/16/2012	100
OCCIDENTAL	100	E/ STANFORD	W/ HARVARD	2	160	33	5,280	E	AC	1/6/2012	96
OCEAN	100	E/ELECTRIC	W/MAIN	2	2,440	51	124,440	C	AC	1/8/2012	99
OCEAN	200	E/MAIN	W/1ST	2	2,490	52	129,480	C	AC	1/11/2012	99
OLD RANCH PARKWAY	100	SEAL BEACH	200 W/ SEAL BEACH	3	520	48	24,960	A	AC	1/11/2012	58
OLD RANCH PARKWAY	200	200 W/ SEAL BEACH	720 W/ SEAL BEACH	4	200	64	12,800	A	AC	1/11/2012	63
OLD RANCH PARKWAY	300	720 W/ SEAL BEACH	W/ 22 FWY	2	1,030	34	35,020	A	AC	5/9/2010	41
OLEANDER	100	S/ALMOND	N/FIR	2	1,320	36	47,520	E	AC	1/4/2012	64
OPAL COVE	100	S/ CRYSTAL COVE	N/ MARLIN	2	360	33	11,880	E	AC	1/9/2012	98
PANSY	100	S/ ALMOND	N/ END	2	430	33	14,190	E	AC	1/3/2012	99
PANSY	200	S/FIR	N/GUAVA	2	160	33	5,280	E	AC	1/6/2012	93
PRIMROSE	100	S/DOGWOOD	N/ELDER	2	210	33	6,930	E	AC	1/4/2012	98
PRIMROSE CIR	100	S/ ALMOND	N/ END	2	430	33	14,190	E	AC	1/3/2012	99
PRINCETON	100	E/END	W/HARVARD	2	230	30	6,900	E	AC	1/6/2012	83
PURDUE CIRCLE	100	S/ END	N/ COLLEGE PARK	2	68	27	1,836	E	AC	1/6/2012	59
RIVIERA	100	S/MARLIN	N/BOLSA	2	560	31	17,360	E	AC	1/12/2012	96
ROSE	100	S/ ALMOND	N/ END	2	430	33	14,190	C	AC	1/3/2012	99
ROSE	200	S/FIR	N/HAZELNUT	2	390	37	14,430	C	AC	1/4/2012	66
ROSE	300	S/HAZELNUT	N/LAMPSON	2	440	37	16,280	C	AC	1/4/2012	58
ROSSMOOR CTR	100	E/SEAL BEACH	W/ WEST RD	2	864	30	25,920	C	AC	1/16/2012	99
ROSSMOOR CTR	200	E/ WEST RD	W/ MONTECITO	2	364	28	10,192	C	AC	1/16/2012	35
SAND PIPER	100	S/BOLSA	N/TAPER	2	1,110	33	36,630	E	AC	1/12/2012	30
SCHOONER	100	E/GALLEON	W/DORY	2	660	33	21,780	E	AC	1/10/2012	94
SEA BREEZE	100	S/BOLSA	N/CATALINA	2	1,160	33	38,280	E	AC	1/12/2012	100
SEAL	100	E/ 11TH	W/ 10TH	1	290	15	4,350	E	PCC	1/12/2012	86
SEAL BEACH BLVD	100	S/ELECTRIC	N/PCH	1	1,510	40	60,400	A	AC	1/16/2012	83
SEAL BEACH BLVD	100	S/PCH	N/BOLSA	6	1,640	97	159,080	A	AC	1/9/2012	100
SEAL BEACH BLVD	200	S/BOLSA	N/ADOLFO LOPEZ	2	3,320	99	328,680	A	AC	1/11/2012	100
SEAL BEACH BLVD	300	S/ADOLFO LOPEZ	N/WESTMINSTER	6	4,080	98	399,840	A	AC	1/16/2012	91
SEAL BEACH BLVD	400	S/WESTMINSTER	N/BEVERLY MANOR	6	4,536	95	430,920	A	AC	1/16/2012	99
SEAL BEACH BLVD	500	OLD RANCH PKY	O N/ LAMPSON	6	833	89	74,137	A	AC	1/11/2012	99
SEAL BEACH BLVD	600	S/ LAMPSON	ST. CLOUD DR	6	915	77	70,455	A	AC	1/9/2012	81

City of Seal Beach
Street Inventory and PCI Report

Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (ft ²)	FC	ST	PCI Date	PCI
SEAL BEACH BLVD	700	ST. CLOUD DR	PLYMOUTH	6	1,491	77	114,807	A	AC	1/9/2012	100
SEAL BEACH BLVD	800	S/ROSSMOOR	N/BRADBURY	6	1,040	97	100,880	A	AC	1/9/2012	100
SEAL WAY	100	E/ELECTRIC	W/14TH	1	1,240	13	16,120	E	PCC	1/9/2012	84
SEAL WAY	200	E/14TH	W/11TH	1	920	15	13800	E	PCC	1/9/2012	100
SILVER SHOALS	100	S/BOLSA	N/FATHOM	2	300	33	9900	E	AC	1/11/2012	33
SOUTH SHORE	100	S/BOLSA	N/TAPER	2	1060	33	34980	E	AC	1/12/2012	29
STANFORD	100	N/COLLEGE PARK	W/COLLEGE PARK	2	1860	32	59520	E	AC	1/6/2012	97
SUNFLOWER	100	S/ ALMOND	N/ END	2	430	33	14190	E	AC	1/3/2012	99
SUNFLOWER	200	S/FIR	N/IRONWOOD	2	560	37	20720	E	AC	1/4/2012	65
SURF	100	S/ CATALINA	N/ END	2	480	33	15840	E	AC	1/11/2012	98
TAPER	100	S/BOLSA	N/CATALINA	2	1110	33	36630	E	AC	1/12/2012	27
TEABERRY	100	S/ ALMOND	N/ END	2	430	33	14190	E	AC	1/3/2012	99
TULIP	100	S/IRONWOOD	N/LAMPSON	2	70	36	2520	E	AC	1/3/2012	100
VIOLET	100	S/ ALMOND	N/ CANDLEBERRY	2	660	33	21780	E	AC	1/3/2012	99
VIOLET	200	S/ELDER	N/FIR	2	160	33	5280	E	AC	1/4/2012	53
WESTMINSTER	100	W/CITY LIMIT	E/SEAL BEACH	4	4360	79	344440	A	AC	1/16/2012	75
WESTMINSTER	200	E/BOLSA CHICA	W/SEAL BEACH	4	10610	72	763920	A	AC	1/16/2012	45
WISTERIA	100	S/DOGWOOD	N/IRONWOOD	2	990	37	36630	E	AC	1/4/2012	91
WISTERIA	200	S/END	N/DOGWOOD	2	1040	33	34320	E	AC	1/3/2012	91
YALE	100	E/COLLEGE PARK	W/COLLEGE PARK	2	1160	33	38280	E	AC	1/6/2012	96
YALE CIRCLE	100	E/END	W/YALE	2	130	48	6240	E	AC	1/9/2012	92

A - Arterial	C - Collector	E- Residential	
	Very Poor	0-40	4%
	Poor	41-59	11%
	Fair	60-74	5%

Appendix B
Maintenance and Rehabilitation History

City of Seal Beach
2012 PMP Update
Maintenance and Rehabilitation History

5/29/2012

Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	FC*	ST*	Treatment Date	Treatment Description
10TH	200	S/OCEAN	N/ELECTRIC	950	40	38,000	E	AC	2/1/2000	Overlay - AC (Major MR)
10TH	300	S/SEAL	N/OCEAN	210	25	5,250	E	AC	2/1/2000	Overlay - AC (Major MR)
11TH	200	S/ELECTRIC	N/LANDING	210	37	7,770	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
11TH	300	S/SEAL	N/OCEAN	210	25	5,250	E	AC	7/9/2012	Surface Treatment - Slurry Seal (Global MR)
12TH	100	S/ELECTRIC	N/PCH	860	37	31,820	C	AC	1/1/2008	GRIND & OVERLAY (Major MR)
12TH	300	S/SEAL	N/OCEAN	210	24	5,040	E	AC	7/9/2012	Surface Treatment - Slurry Seal (Global MR)
13TH	100	S/ELECTRIC	N/PCH	960	21	20,160	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
13TH	300	S/SEAL	N/OCEAN	210	25	5,250	E	AC	7/9/2012	Surface Treatment - Slurry Seal (Global MR)
14TH	100	S/ELECTRIC	N/PCH	1010	21	21,210	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
14TH	300	S/SEAL	N/OCEAN	210	25	5,250	E	AC	7/9/2012	Surface Treatment - Slurry Seal (Global MR)
15TH	100	S/ELECTRIC	N/PCH	1110	21	23,310	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
16TH	100	S/ELECTRIC	N/PCH	1160	21	24,360	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
17TH	100	S/ELECTRIC	N/PCH	1,260	21	26,460	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
1ST	100	S/OCEAN	N/MARINA	887	40	35,480	E	AC	5/24/2010	Overlay - AC (Major MR)
1ST	200E	S/MARINA	N/PCH	2,172	23	49,956	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
1ST	200W	S/ PCH	N/ MARINA	2,172	22	47,784	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
5TH	100	S/MARINA	N/PCH	660	60	39,600	C	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
6TH	100	S/OCEAN	N/ELECTRIC	1,300	40	52,000	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
7TH	100	S/ELECTRIC	N/MARINA	210	40	8,400	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
7TH	200	S/OCEAN	N/ELECTRIC	1,280	40	51,200	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
8TH	100	S/ELECTRIC	N/PCH	460	40	18,400	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
8TH	200	S/OCEAN	N/ELECTRIC	1,150	40	46,000	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
ADOLFO LOPEZ	100	W/END	425 E/SEAL BEACH	800	60	48,000	E	AC	1/1/2007	GRIND & OVERLAY (Major MR)
ADOLFO LOPEZ	200	W/SEAL BEACH	425 W/SEAL BEACH	425	60	25,500	E	AC	1/1/2007	GRIND & OVERLAY (Major MR)
AGUA	100	S/ MARLIN	N/ END	220	27	5,940	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
ALMOND	100	E/OLEANDER	W/ASTER	4,390	36	158,040	C	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
ALMOND	200	E/ VIOLET	E EDGE ROSE CIR	765	37	28,305	C	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
ALMOND	300	E EDGE ROSE CIR	W/ OLEANER	705	37	26,085	A	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
ASTER	100	S/ ALMOND	N/ BIRCHWOOD	1,239	37	45,843	E	AC	10/1/2011	GRIND & OVERLAY (Major MR)
ASTER	200	N/ BIRCHWOOD	N/ CANDLEBERRY	206	37	7,622	A	AC	10/1/2011	GRIND & OVERLAY (Major MR)
AVALON	100	S/ CATALINA	N/ END	430	33	14,190	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
BALBOA	100	S/BOLSA	N/CATALINA	1,060	37	39,220	C	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
BALBOA	200	S/PCH	N/BOLSA	660	37	24,420	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
BANYAN	100	E/CAMELIA	W/COLUMBINE	600	33	19,800	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
BASSWOOD	100	E/ASTER	W/LAMPSON	410	36	14,760	C	AC	5/1/2011	GRIND & OVERLAY (Major MR)
BAYOU	100	E/BAYSIDE	W/HARBOR	630	33	20,790	E	AC	1/1/2008	GRIND & OVERLAY (Major MR)
BAYSIDE	100	S/BOLSA	N/CRESTVIEW	1,410	33	46,530	C	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
BEACHCOMBER	100	S/BOLSA	N/SEA BREEZE	1,160	33	38,280	E	AC	1/1/2008	GRIND & OVERLAY (Major MR)
BERYL COVE	100	S/ EMERALD COVE	N/ MARLIN	360	33	11,880	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
BLUE BELL	100	S/ALMOND	N/BIRCHWOOD	710	33	23,430	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
BOLSA	100	E/SEAL BEACH	W/MAIN	2,810	37	103,970	A	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
CAMELIA	100	S/ALMOND	N/BANYAN	590	33	19,470	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
CANDLEBERRY	100	E/FUCHSIA	W/LAMPSON	2,210	36	79,560	E	AC	6/30/2011	GRIND & OVERLAY (Major MR)
CANDLEBERRY	200	E/MARIGOLD	W/FUCHSIA	1,560	37	57,720	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
CANDLEBERRY	300	E/WISTERIA	W/OLEANDER	1,660	33	54,780	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
CARAVEL	100	S/ MARINA	N/ CORSAIR	360	37	13,320	A	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
CARMEL	100	E/ SURF	W/ COASTLINE	360	37	13,320	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)

City of Seal Beach
2012 PMP Update
Maintenance and Rehabilitation History

5/29/2012

Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	FC*	ST*	Treatment Date	Treatment Description
CARNATION	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
CATALINA	100	E/BALBOA	W/COASTLINE	1,910	37	70,670	C	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
CATALINA	200	E/END	W/BALBOA	2,470	37	91,390	C	AC	8/11/1999	Surface Treatment - Slurry Seal (Global MR)
CENTRAL	100	E/12TH	W/MAIN	860	40	34,400	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)
CENTRAL	200	E/1ST	W/2ND	260	20	5,200	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)
CENTRAL	300	E/2ND	W/MAIN	2,160	40	86,400	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)
CLIPPER	100	E/ CARAVEL	W/ ELECTRIC	910	33	30,030	A	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
CLOVER	100	S/ALMOND	N/END	130	33	4,290	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
COASTLINE	100	S/CARMEL	N/END	480	27	12,960	E	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
COASTLINE	200	E/CARMEL	W/BALBOA	2,380	33	78,540	C	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
COLLEGE PARK	100	E/HARVARD	W/HARVARD	2,590	37	95,830	C	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
COLLEGE PARK	200	E/HARVARD	W/CITY LIMIT	940	44	41,360	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
COLUMBINE	100	S/ALMOND	N/BANYAN	210	33	6,930	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
CORAL	100	E/ END	W/ BAY VIEW	230	27	6,210	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
CORSAIR	100	S/CARAVEL	N/SCHOONER	1,020	33	33,660	E	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
CREST	100	S/CATALINA	N/CRESTVIEW	210	33	6,930	E	AC	6/30/2012	Surface Treatment - Slurry Seal (Global MR)
CRESTVIEW	100	E/ CATALINA	W/ AVALON	3,060	33	100,980	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
CRYSTAL	100	S/ CRYSTAL COVE	N/ END	240	27	6,480	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
CRYSTAL COVE	100	E/ MARBLE COVE	W/ OPAL COVE	520	33	17,160	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
DAFFODIL	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
DAHLIA	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
DAISY	100	S/ALMOND	N/BIRCHWOOD	410	33	13,530	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
DAISY	200	S/CANDLEBERRY	N/DOGWOOD	210	33	6,930	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
DAISY CIRCLE	100	S/FIR	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
DARTMOUTH	100	E/END	W/HARVARD	180	34	6,120	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
DOGWOOD	100	E/DAISY	W/IRONWOOD	1,470	33	48,510	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
DOGWOOD	200	E/MARIGOLD	W/FUCHSIA	1,520	33	50,160	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
DOGWOOD	300	E/WISTERIA	W/OLEANDER	1,710	33	56,430	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
DOLPHIN	100	S/SEAL WAY	N/ OCEAN	226	24	5,424	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
DORY	100	S/GALLEON	N/SCHOONER	360	28	10,080	E	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
DRIFTWOOD	100	E/BALBOA	W/COASTLINE	1,460	33	48,180	E	AC	1/1/2008	GRIND & OVERLAY (Major MR)
ELDER	100	HEATHER	W/IRONWOOD	2,002	36	72,072	E	AC	6/30/2011	GRIND & OVERLAY (Major MR)
ELDER	200	E/OLEANDER	HEATHER	1,130	36	40,680	E	AC	1/1/2007	Surface Treatment - Slurry Seal (Global MR)
ELDER	300	E/VIOLET	W/PRIMROSE	1,380	33	45,540	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
ELECTRIC	100	E/ 5TH	W/ CORSAIR	510	37	18,870	A	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
ELECTRIC	200	E/CORSAIR	W/END	380	33	12,540	A	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
ELECTRIC N	200	E/SEAL BEACH	14TH	820	27	22,140	A	AC	6/30/2010	GRIND & OVERLAY (Major MR)
ELECTRIC N	300	14TH	W/MAIN	1,590	27	42,930	A	AC	7/1/2010	GRIND & OVERLAY (Major MR)
ELECTRIC S	200	E/SEAL BEACH	14TH	755	25	18,875	A	AC	6/30/2010	GRIND & OVERLAY (Major MR)
EMERALD COVE	100	E/ BERYL COVE	W/ JADE COVE	580	33	19,140	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
EMERALD PL	100	S/ EMERALD COVE	N/ END	230	27	6,210	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
FATHOM	100	E/SILVER SHOALS	W/BALBOA	810	33	26,730	E	AC	8/12/1999	Surface Treatment - Slurry Seal (Global MR)
FERN	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
FIR	100	E/GOLDENROD	W/IRONWOOD	1,460	33	48,180	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
FIR	200	E/ROSE	W/HEATHER	1,260	33	41,580	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
FIR	300	E/SUNFLOWER	W/ROSE	330	33	10,890	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)
FIR	400	E/WISTERIA	W/SUNFLOWER	1,220	33	40,260	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)

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Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	FC*	ST*	Treatment Date	Treatment Description
FIR CIRCLE	100	S/FIR	N/END	130	60	7,800	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
FUCHSIA	100	S/BIRCHWOOD	N/ELDER	640	33	21,120	C	AC	5/24/2010	GRIND & OVERLAY (Major MR)
FUCHSIA CIRCLE	100	S/FIR	N/END	330	33	10,890	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
GALLEON	100	S/ELECTRIC	N/DORY	970	33	32,010	E	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
GOLDENROD	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
GOLDENROD	200	S/ELDER	N/END	610	33	20,130	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
GUAVA	100	E/IRONWOOD	W/END	530	33	17,490	E	AC	6/30/2010	Overlay - AC (Major MR)
GUAVA	200	E/PANSY	W/HEATHER	1,360	33	44,880	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
HARBOR	100	S/BAYSIDE	N/BAYOU	760	33	25,080	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
HARVARD	100	S/COLLEGE PARK	W/END	3,310	37	122,470	C	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
HAZELNUT	100	S/GUAVA	N/HEATHER	1,210	33	39,930	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
HAZELNUT	200	E/HEATHER	W/ROSE	1,610	33	53,130	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
HAZELNUT	300	E/WISTERIA	W/SUNFLOWER	1,310	33	43,230	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
HEATHER	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
HEATHER	200	S/ELDER	N/HAZELNUT	790	37	29,230	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
HEATHER	300	S/HAZELNUT	N/LAMPSON	490	37	18,130	C	AC	1/1/2008	GRIND & OVERLAY (Major MR)
IRIS	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
IRIS	200	HAZELNUT AVE	IRONWOOD AVE	226	32	7,232	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
IRONWOOD	50	S/CANDLEBERRY	ELDER	524	33	17,292	E	AC	6/30/2011	GRIND & OVERLAY (Major MR)
IRONWOOD	100	ELDER	N/HEATHER	1,967	33	64,911	E	AC	10/1/1993	Overlay - AC (Major MR)
IRONWOOD	200	E/ROSE	W/IRIS	1,420	33	46,860	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
IRONWOOD	300	E/WISTERIA	W/TULIP	322	37	11,914	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
IRONWOOD	400	W/TULIP	W/SUNFLOWER	1,020	37	37,740	A	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
ISLAND VIEW	100	S/BOLSA	N/SEA BREEZE	1,110	33	36,630	E	AC	1/1/2008	GRIND & OVERLAY (Major MR)
JADE COVE	100	S/ EMERALD COVE	N/ MARLIN	360	33	11,880	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
JASMIN	100	S/ALMOND	N/END	230	33	7,590	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
LAGUNA	100	0 S/ MARLIN	0 N/ END	380	27	10,260	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
LAMPSON	100	W/ BASSWOOD	200 E/ O BASSWOOD	200	56	11,200	A	AC	7/1/2002	GRIND & OVERLAY (Major MR)
LAMPSON	200	E/BASSWOOD	W/ SEAL BEACH	3,300	60	198,000	A	AC	7/1/2002	Overlay - AC (Major MR)
LAMPSON	300	E/ E CITY LIMIT	200 E/ BASSWOOD	7,200	60	432,000	A	AC	7/1/2002	Overlay - AC (Major MR)
LANDING	100	E/12TH	W/11TH	260	42	10,920	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
LANDING	200	E/SEAL BEACH	W/12TH	1,210	21	25,410	E	AC	7/1/1997	Surface Treatment - Slurry Seal (Global MR)
LOYOLA PLAZA	100	S/COLLEGE PARK	N/END	330	25	8,250	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
MAIN	100	S/ELECTRIC	N/PCH	690	55	37,950	A	AC	6/1/1995	Overlay - AC (Major MR)
MAIN	200	S/OCEAN AVE	N/ELECTRIC	1,190	57	67,830	A	AC	6/30/2008	Surface Treatment - Slurry Seal (Global MR)
MARBLE COVE	100	S/ CRYSTAL COVE	N/ MARLIN	360	33	11,880	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
MARIGOLD	100	S/BIRCHWOOD	N/CANDLEBERRY	160	33	5,280	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
MARIGOLD	200	S/CANDLEBERRY	N/DOGWOOD	160	33	5,280	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
MARINA	100	E/PCH	6TH	629	61	38,369	E	AC	10/1/1996	Overlay - AC (Major MR)
MARINA	200	E/ 6TH	W/ W CITY LIMIT	2,219	50	110,950	A	AC	10/1/1996	Overlay - AC (Major MR)
MARLIN	100	E/SEAL BEACH	W/BALBOA	1,610	37	59,570	E	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
NEPTUNE	100	S/SEAL	N/OCEAN	210	24	5,040	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
NORTH GATE	100	W/SEAL BEACH	76 W/SEAL BEACH	760	42	31,920	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
NORTH GATE	200	76 E/SEAL BEACH	W/END	3,300	25	82,500	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
OCCIDENTAL	100	E/ STANFORD	W/ HARVARD	160	33	5,280	A	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
OCEAN	100	E/ELECTRIC	W/MAIN	2,440	51	124,440	A	AC	1/1/2007	Overlay - AC (Major MR)
OCEAN	200	E/MAIN	W/1ST	2,490	52	129,480	A	AC	1/1/2007	Overlay - AC (Major MR)

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Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	FC*	ST*	Treatment Date	Treatment Description
OLD RANCH PARKWA	100	SEAL BEACH	200 W/ SEAL BEACH	520	48	24,960	A	AC	1/1/1986	Overlay - AC (Major MR)
OLD RANCH PARKWA	200	200 W/ SEAL BEACH	720 W/ SEAL BEACH	200	64	12,800	A	AC	1/1/1986	Overlay - AC (Major MR)
OLD RANCH PARKWA	300	720 W/ SEAL BEACH	W/ 22 FWY	1,030	34	35,020	A	AC	1/1/1986	Overlay - AC (Major MR)
OLEANDER	100	S/ALMOND	N/FIR	1,320	36	47,520	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
OPAL COVE	100	S/ CRYSTAL COVE	N/ MARLIN	360	33	11,880	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
PANSY	100	S/ ALMOND	N/ END	430	33	14,190	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
PANSY	200	S/FIR	N/GUAVA	160	33	5,280	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
PRIMROSE	100	S/DOGWOOD	N/ELDER	210	33	6,930	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
PRIMROSE CIR	100	S/ ALMOND	N/ END	430	33	14,190	A	AC	1/1/1990	Surface Treatment - Slurry Seal (Global MR)
PRINCETON	100	E/END	W/HARVARD	230	30	6,900	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
PURDUE CIRCLE	100	S/ END	N/ COLLEGE PARK	68	27	1,836	A	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
RIVIERA	100	S/MARLIN	N/BOLSA	560	31	17,360	E	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
ROSE	100	S/ ALMOND	N/ END	430	33	14,190	C	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
ROSE	200	S/FIR	N/HAZELNUT	390	37	14,430	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
ROSE	300	S/HAZELNUT	N/LAMPSON	440	37	16,280	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
ROSSMOOR CTR	100	E/SEAL BEACH	W/ WEST RD	864	30	25,920	C	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
SAND PIPER	100	S/BOLSA	N/TAPER	1,110	33	36,630	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
SCHOONER	100	E/GALLEON	W/DORY	660	33	21,780	E	AC	1/1/2010	Surface Treatment - Slurry Seal (Global MR)
SEA BREEZE	100	S/BOLSA	N/CATALINA	1,160	33	38,280	E	AC	1/1/2008	Overlay - AC (Major MR)
SEAL BEACH BLVD	100	S/PCH	N/BOLSA	1,640	97	159,080	A	AC	6/30/2011	GRIND & OVERLAY (Major MR)
SEAL BEACH BLVD	100	S/ELECTRIC	N/PCH	1,510	40	60,400	A	AC	8/1/2001	Overlay - AC (Major MR)
SEAL BEACH BLVD	200	S/BOLSA	N/ADOLFO LOPEZ	3,320	99	328,680	A	AC	1/1/2008	Overlay - AC (Major MR)
SEAL BEACH BLVD	300	S/ADOLFO LOPEZ	N/WESTMINSTER	4,080	98	399,840	A	AC	5/24/2010	Overlay - AC (Major MR)
SEAL BEACH BLVD	400	S/WESTMINSTER	N/BEVERLY MANOR	4,536	95	430,920	A	AC	5/24/2010	Overlay - AC (Major MR)
SEAL BEACH BLVD	500	OLD RANCH PKY	O N/ LAMPSON	833	89	74,137	A	AC	5/24/2010	Overlay - AC (Major MR)
SEAL BEACH BLVD	600	S/ LAMPSON	ST. CLOUD DR	915	77	70,455	A	AC	5/10/2010	Overlay - AC (Major MR)
SEAL BEACH BLVD	700	ST. CLOUD DR	PLYMOUTH	1,491	77	114,807	A	AC	5/10/2010	Overlay - AC (Major MR)
SEAL BEACH BLVD	800	S/ROSSMOOR	N/BRADBURY	1,040	97	100,880	A	AC	5/10/2010	Overlay - AC (Major MR)
SEAL WAY	200	E/14TH	W/11TH	920	15	13,800	E	AC	5/24/2010	Overlay - AC (Major MR)
SILVER SHOALS	100	S/BOLSA	N/FATHOM	300	33	9,900	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
SOUTH SHORE	100	S/BOLSA	N/TAPER	1,060	33	34,980	E	AC	8/12/1999	Surface Treatment - Slurry Seal (Global MR)
STANFORD	100	N/COLLEGE PARK	W/COLLEGE PARK	1,860	32	59,520	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
SUNFLOWER	100	S/ ALMOND	N/ END	430	33	14,190	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
SUNFLOWER	200	S/FIR	N/IRONWOOD	560	37	20,720	E	AC	6/1/1995	Overlay - AC (Major MR)
SURF	100	S/ CATALINA	N/ END	480	33	15,840	A	AC	6/30/2010	Surface Treatment - Slurry Seal (Global MR)
TAPER	100	S/BOLSA	N/CATALINA	1,110	33	36,630	E	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
TEABERRY	100	S/ ALMOND	N/ END	430	33	14,190	A	AC	1/1/2006	Surface Treatment - Slurry Seal (Global MR)
TULIP	100	S/IRONWOOD	N/LAMPSON	70	36	2,520	E	AC	5/24/2010	GRIND & OVERLAY (Major MR)
VIOLET	100	S/ ALMOND	N/ CANDLEBERRY	660	33	21,780	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
VIOLET	200	S/ELDER	N/FIR	160	33	5,280	E	AC	5/1/2003	Surface Treatment - Slurry Seal (Global MR)
WESTMINSTER	100	W/CITY LIMIT	E/SEAL BEACH	4,360	79	344,440	A	AC	8/1/1987	Overlay - AC (Major MR)
WESTMINSTER	200	E/BOLSA CHICA	W/SEAL BEACH	10,610	72	763,920	A	AC	10/1/1997	Overlay - AC (Major MR)
WISTERIA	100	S/DOGWOOD	N/IRONWOOD	990	37	36,630	C	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
WISTERIA	200	S/END	N/DOGWOOD	1,040	33	34,320	E	AC	1/1/2009	Surface Treatment - Slurry Seal (Global MR)
YALE	100	E/COLLEGE PARK	W/COLLEGE PARK	1,160	33	38,280	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)
YALE CIRCLE	100	E/END	W/YALE	130	48	6,240	E	AC	1/1/2008	Surface Treatment - Slurry Seal (Global MR)

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Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	FC*	ST*	Treatment Date	Treatment Description
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Note:

1. "FC" is Functional Classification

A - Arterial

C - Collector

E - Residential

2. "ST" is Surface Type

AC - Asphalt Concrete

PCC - Portland Cement Concrete

Appendix C
City's Projected Resurfacing Program

City of Seal Beach
Arterial Resurfacing Program

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2012-2013	ELECTRIC N	300	14TH	W/MAIN	1,620	27	43,740	66	\$ 192,456	Cold Mill & Fill (4" AC)
Total									\$ 192,456	

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2013-2014	ELECTRIC S	300	W/MAIN	14TH	1,580	27	42,660	42	\$ 187,704	Cold Mill & Fill (4" AC)
Total									\$ 187,704	

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2014-2015	WESTMINSTER	100	W/CITY LIMIT	E/SEAL BEACH	4,360	79	344,440	70	\$ 1,515,536	Cold Mill & Fill (4" AC)
Total									\$ 1,515,536	

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2015-2017	WESTMINSTER	200	E/BOLSA CHICA	W/SEAL BEACH	10,610	72	763,920	29	\$ 7,073,899	R & R
Total									\$ 7,073,899	

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2017-2018	1ST	200W	S/PCH	N/MARINA	2,172	22	47,784	41	\$ 210,250	Cold Mill & Fill (4" AC)
Total									\$ 210,250	

Year	Street Name	Section ID	From	To	Length (ft)	Width (ft)	Area (ft ²)	PCI Before Treatment	Treatment Cost	Treatment
2018-2019	ELECTRIC S	100	E/6TH	W/MAIN	910	25	22,750	63	\$ 100,100	Cold Mill & Fill (4" AC)
2018-2019	OLD RANCH PARKWAY	100	SEAL BEACH	200 W/ SEAL BEACH	520	48	24,960	69	\$ 109,824	Cold Mill & Fill (4" AC)
Total									\$ 209,924	

Arterial Resurfacing Program 2012-2018

Grand Total 21,772

1,290,254

\$ 9,389,769

City of Seal Beach
Local Street Resurfacing Program

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2012-2013	SAND PIPER	S/BOLSA	N/TAPER	1,110	33	36,630	30	\$93,407	Cold Mill & Fill (2" AC)
2012-2013	SOUTH SHORE	S/BOLSA	N/TAPER	1,060	33	34,980	29	\$89,199	Cold Mill & Fill (2" AC)
2012-2013	TAPER	S/BOLSA	N/CATALINA	1,110	33	36,630	27	\$93,407	Cold Mill & Fill (2" AC)
Total				3,280		108,240		\$276,012	

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2013-2014	IRONWOOD	E/WISTERIA	W/TULIP	322	37	11,914	29	\$30,381	Cold Mill & Fill (2" AC)
2013-2014	IRONWOOD	ELDER	N/HEATHER	1,967	33	64,911	47	\$165,523	Cold Mill & Fill (2" AC)
Total				2,289		76,825		\$195,904	

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2014-2015	14TH	S/ELECTRIC	N/PCH	1,010	21	21,210	32	\$54,086	Cold Mill & Fill (2" AC)
2014-2015	15TH	S/ELECTRIC	N/PCH	1,110	21	23,310	20	\$59,441	Cold Mill & Fill (2" AC)
Total				2,120		44,520		\$113,526	

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2015-2016	11TH	S/ELECTRIC	N/LANDING	210	37	7,770	47	\$19,814	Cold Mill & Fill (2" AC)
2015-2016	13TH	S/ELECTRIC	N/PCH	960	21	20,160	35	\$51,408	Cold Mill & Fill (2" AC)
2015-2016	BALBOA	S/BOLSA	N/CATALINA	1,060	37	39,220	24	\$100,011	Cold Mill & Fill (2" AC)
Total				2,230		67,150		\$171,233	

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2016-2017	MARINA	E/PCH	6TH	629	61	38,369	20	\$97,841	Cold Mill & Fill (2" AC)
Total				629		38,369		\$97,841	

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2017-2018	IRIS	HAZELNUT AVE	IRONWOOD AVE	226	32	7,232	68	\$18,442	Cold Mill & Fill (2" AC)
2017-2018	SILVER SHOALS	S/BOLSA	N/FATHOM	300	33	9,900	22	\$25,245	Cold Mill & Fill (2" AC)
2017-2018	VIOLET	S/ELDER	N/FIR	160	33	5,280	45	\$13,464	Cold Mill & Fill (2" AC)
Total				686		22,412		\$57,151	

City of Seal Beach
Local Street Resurfacing Program

Plan Year	Street Name	From	To	Length (ft)	Width (ft)	Area (ft²)	PCI before Treatment	Treatment Cost	Treatment
2018-2019	16TH	S/ELECTRIC	N/PCH	1,160	21	24,360	35	\$62,118	Cold Mill and Fill (2" AC)
2018-2019	17TH	S/ELECTRIC	N/PCH	1,260	21	26,460	60	\$67,473	Cold Mill and Fill (2" AC)
2018-2019	ANDERSON	W/S PCH	END CDS	255	38	9,690	57	\$24,710	Cold Mill and Fill (2" AC)
Total				2,675		60,510		\$154,301	
Grand Total				13,909		418,026		1,065,966	

*Ironwood will be funded through sewer enterprise funds as the construction is being done to rehabilitate sanitary sewer facilities.

Appendix D
City's Projected Slurry Seal Program

City of Seal Beach
Local Street Slurry Program

7/19/2012

Plan Year*	Street Name	From	To	Length (ft)	Width (ft)	Area (sf)	FC*	PCI Date	PCI before Treatment	Treatment Cost	Treatment
2013	ASTER	S/ ALMOND	N/ BIRCHWOOD	1,239	37	45,843	E	1/5/12	89	\$13,753	Slurry Seal
2013	CLOVER	S/ALMOND	N/END	130	33	4,290	E	1/3/12	81	\$1,287	Slurry Seal
2013	FIR CIRCLE	S/FIR	N/END	130	60	7,800	E	1/4/12	79	\$2,340	Slurry Seal
2013	HEATHER	S/ELDER	N/HAZELNUT	790	37	29,230	C	1/3/12	77	\$8,769	Slurry Seal
2013	PANSY	S/FIR	N/GUAVA	160	33	5,280	E	1/3/12	81	\$1,584	Slurry Seal
2013	ROSE	S/FIR	N/HAZELNUT	390	37	14,430	C	1/4/12	81	\$4,329	Slurry Seal
2014	ELDER	E/OLEANDER	W/FUCHSIA	1,790	36	64,440	E	3/9/12	83	\$19,332	Slurry Seal
2014	GUAVA	E/PANSY	W/HEATHER	1,360	33	44,880	E	1/4/12	78	\$13,464	Slurry Seal
2015	HAZELNUT	E/HEATHER	W/ROSE	1,610	33	53,130	E	1/4/12	80	\$15,939	Slurry Seal
2015	SUNFLOWER	S/FIR	N/IRONWOOD	560	37	20,720	E	1/3/12	76	\$6,216	Slurry Seal
2016	ALMOND	E/OLEANDER	W/ASTER	4,390	36	158,040	C	1/3/12	91	\$47,412	Slurry Seal
2016	BASSWOOD	E/ASTER	W/LAMPSON	410	36	14,760	C	1/5/12	85	\$4,428	Slurry Seal
2016	BLUE BELL	S/ALMOND	N/BIRCHWOOD	710	33	23,430	E	1/3/12	86	\$7,029	Slurry Seal
2016	CAMELIA	S/ALMOND	N/BANYAN	590	33	19,470	E	1/3/12	90	\$5,841	Slurry Seal
2016	CANDLEBERRY	E/WISTERIA	W/OLEANDER	1,660	33	54,780	E	1/5/12	91	\$16,434	Slurry Seal
2016	CARNATION	S/ALMOND	N/END	230	33	7,590	E	1/3/12	88	\$2,277	Slurry Seal
2016	DAFFODIL	S/ALMOND	N/END	230	33	7,590	E	1/3/12	84	\$2,277	Slurry Seal
2016	DAISY	S/ALMOND	N/BIRCHWOOD	410	33	13,530	C	1/6/12	90	\$4,059	Slurry Seal
2016	DAISY CIRCLE	S/FIR	N/END	230	33	7,590	E	1/6/12	86	\$2,277	Slurry Seal
2016	DOGWOOD	E/DAISY	W/IRONWOOD	1,470	33	48,510	E	1/6/12	92	\$14,553	Slurry Seal
2016	DOGWOOD	E/MARIGOLD	W/FUCHSIA	1,520	33	50,160	E	1/6/12	90	\$15,048	Slurry Seal
2016	ELDER	E/VIOLET	W/PRIMROSE	1,380	33	45,540	E	1/6/12	92	\$13,662	Slurry Seal
2016	FERN	S/ALMOND	N/END	230	33	7,590	E	1/3/12	94	\$2,277	Slurry Seal
2016	IRIS	S/ALMOND	N/END	230	33	7,590	E	1/5/12	89	\$2,277	Slurry Seal
2016	MARIGOLD	S/CANDLEBERRY	N/DOGWOOD	160	33	5,280	E	1/6/12	89	\$1,584	Slurry Seal
2016	OLEANDER	S/ALMOND	N/FIR	1,320	36	47,520	E	1/4/12	89	\$14,256	Slurry Seal
2016	PRIMROSE	S/DOGWOOD	N/ELDER	210	33	6,930	E	1/4/12	93	\$2,079	Slurry Seal
2017	5TH	S/MARINA	N/PCH	660	60	39,600	C	1/10/12	89	\$11,880	Slurry Seal
2017	CLIPPER	E/ CARAVEL	W/ ELECTRIC	910	33	30,030	E	1/10/12	85	\$9,009	Slurry Seal
2017	COLLEGE PARK	E/HARVARD	W/HARVARD	2,590	37	95,830	C	1/6/12	94	\$28,749	Slurry Seal

City of Seal Beach
Local Street Slurry Program

7/19/2012

Plan Year*	Street Name	From	To	Length (ft)	Width (ft)	Area (sf)	FC*	PCI Date	PCI before Treatment	Treatment Cost	Treatment
2017	COLLEGE PARK	E/HARVARD	W/CITY LIMIT	940	44	41,360	E	1/6/12	86	\$12,408	Slurry Seal
2017	CORSAIR	S/CARAVEL	N/SCHOONER	1,020	33	33,660	E	1/10/12	97	\$10,098	Slurry Seal
2017	DARTMOUTH	E/END	W/HARVARD	180	34	6,120	E	1/6/12	84	\$1,836	Slurry Seal
2017	DORY	S/GALLEON	N/SCHOONER	360	28	10,080	E	1/10/12	92	\$3,024	Slurry Seal
2017	ELECTRIC	E/CORSAIR	W/END	380	33	12,540	A	1/8/12	94	\$3,762	Slurry Seal
2017	ELECTRIC	E/ 5TH	W/ CORSAIR	510	37	18,870	C	1/8/12	98	\$5,661	Slurry Seal
2017	GALLEON	S/ELECTRIC	N/DORY	970	33	32,010	E	1/10/12	91	\$9,603	Slurry Seal
2017	HARVARD	S/COLLEGE PARK	W/END	3,310	37	122,470	C	1/6/12	90	\$36,741	Slurry Seal
2017	LOYOLA PLAZA	S/COLLEGE PARK	N/END	330	25	8,250	E	1/6/12	89	\$2,475	Slurry Seal
2017	OCCIDENTAL	E/ STANFORD	W/ HARVARD	160	33	5,280	E	1/6/12	81	\$1,584	Slurry Seal
2017	PRINCETON	E/END	W/HARVARD	230	30	6,900	E	1/6/12	83	\$2,070	Slurry Seal
2017	SCHOONER	E/GALLEON	W/DORY	660	33	21,780	E	1/10/12	94	\$6,534	Slurry Seal
2017	YALE	E/COLLEGE PARK	W/COLLEGE PARK	1,160	33	38,280	E	1/6/12	92	\$11,484	Slurry Seal
2018	AVALON	S/ CATALINA	N/ END	430	33	14,190	E	1/12/12	98	\$4,257	Slurry Seal
2018	BAYSIDE	S/BOLSA	N/CRESTVIEW	1,410	33	46,530	E	1/12/12	98	\$13,959	Slurry Seal
2018	CARMEL	E/ SURF	W/ COASTLINE	360	37	13,320	E	1/11/12	97	\$3,996	Slurry Seal
2018	CATALINA	E/BALBOA	W/COASTLINE	1,910	37	70,670	E	1/11/12	98	\$21,201	Slurry Seal
2018	CATALINA	E/END	W/BALBOA	2,470	37	91,390	E	1/11/12	98	\$27,417	Slurry Seal
2018	COASTLINE	S/CARMEL	N/END	480	27	12,960	E	1/11/12	98	\$3,888	Slurry Seal
2018	COASTLINE	E/CARMEL	W/BALBOA	2,380	33	78,540	E	1/11/12	97	\$23,562	Slurry Seal
2018	CORAL	E/ END	W/ BAY VIEW	230	27	6,210	E	1/12/12	98	\$1,863	Slurry Seal
2018	CREST	S/CATALINA	N/CRESTVIEW	210	33	6,930	E	1/12/12	98	\$2,079	Slurry Seal
2018	CRESTVIEW	E/ CATALINA	W/ AVALON	3,060	33	100,980	E	1/12/12	98	\$30,294	Slurry Seal
2018	DORY	S/GALLEON	N/SCHOONER	360	28	10,080	E	1/10/12	94	\$3,024	Slurry Seal
2018	EBBTIDE	S/ COASTLINE	N/ END	230	27	6,210	E	1/11/12	99	\$1,863	Slurry Seal
2018	SURF	S/ CATALINA	N/ END	480	33	15,840	E	1/11/12	98	\$4,752	Slurry Seal
2018	TEABERRY	S/ ALMOND	N/ END	430	33	14,190	E	1/3/12	99	\$4,257	Slurry Seal
2019	10TH	S/OCEAN	N/ELECTRIC	950	40	38,000	E	1/9/12	98	\$11,400	Slurry Seal
2019	12TH	S/ELECTRIC	N/PCH	860	37	31,820	C	1/9/12	99	\$9,546	Slurry Seal
2019	12TH	S/SEAL	N/OCEAN	210	24	5,040	E	1/9/12	83	\$1,512	Slurry Seal

City of Seal Beach
Local Street Slurry Program

7/19/2012

Plan Year*	Street Name	From	To	Length (ft)	Width (ft)	Area (sf)	FC*	PCI Date	PCI before Treatment	Treatment Cost	Treatment
2019	13TH	S/SEAL	N/OCEAN	210	25	5,250	E	1/9/12	94	\$1,575	Slurry Seal
2019	ELECTRIC	E/SEAL BEACH	19 W/SEAL BEACH	190	34	6,460	C	1/8/12	98	\$1,938	Slurry Seal
2019	ELECTRIC N	E/SEAL BEACH	W/MAIN	2,410	27	65,070	C	1/8/12	99	\$19,521	Slurry Seal
2019	MAIN	S/OCEAN AVE	N/ELECTRIC	1,190	57	67,830	C	1/12/12	96	\$20,349	Slurry Seal
2019	MARINA	E/ 6TH	W/ W CITY LIMIT	2,219	50	110,950	C	1/12/12	85	\$33,285	Slurry Seal
Total				60,588		2,157,463				647,239	

Note:

1 - "Plan Year" is the fiscal year planning for the treatment

2013 - FY 2012-2013 CPE Phase I

2014 - FY 2013-2014 CPE Phase II

2015 - FY 2014-2015 CPE Phase III

2016 - FY 2015-2016 CPE Phase IV

2017 - FY 2016 -2017 CPW/Bridgeport

2018 - FY 2017-2018 Hill/Cove

2019 - FY 2018-2019 Old Town

2 - "FC" is Functional Class

A - Arterial

C - Collector

E - Residential

Appendix E
Sections Selected for Treatment
(City Budget \$575,000/year)

City of Seal Beach
Section Selected for Treatment (\$575,000/year, City's Existing Budget)

Year	Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (sf)	FC	ST	PCI Date	PCI	Treatment	Treatment Cost
2012	11TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	01/12	64	2" AC Overlay	\$9,240
2012	1ST	200W	S/ PCH	N/ MARINA	2	2,172	22	47,784	E	AC	01/12	72	2" AC Overlay	\$49,451
2012	ADOLFO LOPEZ	200	W/SEAL BEACH	425 W/SEAL BEACH	2	425	60	25,500	E	AC	01/12	74	Slurry Seal	\$21,069
2012	BLUE BELL	100	S/ALMOND	N/BIRCHWOOD	2	710	33	23,430	E	AC	01/12	79	Slurry Seal	\$7,150
2012	CLOVER	100	S/ALMOND	N/END	2	130	33	4,290	E	AC	01/12	75	Slurry Seal	\$3,113
2012	DAISY CIRCLE	100	S/FIR	N/END	2	230	33	7,590	E	AC	01/12	79	Slurry Seal	\$2,308
2012	DARTMOUTH	100	E/END	W/HARVARD	2	180	34	6,120	E	AC	01/12	81	Slurry Seal	\$868
2012	DOLPHIN	100	S/SEAL WAY	N/ OCEAN	2	226	24	5,424	E	AC	01/12	64	2" AC Overlay	\$9,542
2012	ELDER	200	E/OLEANDER	HEATHER	2	1,130	36	40,680	E	AC	01/12	80	Slurry Seal	\$8,061
2012	ELECTRIC S	200	E/SEAL BEACH	W/MAIN	1	2,360	25	59,000	C	AC	01/12	72	2" AC Overlay	\$60,996
2012	FIR CIRCLE	100	S/FIR	N/END	2	130	60	7,800	E	AC	01/12	79	Slurry Seal	\$2,380
2012	GUAVA	200	E/PANSY	W/HEATHER	2	1,360	33	44,880	E	AC	01/12	78	Slurry Seal	\$18,353
2012	HAZELNUT	200	E/HEATHER	W/ROSE	2	1,610	33	53,130	E	AC	01/12	74	Slurry Seal	\$44,069
2012	MARIGOLD	100	S/BIRCHWOOD	N/CANDLEBERRY	2	160	33	5,280	E	AC	01/12	78	Slurry Seal	\$2,159
2013	12TH	300	S/SEAL	N/OCEAN	2	210	24	5,040	E	AC	01/12	83	Slurry Seal	\$730
2013	ADOLFO LOPEZ	200	W/SEAL BEACH	425 W/SEAL BEACH	2	425	60	25,500	E	AC	01/12	74	Slurry Seal	\$25,503
2013	DAISY CIRCLE	100	S/FIR	N/END	2	230	33	7,590	E	AC	01/12	79	Slurry Seal	\$3,737
2013	DARTMOUTH	100	E/END	W/HARVARD	2	180	34	6,120	E	AC	01/12	81	Slurry Seal	\$1,727
2013	ELECTRIC N	100	E/MAIN	W/6TH	1	960	27	25,920	C	AC	01/12	46	Grind/Fill 2" AC	\$88,996
2013	HEATHER	200	S/ELDER	N/HAZELNUT	2	790	37	29,230	C	AC	01/12	63	Grind/Fill 2" AC	\$61,172
2013	IRONWOOD	200	E/ROSE	W/IRIS	2	1,420	33	46,860	C	AC	01/12	62	Grind/Fill 2" AC	\$104,216
2013	OLD RANCH PARKWAY	200	200 W/ SEAL BEACH	720 W/ SEAL BEACH	4	200	64	12,800	A	AC	01/12	63	Grind/Fill 2" AC	\$26,753
2013	OLD RANCH PARKWAY	300	720 W/ SEAL BEACH	W/ 22 FWY	2	1,030	34	35,020	A	AC	05/10	41	Grind/Fill 4" AC	\$120,241
2013	PRINCETON	100	E/END	W/HARVARD	2	230	30	6,900	E	AC	01/12	83	Slurry Seal	\$1,001
2013	ROSE	200	S/FIR	N/HAZELNUT	2	390	37	14,430	C	AC	01/12	66	2" AC Overlay	\$24,687
2013	ROSE	300	S/HAZELNUT	N/LAMPSON	2	440	37	16,280	C	AC	01/12	58	Grind/Fill 2" AC	\$46,683
2014	12TH	300	S/SEAL	N/OCEAN	2	210	24	5,040	E	AC	01/12	83	Slurry Seal	\$1,345
2014	BOLSA	100	E/SEAL BEACH	W/MAIN	2	2,810	37	103,970	C	AC	01/12	57	Grind/Fill 2" AC	\$374,830
2014	DAISY CIRCLE	100	S/FIR	N/END	2	230	33	7,590	E	AC	01/12	79	Slurry Seal	\$5,222
2014	DARTMOUTH	100	E/END	W/HARVARD	2	180	34	6,120	E	AC	01/12	81	Slurry Seal	\$2,940
2014	IRONWOOD	300	E/ WISTERIA	W/ TULIP	2	322	37	11,914	C	AC	01/12	32	Grind/Fill 2" AC	\$58,681
2014	PRINCETON	100	E/END	W/HARVARD	2	230	30	6,900	E	AC	01/12	83	Slurry Seal	\$1,849
2014	ROSSMOOR CTR	200	E/ WEST RD	W/ MONTECITO	2	364	28	10,192	C	AC	01/12	46	Grind/Fill 2" AC	\$36,744
2015	DAISY CIRCLE	100	S/FIR	N/END	2	230	33	7,590	E	AC	01/12	79	Slurry Seal	\$6,743
2015	IRONWOOD	400	W/ TULIP	W/ SUNFLOWER	2	1,020	37	37,740	C	AC	01/12	54	Grind/Fill 2" AC	\$142,862
2015	MAIN	100	S/ELECTRIC	N/PCH	2	690	55	37,950	C	AC	01/12	50	Grind/Fill 2" AC	\$143,657
2015	MARINA	100	E/PCH	6TH	3	629	61	38,369	C	AC	01/12	37	Grind/Fill 2" AC	\$175,558
2015	PURDUE CIRCLE	100	S/ END	N/ COLLEGE PARK	2	68	27	1,836	E	AC	01/12	59	Grind/Fill 2" AC	\$6,950
2016	1ST	200E	S/MARINA	N/PCH	2	2,172	23	49,956	E	AC	01/12	68	2" AC Overlay	\$90,217

City of Seal Beach
Section Selected for Treatment (\$575,000/year, City's Existing Budget)

Year	Street Name	Section ID	From	To	Lanes	Length (ft)	Width (ft)	Area (sf)	FC	ST	PCI Date	PCI	Treatment	Treatment Cost
2016	ADOLFO LOPEZ	200	W/SEAL BEACH	425 W/SEAL BEACH	2	425	60	25,500	E	AC	01/12	74	2" AC Overlay	\$39,014
2016	DAFFODIL	100	S/ALMOND	N/END	2	230	33	7,590	E	AC	01/12	90	Slurry Seal	\$1,144
2016	DAISY	100	S/ALMOND	N/BIRCHWOOD	2	410	33	13,530	E	AC	01/12	67	2" AC Overlay	\$24,533
2016	DARTMOUTH	100	E/END	W/HARVARD	2	180	34	6,120	E	AC	01/12	81	Slurry Seal	\$5,589
2016	IRONWOOD	100	ELDER	N/HEATHER	2	1,967	33	64,911	C	AC	05/10	50	Grind/Fill 2" AC	\$258,002
2016	SUNFLOWER	200	S/FIR	N/IRONWOOD	2	560	37	20,720	E	AC	01/12	65	Grind/Fill 2" AC	\$56,461
2017	BALBOA	100	S/BOLSA	N/CATALINA	2	1,060	37	39,220	C	AC	01/12	31	Reconstruction (AC 6"/AB 10")	\$372,151
2017	BALBOA	200	S/PCH	N/BOLSA	2	660	37	24,420	E	AC	01/12	63	Grind/Fill 2" AC	\$101,915
2018	10TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	01/12	63	Grind/Fill 2" AC	\$23,006
2018	11TH	200	S/ELECTRIC	N/LANDING	2	210	37	7,770	E	AC	01/12	54	Grind/Fill 2" AC	\$34,049
2018	14TH	300	S/SEAL	N/OCEAN	2	210	25	5,250	E	AC	01/12	63	Grind/Fill 2" AC	\$23,006
2018	17TH	100	S/ELECTRIC	N/PCH	1	1,260	21	26,460	E	AC	01/12	60	Grind/Fill 2" AC	\$115,951
2018	1ST	300	N/PCH	597NE/PCH	2	597	24	14,328	E	AC	01/12	59	Grind/Fill 2" AC	\$62,787
2018	OLEANDER	100	S/ALMOND	N/FIR	2	1,320	36	47,520	E	AC	01/12	64	Grind/Fill 2" AC	\$208,238
Total						35,992		1,201,604						

Note :

1 -"FC" is Functional Class

- A - Arterial
- C - Collector
- E - Residential

2 - "ST" is Surface Type AC= Asphalt Concrete, PCC=Portland Cement Concrete