FINAL REPORT

UPDATE OF PAVEMENT MANAGEMENT PROGRAM

(Citywide)

2024-2029

Submitted to:
City of Del Mar, CA
February 26, 2024

BUCKNAM INFRASTRUCTURE GROUP, INC

February 26, 2024

Mrs. Karen Falk, PE
Principal Engineer
City of Del Mar
2240 Jimmy Durante Blvd
Del Mar, CA 92014

Subject: **Final Report - Update of the Pavement Management Program**

Dear Karen:

As part of the 2023-24 Update of the Pavement Management Program for the City of Del Mar, *Bucknam Infrastructure Group, Inc. (Bucknam)* is pleased to submit the Final Report for the City's pavement network.

The information contained in this report was used to develop the recommended improvement program for the pavement network. The report covers the following categories:

- **Executive Summary (Section I)**

- **Pavement Management Program Development and Reporting (Section II)**

- **Pavement Conditions For Each Segment in the Network (PCI Report – Section III)**
  The Pavement Condition Index report shows the present condition of each street in the pavement network. In addition, the report shows the basic geometry of each street segment.

- **Forecast Maintenance & Rehabilitation (FMR) Reports (Section IV)**

  - **Recommended Maintenance and Repair Strategies**
    The recommended maintenance and repair strategies were used to generate the Forecast Maintenance & Rehabilitation Report and were based on our 2023 inspections. Additionally, we have assessed and incorporated unit cost and maintenance application practices/types with our strategies.

  - **Projected Projects based on M&R Strategies**
    The FMR Report projects the street maintenance activities required for the next five years, broken down to show maintenance levels for Arterials, Collectors, Locals and Alley streets. The data included in this report is organized by fiscal year.

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Our thorough analysis of previous and current Del Mar PMP strategies enabled our staff to make proactive recommendations to the City's pavement CIP. All comments received from the City have been incorporated in the reports that follow. All of the City's issues and needs that were brought to our attention are included in the report. It has been a pleasure working with you and the City on updating your Pavement Management Program. We look forward to the continued success of this project and future teamwork with City staff.

Sincerely,

Bucknam Infrastructure Group, Inc.

Peter J. Bucknam
Project Manager
Infrastructure Management – GIS Services

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Acronym Listing

American Society for Testing and Materials (ASTM)
Army Corps of Engineers (ACOE)
Asphalt Concrete (AC)
Asphalt Rubber Hot Mix (ARHM)
Average Daily Traffic (ADT)
Capital Improvement Program (CIP)
Geographic Information System (GIS)
Maintenance and Repair (M&R)
Pavement Condition Index (PCI)
Pavement Management Program (PMP)
Portland Cement Concrete (PCC)
San Diego Regional Transportation Sales Tax Measure (TransNET)

SECTION I
EXECUTIVE SUMMARY

2023-24 UPDATE OF PAVEMENT MANAGEMENT PROGRAM

This report reflects the continued commitment and proactive management of the City's Pavement Management Program (PMP); the last major update to the City's PMP was performed in 2013. As the City of Del Mar continues to show growth in its population, demographics, infrastructure and maintenance needs, the street network is demonstrating similar needs in regard to capital revenues and capital improvement program management.

Today, Bucknam Infrastructure Group utilized the Army Corps of Engineers pavement management program, MicroPAVER / MyRoads®, to establish and manage the 30 miles within street network. This software is essential in that it assists Public Works staff in identifying what levels of annual funding are needed to maintain and/or improve the pavement conditions across the network. These funds are vital for the annual arterial / collector street capital improvement program projects as well as for cost-effectively managing the local network through proactive cyclical maintenance/rehabilitation and scheduling. Under this project, the City has incorporated the use of its unique Pavement Management – GIS MyRoads® PMP web-portal and GIS layers that assist the City in spatially analyzing pavement conditions and economic needs for a given pavement segment or citywide.

The Del Mar PMP has been developed to assist City personnel by providing current data on the City street networks and to develop cost-effective maintenance / rehabilitation strategies to maintain a desirable level of pavement performance on a network scale; this optimizes the expenditure of limited fiscal resources. The PMP efforts in the winter of 2023 consisted of analyzing the City's previous PMP dataset for quality and usability. City staff also provided key information pertaining to the ongoing maintenance/rehabilitation efforts that have occurred throughout the City since 2013. In doing this, we were tasked to generate an updated Capital Improvement Program report that identified deficiencies and recommendations in the current operating and maintenance efforts put forth by the City.

For the 2023-24 project, our staff surveyed all arterial, collector, local and alley routes to assist the City in complying with San Diego County TransNet PMP requirements and analyzed historical maintenance / rehabilitation operations.

Specifically, the program provides administrators and maintenance personnel with:

- *The present condition status of the pavement network (arterial, collector, local and alley streets), as a whole and of any grouping or individual component within the City;*
- *A ranked list of all streets, or segments of streets, by condition within the network;*
- *Rehabilitation/maintenance needs of qualifying street segments by year;*
- *An optimized priority maintenance and rehabilitation program based on cost/benefit analysis and various levels of funding;*

- *Optimum annual budget levels for pavement maintenance for the current and the following five (5) years;*
- *Prediction of the future performance of the City's pavement network and each individual street section; and*
- *Pavement network and conditional data presented in* ***ArcMap and MyRoads®*** that is compatible with City's existing GIS Enterprise

Pavement is a dynamic structure where deterioration is constantly occurring; thus the pavement management system needs to be updated on a regular basis to reflect these changes in pavement conditions, pavement maintenance histories, and maintenance strategies based upon budgetary constraints. In our approach to develop the City's forecasted maintenance recommendations we worked with Del Mar staff in identifying unit costs for all maintenance practices used on an annual basis. Currently, based upon the City's maintenance/rehabilitation practices and their associated unit costs, the total replacement value of the pavement network is $40,510,000 This value clearly indicates that the City's pavement network is a very valuable and essential asset to Del Mar. The City's use of preventative, ARHM Overlay and reconstruction practices are typically applied at a five year, ten year and 25 year frequency respectively. These frequencies are typical but the City may see increases in deterioration rates due to environmental, load and high average daily traffic (ADT) volumes. For example, high ADT volumes along one of Del Mar's arterial streets will increase deterioration rates for a previously applied AC Overlay compared to a small local street. These deterioration rates are monitored through frequent inspections and functional class deterioration analysis within the City's PMP database.

This report reflects our findings and recommendations for the PMP and the current state of the City's pavement network. Furthermore, we have recommended detailed funding and maintenance strategies for the arterial/collector and residential networks for next five (5) years.

A. CITY'S PAVEMENT NETWORK

Combined, the entire network consists of 29.9 section miles of streets, 4,238,936 SF and 181 total pavement sections. The Del Mar Arterial/Collector pavement network consists of approximately 11.4 section miles of streets, 1,888,662 SF of AC/PCC pavement that is made up of 44 pavement sections. The Local network consist of approx. 16.9 section miles of streets, 2,205,030 SF of pavement which includes 124 pavement sections. The Alley network consist of approx. 1.6 section miles of streets, 145,244 SF of pavement which includes 13 pavement sections.

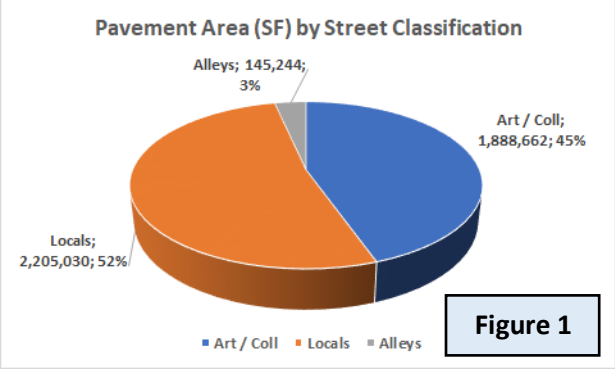


Figure 1

The City's pavement network is broken down into manageable groups that have similar characteristics, such as pavement rank, surface type and logical segmentation. Pavement segments are identified by their branch and section numbers. Pavement "branches" that have a common usage, such as Camino Del Mar, defines a "branch" within the PMP database. Pavement "sections" are pavement

segments within the defined branch that have consistent pavement rankings, construction/maintenance histories and use. Representative inspection samples are then selected and visually surveyed to locate distress data. This data is used to calculate the pavement sections Pavement Condition Index (PCI) which includes distress type, extent of the distress and its severity.

The PCI is a condition rating that ranges from 100 (a new pavement section or recently overlaid or reconstructed) to 0 for a section that has structurally failed and deteriorated dramatically. Weighted average PCI of a given area equals the pavement sections PCI multiplied by its own area then divided by the total square footage of the given area. Table 1 summarizes the section conditions found within the City of Del Mar pavement network by rank.

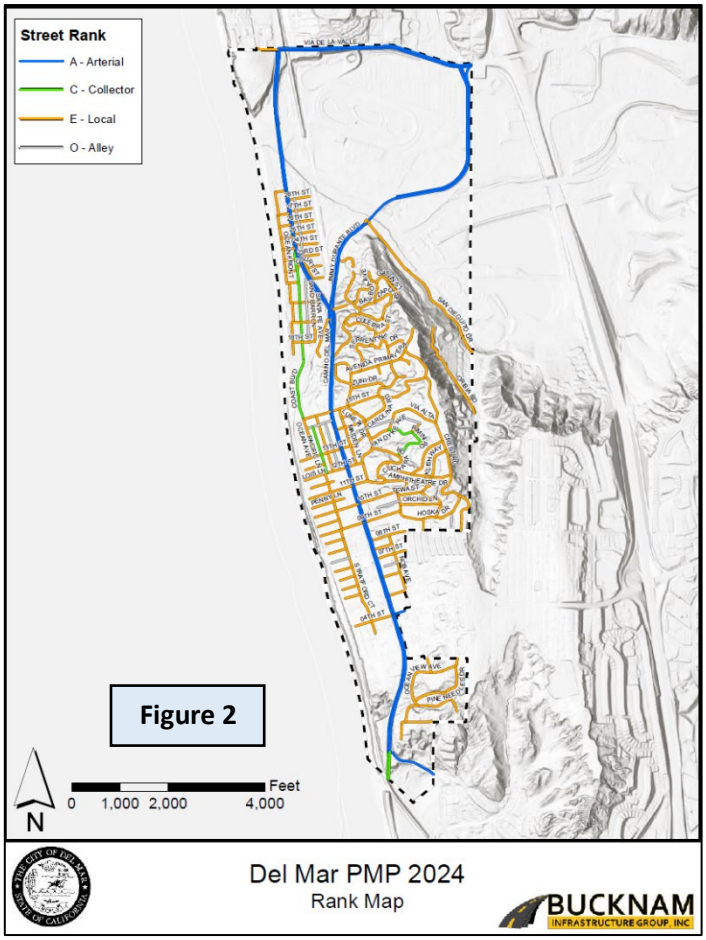


Figure 2

- **<u>The weighted avg. PCI for the City of Del Mar ARTERIAL / COLLECTOR network is 76.5</u>**
- **<u>The weighted avg. PCI for the City of Del Mar LOCAL network is 75.9</u>**
- **<u>The weighted avg. PCI for the City of Del Mar ALLEY network is 73.7</u>**

The weighted PCI value associated with the Arterial and Local routes shown through our survey analysis is timely in that it demonstrates the results of proactive pavement management. Furthermore, it is showing that a moderate amount of preventative maintenance, and overlay work will be needed over the next several years to sustain the level of condition (PCI) at a "preventative maintenance" level. The City is proactively scheduling and funding its PMP to reach a citywide weighted PCI of 80 within the next five years.

<u>Table 1 – Past and Present PCI Results and Comparisons</u>

Rank	Mileage	SF	2023 PCI	2013 PCI
Art / Coll	11.4	1,888,662	76.5	n/a
Locals	16.9	2,205,030	75.9	n/a
Alleys	1.6	145,244	73.7	n/a
Citywide	29.9	4,238,936	76.1	65.0

B. CURRENT CITYWIDE CONDITIONS (ARTERIALS-COLLECTORS, LOCALS AND ALLEYS)

The overall condition of the City's pavement network is "Good" with a weighted average PCI of 76.1 based on the surface area of each segment (this is a 11.1 PCI increase or a 17% increase compared to 2013 results). The distribution of the City's overall pavement network is shown in Section III of this report (Condition Distribution).

Table 2 – Condition Distribution by Section Mileage for All Streets

Condition	PCI Range	Arterial	Local	Alleys	Total	% of Network
Very Good	86-100	4.5	4.4	0.6	9.5	31.8%
Good	75-85	2.3	5.7	0.2	8.2	27.4%
Fair	60-74	2.9	5.4	0.4	8.7	29.1%
Poor	41-59	1.7	1.4	0.4	3.5	11.7%
Very Poor	0-40	0.0	0.0	0.0	0.0	0.0%
		11.4	16.9	1.6	29.9	

For comparison, Bucknam performed pavement management studies for several other SoCal local agencies and have included their weighted PCI values (right).

Neighboring City PCI's			
National City	70.6	Vista	78.1
Del Mar	76.1	Solana Beach	73.4
San Diego	63.0		

As shown above, a large majority of segments are evenly distributed through four condition categories (Very Good to Poor). For a network in "preventive" condition status you would typically see Very Good to Good section percentage totals at the 55% to 60% range; Del Mar's network currently shows 59% of its sections within these PCI ranges. These findings indicate that the proper funding of the network exists but should focus on improvement over the next five years; this will allow Public Works managers/staff to proactively establish preventative and rehabilitation schedules that will generate further high-value ROI for the City. At a minimum, to sustain this asset, continued amounts of overlay rehabilitation and preventative maintenance needs to be budgeted for and performed across all areas of the pavement network.

As shown in Table 2, over 41% of the City's entire network falls within the fair, poor and very poor condition categories based on the PCI findings, highlighting the need for continued funding and implementation of proactive overlay projects. Increased overlay rehabilitation activity will improve the City's overall weighted PCI while reducing deferred maintenance costs in future fiscal years.

Overlay projects applied to appropriate, qualifying segments is necessary to sustain the City's network in a preventative condition status as described above. A network-wide preventative condition status is typically a network with a weighted average PCI over 75.

Regarding the Local network, detailed inspection analysis shows 23% (3.8 miles) requires overlay rehabilitation or full reconstruction. With the major amount of Local sections needing rehabilitation the City should proactively appropriate the necessary amount of annual overlay funding to improve the network to a higher condition level.

The Local network has shown minor improvement over five years however it will continue to be a major contributor to the high amount of deferred rehabilitation cost burdens unless appropriate pavement funding is applied.

In regard to the Arterial / Collector network, detailed inspection analysis shows that 32% (3.7 miles) requires overlay rehabilitation or full reconstruction. With the overall PCI in the mid-70's, proactive planning and application of scheduled overlay projects needs to be established; this will improve the overall conditions while freeing up additional funding for deferred projects. With the supplement of SB1/RMRA/TransNet monies coming to the City this fiscal year additional projects can be schedule and expedited over the next three years.

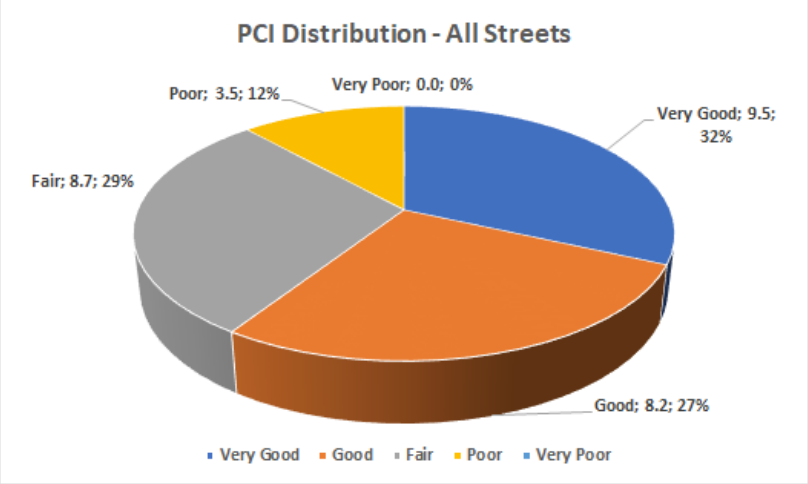
Through our assessment of the City's annual pavement management budget allocations (FY 2024-2029) the lack or major reduction of necessary CIP funds will cause the City's citywide weighted PCI to decrease over the next five years if additional funding is not appropriated.

Furthermore, as large overlay and rehabilitation projects are considered for funding, the City should also consider using sub-grade R - Values, structural design, distress severities and extents as parameters for determining whether a pavement section that lies within the Poor to Very Poor condition range should be overlaid or reconstructed. The City has available and accessible Google .kmz Coring Data that will serve as an essential tool when assessing AC and Base thicknesses during grind and overlay planning.

PCI conditions reflect "surface" conditions; additional sub-surface data such as coring data, R-Values and ground penetrating radar (GPR) will provide City to with a better approach to the maintenance that should be applied.

Our 2023-24 findings reflect the need to proactively manage the PMP network over the next several years. As the City strives to implement a more preventative state of M&R, cost efficient Arterial/Local rehabilitation and proactive use of available SB1/TransNet overlay funding should remain the focus.

Figure 3 – PCI Distribution by Section Mileage for All Streets



C. MAINTENANCE STRATEGY DEVELOPMENT

Based on the results of the condition survey and input from the City, pavement maintenance/rehabilitation strategies were developed. From the onset, the City and Bucknam staff identified a distribution of City maintenance funds that would be applied to the network over the next five years. This was based upon the desire to prevent the decrease in street conditions and not allow an increase in the maintenance backlog funds over the five-year program.

Through our assessment and discussions with the City we were requested to identify what level of funding would be required to maintain the current PCI as well as identify the level of funding needed to increase the overall weighted PCI. With this approach, Bucknam has recommended a "minimal level of service" which creates a major dividing line in determining between preventive maintenance and major pavement rehabilitation.

Generally within pavement management programs, a PCI range between 55 to 70 determines the threshold of when preventive or major overlay rehabilitation is activated. Based on the City's weighted average PCI, condition distribution, maintenance practices, our team has identified a PCI of "70" as the minimum level of service. This means, in most cases, that pavement sections with a PCI greater than 70 will typically be recommended for preventive maintenance. This recommendation is indicated in Table 7, Section II.

Bucknam developed three (3) multi-year Capital Improvement Programs for the City based on the pavement records, yearly capital expenditures, available funding and the most recent 2023 inspections. These recommendations and results are shown in Section II of this report where, for example, we have demonstrated what level of funding is necessary to improve the current weighted condition level of 76 to a level of 80 by FY 2029.

As shown above in Figure 3, 56% of the City's streets are in Good to Fair condition. These sections will be targeted for "preventive" maintenance within our Capital Improvement Program (CIP) recommendations. The reasoning in doing this is to extend the life cycles of those "good" pavement sections which accrues capital saving to aggressively rehabilitate those pavement sections that are below the "minimal level of service".

In order to achieve the most effective and optimum program for the City, certain strategies have been selected and/or analyzed. Below is a listing of the maintenance activities that are typically utilized in strategy development. Each activity is representative of the types of work that have been programmed as part of the long-term maintenance requirements of the City's street network.

General Repairs-Stop Gap (Localized Maintenance*); PCI Range – 20 to 95

For this maintenance type, small localized surface treatments are utilized as "holding action" solutions (stop gaps) to delay the need for pavement structural strengthening. They typically include activities such as crack sealing, AC deep patching, AC skin patching, PCC slab replacement, grinding and leveling.

Microsurfacing - (Global Maintenance*); PCI Range – 60 to 85

Microsurfacing is similar to slurry seal. It consists of the application of a mixture of water, asphalt emulsion, aggregate (very small crushed rock), and chemical additives to an

existing asphalt concrete pavement surface. Polymer is commonly added to the asphalt emulsion to provide better mixture properties. The major difference between slurry seal and microsurfacing is in how they "break" or harden. Slurry relies on evaporation of the water in the asphalt emulsion. The asphalt emulsion used in microsurfacing contains chemical additives which allow it to break without relying on the sun or heat for evaporation to occur. Thus, microsurfacing is an application that hardens quicker than slurry seals and can be used when conditions would not allow slurry seal to be successfully placed. Streets that have a lot of shade and streets that have a lot of traffic are good candidates for microsurfacing (*source - LA County of Public Works*).

Slurry Seals (Global Maintenance*); PCI Range – 60 to 85

Surface treatments applied to pavements with minimal surface distress to provide new wearing surfaces and extend pavement life. Generally consists of a mixture of conventional or latex-modified emulsified asphalt, well-graded fine aggregate, mineral filler and water placed over an existing AC surface; Slurry seal application life-cycles are averaging 4 to 5 years. Type II Slurry is recommended for Local streets. **Currently not used by the City.**

Cape Seals (Global Maintenance*); PCI Range – 40 to 65

This is an application of a single layer of asphalt binder to a road surface immediately followed by a single layer of cover aggregate (chips). The single layer chip seal is then followed with a slurry seal application; Conventional cape seal application life-cycles are averaging 6 to 7 years. For sections that have lower PCI's in this range, leveling courses should be considered. City is currently considering this application as an alternative cost-saving tool. **Currently not used by the City.**

Overlays (Major Rehabilitation*); PCI Range – 20 to 65

AC Overlay – Placement of a layer of hot-mixed asphalt concrete over the existing pavement surface (may include pavement fabric). Grinding (milling) is performed prior to the overlay to reduce the total height of asphalt and assure alignment with existing gutter lines. This also includes "dig-outs" and crack sealing prior to the application of an overlay. This treatment provides a new wearing surface and increased structural strength to the pavement section. A conventional overlay should be designed for a ten-year life.

Asphalt Rubber Hot-Mix Overlay - The ASTM definition is: Asphalt-Rubber is a blend of asphalt cement, reclaimed tire rubber and certain additives in which the rubber component is at least 15% by weight of the total blend and has reacted in the hot asphalt cement sufficiently to cause swelling of the rubber particles. Specifically, using crumb rubber modified binders in pavement application benefit local agencies in that cities find:

- Pavement resists cracking by being more flexible;
- Cost savings come from a longer life cycle (from Bucknam's experience typically 20% longer), decreased maintenance and the use of less material
- Improvement in skid resistance;
- Decreased noise; and
- It provides long-lasting color contrast for marking and striping
- Life cycles are averaging 8 to 12 years

Reconstruction (Major Rehabilitation*); PCI Range – 0 to 20

Reconstruction of an existing pavement section includes demolition and removal of the asphalt to a prescribed depth, grading, sub-base compaction, application of a binder/surface course followed by the placement of a conventional flexible pavement section using a structural AC Hot Mix, ARHM or a full depth asphalt. Each classification of road has a typical design cross-section based on anticipated traffic loading. Reconstruction resets a roadway section PCI to 100 and restarts the life-cycle deterioration curve of the section.

*Localized, Global and Major maintenance activities are default terms used within the pavement software. Specific pavement repair applications are placed within each maintenance activity in order to develop multi-year maintenance forecast recommendations.

D. ANNUAL BUDGET PROJECTIONS

The budgeting process was approached with the following in mind; generate three (3) unique work programs for the next five (5) years based upon actual road pavement conditions in order to:

1. Demonstrate how a City $500,000/yr budget allocation for pavement maintenance/rehabilitation performs against the found conditions;

2. Demonstrate how a City $750,000/yr budget allocation for pavement maintenance/rehabilitation performs against the found conditions;

3. Demonstrate how a City $1,000,000/yr budget allocation for pavement maintenance/rehabilitation performs against the found conditions;

Table 3 – Five-Year Projection Demonstrating Annual $500k Budget

Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	76.5	$1,425,100	$5,598,700
2025-26	77.5	$497,500	$5,535,400
2026-27	78.0	$498,300	$5,602,200
2027-28	78.1	$498,700	$5,379,600
2028-29	78.1	$499,100	$5,492,100
		$3,418,700	

Table 4 – Five-Year Projection Demonstrating Annual $750k Budget

Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	77.1	$1,425,100	$5,401,700
2025-26	78.6	$725,800	$5,088,100
2026-27	79.5	$703,500	$4,757,300
2027-28	80.0	$785,400	$4,316,900
2028-29	80.5	$819,800	$3,830,500
		$4,459,600	

Table 5 – Five-Year Projection Demonstrating Annual $1,000,000 Budget

Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	78.1	$1,425,100	$5,105,600
2025-26	79.4	$998,400	$4,607,000
2026-27	80.3	$996,100	$3,981,500
2027-28	81.2	$998,600	$3,183,900
2028-29	82.0	$999,100	$2,615,800
		$5,417,300	

Our findings within Table 4 or 5 demonstrate the continued ROI that will result if proper annual funding is applied. By applying approximately $750,000/yr or $1,000,000/yr the City will continue to see positive results with overall PCI and reduction in deferred preventative maintenance / overlay rehabilitation.

Additional detail and breakdown of budget projections are demonstrated in Section IV of this report. All work program budgets generated are presented in terms of current 2024 dollars. All repair activities were based on distresses observed at the time of the field survey. These are recommendations and are to be used as "the best case scenario" for improving the City of Del Mar street network.

E. QUALITY CONTROL EFFORTS

Quality control efforts begin at the notice-to-proceed; this involved a full assessment of the previous PMP segmentation defined in the previous 2013 reporting as well as available GIS data associated with the City of Del Mar street network. The PMP network was then built within Bucknam's license of MicroPAVER for the required general reporting, inspections, work history input and economic budgetary models shown in this report.

As indicated in our scope of work, Bucknam performed numerous quality control checks in the field during survey efforts. Field check efforts were performed at the end of each week of survey; 10% of the pavement inspection set was resurveyed by a second team to ensure the quantities and distress types were collected properly (approx. 3 miles).

Through our internal quality control efforts, we also found multiple sections that were missing and/or needed to be removed from the PMP network. All new sections were added to the PMP database and included in our survey efforts. We believe that all public street sections have been identified, inventoried, and surveyed under this project.

F. FINDINGS AND RECOMMENDATIONS

Arterials/Collectors

The actual workload requirements identified indicate that the Arterial/Collector street network is currently in "Good" condition (PCI = 76.5). To improve this condition, it is essential that preventive maintenance and overlay rehabilitation activities are funded at the levels identified in Table 3 to sustain the network weighted average PCI value to within the "Good" condition category.

Our arterial/collector findings for conditional data and recommendations for revenue expenditures are shown below:

- The Arterial/Collector network has a weighted PCI of 76.5;
- Currently, 32% of the arterial/collector network (approx. 3.7 miles) qualify for overlay/reconstruction maintenance;
- At a minimum, Arterial/Collector maintenance projects should focus on achieving and maintaining the a PCI of 76+ within the next five years;
    - Develop a proactive fiscal and planned approach to identify arterial/collector overlay projects based on the deterioration modeling within the PMP software;
    - Maintain arterial/collector revenues at the levels shown within the Section IV Forecasted Maintenance Report for a minimum of five years to generate the results identified within this report;
- Reassess/re-evaluate the arterial/collector rehabilitation budget programs every two years to improve on CIP forecasts for 2024-25 and beyond to ensure the results shown in Table 3, 4 and 5;
- Perform pavement inspections on the arterial/collector network every three years to build a solid planning model within MicroPAVER/MyRoads® to track PCI deterioration;
- Demonstrated budget shown in Table 5 is ample to improve upon the Arterial/Collector weighted PCI of 76.5 through five years, additionally, the citywide deferred backlog decreases from a level of $5.2 million to $2.7 million after five years; and
- Bucknam recommends that the City proactively budget overlay rehabilitation projects at the levels shown in Table 5 in order to improve upon the conditions found today as well as minimize the impact of a high increase deferred backlog across the City

Locals

The actual workload requirements identified indicate that the Local street network is currently in "Good" condition (PCI = 75.9). To improve this condition, it is essential that preventive maintenance and overlay activities are funded at the levels identified in Table 3 to sustain the network weighted average PCI value in the "Good" category.

Our Local findings for conditional data and recommendations for revenue expenditures are shown below:

- The Local network has a weighted PCI of 75.9;
- Currently, 23% of the Local network (approx. 3.8 miles) qualify for overlay/reconstruction maintenance;
- At a minimum, Local maintenance projects should focus on achieving and maintaining a weighted PCI above a level of 75+ within the next five years;
    - Current Local Forecast Maintenance & Rehabilitation (FMR) recommendations should be followed as shown in Section IV reporting;
    - Develop a proactive fiscal and planned approach to identify Local overlay projects based on the deterioration modeling within the PMP software;
- Increase Local revenues at the levels shown within the Section IV Forecasted Maintenance Report for a minimum of five years to generate the results identified within this report;
- Reassess/re-evaluate the Local rehabilitation budget programs every two years to improve on budget forecasts for 2024-25 and beyond to ensure the results shown in Table 3, 4 and 5;
- Perform pavement inspections on the Local network every three years to build a solid planning model within MicroPAVER/MyRoads® to track PCI deterioration; and
- Demonstrated budget shown in Table 5 is ample enough to improve the Local weighted PCI; proactive overlay funding needs to be implemented to see these results. additionally, the citywide deferred backlog decreases from a level of $5.2 million to $2.7 million after five years

SECTION II
PAVEMENT MANAGEMENT PROGRAM – CAPITAL IMPROVEMENT PROGRAM

Bucknam Infrastructure Group, Inc. (Bucknam) performed the following services in accordance with the scope of services that was contracted with the City of Del Mar. As a quick overview, the following tasks were performed to complete the work over the past several months:

2023-24 Pavement Management Work Efforts:

Task 1: Project Kickoff-Data Management
Task 2: Update of Maintenance Activities
Task 3: Pavement Condition Survey (approx. 29.9 miles)
Task 4: Budgetary Analysis and Capital Improvement Reports
Task 5: Executive Summary and Final CIP Reports
Task 6: Mapping of the Pavement Network

A. PAVEMENT MANAGEMENT PROGRAM UPDATE 2023-24

As a part of the 2023-24 update of the pavement management program, a major element of work was to complete a comprehensive assessment of the existing street network and PMS database within the City. This included building the City's 2023 PMP database within Bucknam's MicroPAVER license, GIS, street naming conventions and work history information. From there, Bucknam worked with the City to confirm public and private street listings which set the foundation for accurate CIP reporting. All data was then updated into the MicroPAVER database.

Work history information was provided by the City in the form of completed bid documents, institutional knowledge, and previous dataset and Excel documents. This information was entered into the proper pavement segments that match the limits of those projects. From there, CIP pavement recommendations were performed where the pavement maintenance/rehabilitation information the City provided (PMP application practices, unit costs, and capital budgets) was utilized to generate recommendations through the PMP software.

Table 6 demonstrates PCI ranges utilized for PCI calculations and reporting. Once a pavement inspection is complete, a PCI is calculated for each pavement section. Each PCI calculated falls within a defined PCI range category (Very Good, Poor, etc.). Furthermore, a weighted PCI was calculated for each functional class within the network (arterials and locals).

The PCI is a condition rating that ranges from 100 (a new pavement section or recently overlaid or reconstructed) to 0 for a section that has structurally failed and deteriorated dramatically. Weighted average PCI of a given area equals the pavement sections PCI multiplied by its own area then divided by the total square footage of the given area. This information can also be represented through MicroPAVER/MyRoads® to show how much square footage or percentage of area falls within a PCI range category.

Table 6 – Pavement Condition Index (PCI) Ranges

PCI Range	Condition
86-100	Very Good
75-85	*Good (2023 Del Mar = 76.1)*
60-74	Fair
41-59	Poor
0-40	Very Poor

These condition ranges are defined by the Army Corps of Engineers and utilized within the PMP software. The summary of all roads condition data and their representative PCI's can be seen in the Pavement Condition Report in Section III.

B. MAINTENANCE STRATEGY ASSIGNMENTS

The City was requested to provide a pavement maintenance list that demonstrated what pavement applications were currently being used and to provide their associated unit costs; from there a Maintenance Strategy Table was defined within the system that provided recommended actions to the specific repair needs of a street or a grouping of streets.

Table 7 – Maintenance Strategy Assignments

All Streets		
PCI Range	**Description**	**Unit Cost**
20-90 Varies by Activity	Preventative, Crack Sealing, Patching	Varies by Activity
60-85	Type II Slurry + Crack Seal (Locals)	$0.69/SF
60-85	Type II Slurry + Crack Seal (Arterials)	$0.88/SF
Minimal Level of Service (70)		
40-65	Cape Seal (Locals)	$1.62/SF
20-60	1.5" Grind / Overlay (Local)	$4.38/SF
20-60	2" Grind / Overlay (Local)	$4.56/SF
30-60	2.5" Grind / Overlay (Arterial)	$5.50/SF
20-60	2.5" Grind - 2" ARHM (Arterials)	$6.38/SF
0-20	AC Remove & Replace	$11.88/SF
0-20	PCC Reconstruction	$28.13/SF
	25% Contingency included within All Unit Costs	

The Strategy Assignments List, shown in Table 7, was developed to identify the most critical segments in each of the work programs (Arterial, Collector, Local and Alley). Segment priorities were established by determining the range of PCI's requiring first attention based on the relative value of each segment's PCI, thus maximizing the annual maintenance budget. Also, distress quantity, area extent, type and severity were critical elements in the decision process for recommending maintenance.

The strategy assignment table is used as a guide within PMP software to recommend maintenance, however, further assessment by City staff and/or outside parties can override maintenance recommendations. This can be done by reviewing and assessing distress extents and their weighted percentages.

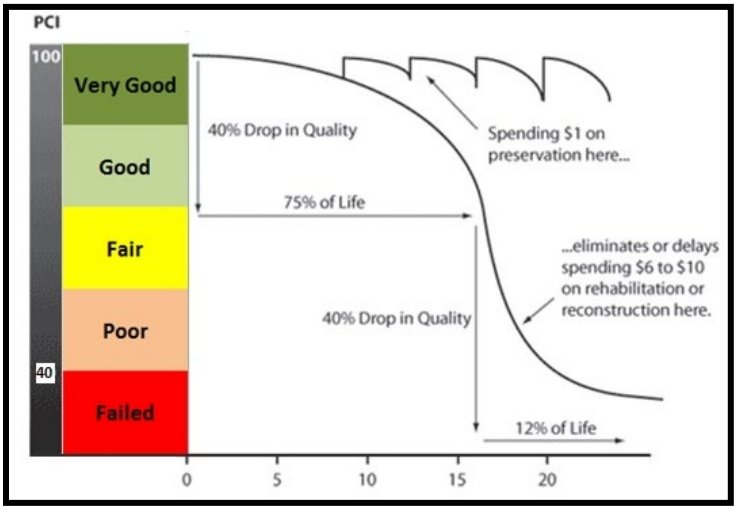
Once the strategy assignments were set within the system, budgets and work assignments were generated for each work program on an annual basis. Using pavement deterioration curves for each type of pavement surface and class of road, both current year and future years work requirements for each pavement segment within the City were determined. In forecasting the maintenance requirements in future years, the current PCI value is reduced annually for each pavement segment based on the deterioration curves within the PMP database.

Likewise, maintenance activities performed in a given year increase the PCI value as they are applied to the segment. The overall program is dynamic in that each strategy consists of a cyclic series of actions that simulates the pavement anticipated life cycle.

Strategy Assignment Notes

1. Unit costs from the City's most recent construction bids were used as well as benchmarked values from neighboring SoCal local agency cities;
2. 25% contingency costs were applied to pavement material costs (for design, bidding, construction management, inspection, staff labor and contingency); additional soft costs that were not included were:
    a. Right-of-way improvements
    b. Curb & gutter improvements
    c. ADA ramp improvement
    d. Utility improvement
    e. Tree removals
3. Bucknam applied a 5% inflation rate on the annual budget within forecast maintenance & rehabilitation projections (Section IV)

Figure 4 – Sample Pavement Life Cycle



C. MULTI-YEAR ANNUAL WORK PROGRAM PROJECTIONS

The goal of these projections is to assist City policy makers in reviewing/utilizing the recommendations of the PMP software. By using the City of Del Mar's current budgets and maintenance practices the system will develop "section unique" improvements and strategies. Qualifying segments will be tied to a specific fiscal year. As shown in the following pages, we have assessed the budgets that have been projected to meet the maintenance and rehabilitations needed to maximize the City's return on investment. The budget forecasting goal for the City network focused on:

- Establishing a proactive multi-year Maintenance & Rehabilitation Program;
- Developing a preventive maintenance program; and
- Selecting the most cost-effective repairs based on City strategies

ANNUAL $500,000 BUDGET – A $500k/five-yr budget was utilized for the City to demonstrate how its existing Public Works M&R/CIP budget allocation would perform against the current citywide conditions.

ANNUAL $750,000 BUDGET – A $750k/five-yr budget was utilized for the City to demonstrate how its existing Public Works M&R/CIP budget allocation would perform against the current citywide conditions.

ANNUAL $1,000,000 BUDGET – A $1,000,000/five-yr budget was utilized for the City to demonstrate how its existing Public Works M&R/CIP budget allocation would perform against the current citywide conditions.

All multi-year budget projections include a 5% inflation rate for the term of the budget forecast.

ARTERIAL-COLLECTOR / LOCAL / ALLEY
BUDGET PROJECTIONS

$500,000, FIVE-YR BUDGET PROGRAM

With the City striving to show proactive maintenance/rehabilitation across all City pavements, several budget programs were generated to show the greatest return on investment through the applications of preventative maintenance, grind/overlay and alternative overlay rehabilitations. Our goal under the $500k/yr model is to maintain or slightly improve the current 2023 weighted PCI of 76 after a five-year program. This model will demonstrate the necessary funding to achieve this goal.

We used the City's current and SoCal benchmark unit costs within our modeling as a cornerstone within the recommended program. Assessing all work history, current PCI and relevant unit costs for construction a realistic and achievable annual budget was achieved. The $500k Program incorporates pavement sections that have a functional class of Arterial (A, C), Local (E) and Alley (O).

Table 8 – Citywide Projection Utilizing $500,000 Annual Budget

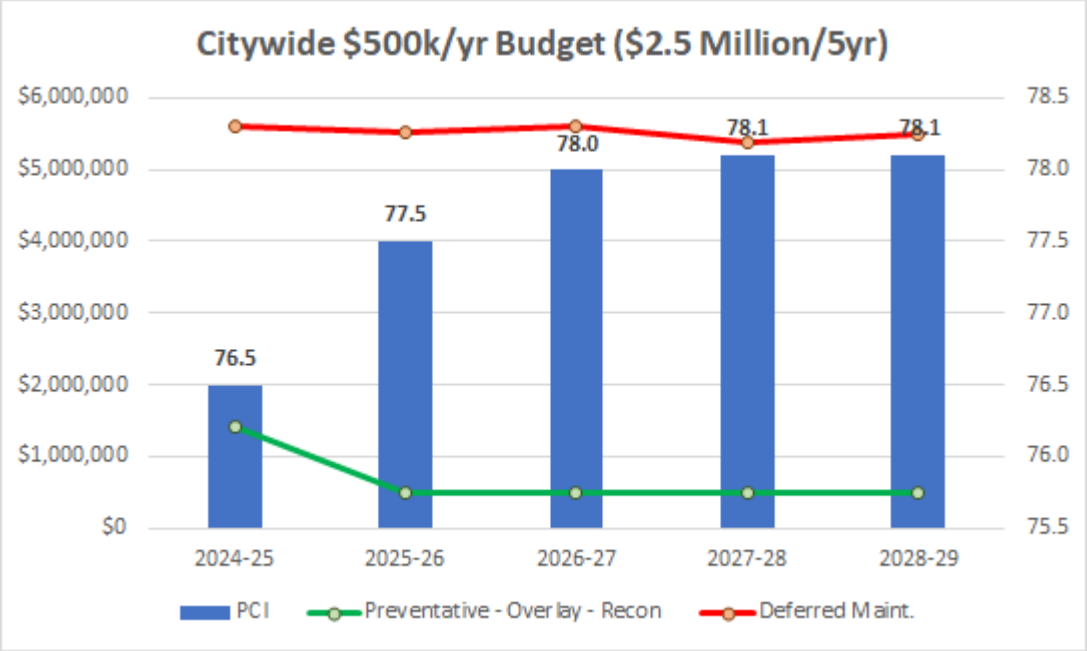
Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	76.5	$1,425,100	$5,598,700
2025-26	77.5	$497,500	$5,535,400
2026-27	78.0	$498,300	$5,602,200
2027-28	78.1	$498,700	$5,379,600
2028-29	78.1	$499,100	$5,492,100
		$3,418,700	

Referring to Table 8, it is noted that the weighted PCI consistently improves to a level of 78 at the end of the five-year projection. However, the resulting deferred maintenance backlog shows that it decreases from $5.6 million to $5.5 million after the five year program. This indicates that an annual $500k budget is ample enough to proactively chip away at the deferred maintenance on the network. If the City were to reduce their annual funding to a level of $300k/yr major overlay projects would continue to be delayed thus increasing the overall deferred maintenance to a level of $6.8 million after five years.

DEFERRED MAINTENANCE
Delaying repairs on streets where pavement condition indicates a need creates deferred maintenance. Deferred maintenance includes pavement maintenance / rehabilitation that is needed across the entire network, but cannot be performed due to the lack of available funding and is pushed to the next budget cycle. The actual repairs that are being deferred are often referred to as a "backlog". As maintenance is deferred, the opportunity to apply life extending preventive pavement applications is lost and the ultimate cost of rehabilitation multiples.

We recommend that a stronger focus be placed on the Local network improvements within the first three years due to the fact that the network has a slightly lower weighted PCI than the Arterials/Collector. We still recommend comprehensive maintenance to the Arterial/Collector network through localized patching, preventative maintenance and through the use of SB1/RMRA/TransNet funds.

Figure 5 – Five-Year Projection; $500k/Yr Budget



Additionally, it is recommended that the City continue to monitor the potential application of Cape Seal and/or High Density Mineral Bond (HDMB) as an asphalt application alternatives for the specific local sections. Specific sections are now qualifying for maintenance that warrants a stronger application rather than a typical preventative measures. With a five year cycle in motion, it is essential to address local sections that have PCI's less than 70 with the proper rehabilitation since crews will not be back within that area for five to six years.

ANNUAL $750,000, Five-Year – The first key step in developing a proactive PMP is to model the City's existing conditions against a "projected" annual budget. In doing this, PCI performance, deferred maintenance and pavement application uses are able to benchmarked and demonstrated in a positive or negative result. The City provided Bucknam with regional benchmark 2023 unit costs for pavement maintenance/rehabilitation applications currently being used by the City. The $750k Program incorporates pavement sections that have a functional class of Arterial (A, C), Local (E) and Alley (O).

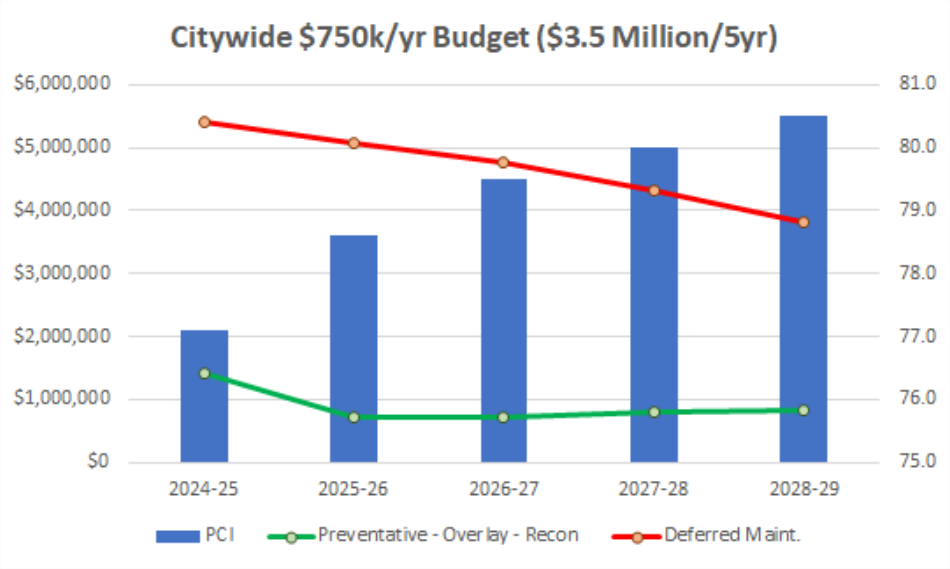
$750,000, FIVE-YR BUDGET PROGRAM

Table 9 – Citywide Projection Utilizing $750,000 Annual Budget

Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	77.1	$1,425,100	$5,401,700
2025-26	78.6	$725,800	$5,088,100
2026-27	79.5	$703,500	$4,757,300
2027-28	80.0	$785,400	$4,316,900
2028-29	80.5	$819,800	$3,830,500
		$4,459,600	

Referring to Table 9, it is noted that the weighted PCI increases proactively through the five-year term (76.1 to 80.5). Additionally, the annual deferred maintenance total decreases from $5.4 million to $3.8 million at the end of the five-years. If the City utilizes an average annual budget of $891,900/yr for preventative maintenance, overlay, and reconstruction projects as shown above, the City will be able to "increase" the current conditions and will continue to see a reduction of deferred maintenance by fiscal year 2029. The annual improvement in these major PMP factors demonstrates that an annual budget appropriation of this level will set the City on a positive operations and maintenance path for the next several years.

Figure 6 – Five Year Projection; $750k/Yr Budget



ANNUAL $1,000,000, Five-Year – within this budget model the annual PMP funding appropriations were increased to the level of $1,000,000/yr. The improvement in annual funding is expected to elevate the overall weighted PCI as well as continue to show the decrease in deferred overlay rehabilitations. The $1,000,000 Program incorporates pavement sections that have a functional class of Arterial (A, C), Local (E) and Alley (O).

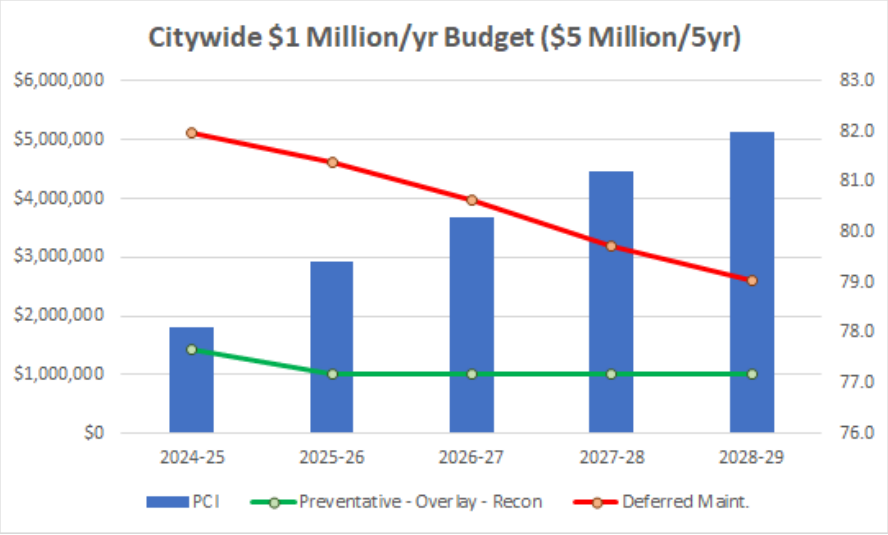
$1,000,000, FIVE-YR BUDGET PROGRAM

Table 10 – Citywide Projection Utilizing $1,000,000 Annual Budget

Plan Year	PCI	Preventative - Overlay - Recon	Deferred Maint.
2024-25	78.1	$1,425,100	$5,105,600
2025-26	79.4	$998,400	$4,607,000
2026-27	80.3	$996,100	$3,981,500
2027-28	81.2	$998,600	$3,183,900
2028-29	82.0	$999,100	$2,615,800
		$5,417,300	

Referring to Table 10, it is noted that the weighted PCI increases proactively through the five-year term (76.1 to 82). Again, as shown above within the $750k budget, the annual deferred maintenance total decreases from $5.1 million to $2.6 million at the end of the five-years. If the City utilizes an average annual budget of $1,083,500/yr for preventative maintenance, overlay, and reconstruction projects as shown above, the City will be able to "increase" the current conditions and will continue to see a dramatic reduction in deferred maintenance by fiscal year 2029. The potential ability to dramatically increase the annual funding will ease the potential burden of funding the PMP at these levels for FY 2028-29 and beyond. Having only $2.6 million in deferred backlog by that time will place the City in a "preventative state" of operations and maintenance.

Figure 7 – Five Year Projection; $1 Million / Yr Budget



PAVEMENT MANAGEMENT PROGRAM REPORTS

In addition to the annual budget scenario, this report contains a comprehensive and complementary assemblage of pavement management reports ranging from summary reports to annual maintenance and rehabilitation schedules (Forecast Maintenance & Rehabilitation (FMR) Report, Section IV). Collectively as well as individually, the reports represent reasonable projections of pavement maintenance needs and performance based on visual condition assessments, unit cost estimates, and pavement deterioration models.

It is important to note that pavement segment dimensions and surface area recorded during 2013 and 2023 inspections, along with the action and repair costs, as presented within the reports are accurate within tolerable limits. This is noteworthy due to the "implied" accuracy of reporting length and width to the nearest foot, surface area to the nearest square foot, and action and repair unit costs and project estimates to the nearest penny and dollar, respectively.

NEXT STEPS

As with any infrastructure management software program, time investments need to be made by key Public Works staff to maintain the integrity of the data as well as the accuracy. Bucknam can perform training sessions in the use of the MicroPAVER/MyRoads® tools and demonstrate how to generate standard common-sense reports to assist City staff in developing yearly budgets, project level analysis, and CIP projections. This will be key to future management of the pavement program and reporting. City personnel need to maintain their commitment to the preventive maintenance system, while working toward reducing the City's present backlog of rehabilitation projects.

In order to ensure that report outputs are accurate and credible, it is essential that the integrity of all data files be maintained. This will require performing all necessary updates when changes are made to scheduling scenarios, unit cost information, historical data, etc. In addition, the entire pavement network will have to be re-inventoried at regular intervals. This typically includes surveying arterial and collectors every two years and locals every three.

Maintaining this inspection schedule will not only allow work to be scheduled based on the most current condition data available, but will provide City personnel with a means to monitor actual rates of pavement deterioration so appropriate modifications can be made to the system curves. Additionally, this proactive management method will help met San Diego County TransNet and state SB-1 PMP guidelines and internal in-house PMP requirements.

Bucknam will be supporting the City with staff level support to assist in the continuous updates with the MicroPAVER/MyRoads® system. This will include work history updates, generating reports from the system, unit cost updates, and future inspections.

SECTION III

CITYWIDE
PAVEMENT CONDITION INDEX REPORT

A. Definitions
B. Condition Distribution Report
C. Calculation of PCI
D. Del Mar MyRoads®
E. Sample Distress Photos
F. 2023 Del Mar PCI Map
G. Name Order (A to Z)
H. PCI Order (0-100)

A. PAVEMENT CONDITION INDEX REPORT DEFINITIONS

Listed alphabetically by street name or PCI, these reports provide the City with a listing of pertinent inventory and pavement condition data for each inventory unit within the City's pavement network. The Pavement Condition Index (PCI) Report notes the names, limits, classification, dimension, surface type, and lane configuration of each inventory unit.

Detailed descriptions of the information appearing on this report are presented below:

BRANCH NAME - The name of each inventory unit appears in this column. Generally, the inventory unit name is taken directly from a street sign; however, where no street signs are posted, the name appearing on the network map is noted instead.

A sample set of street name suffix abbreviation definitions is presented below:

AVE -	Avenue	CT -	Court	CIR -	Circle
DR -	Drive	LN -	Lane	RD -	Road
ST -	Street	WY -	Way	EB -	East Bound
NB -	North Bound	SB -	South Bound	WB -	West Bound
TER -	Terrace	PL -	Place		

FROM - A description of the beginning limit of each inventory unit appears in this column. If the beginning limit exists between intersections, then the beginning limit description may be an address, post mile marker, or a distance from a known point of reference (e.g., "500' N/MAIN ST").

TO - A description of the ending limit of each inventory unit appears in this column. Like BEGIN limit, the END limit description may consist of a street name, an address, or a distance from a known point of reference. In the case of cul-de-sacs, or dead-ends, the END limit consists of and address, or a directional reference, such as "NORTH END," when no address is available.

STREET CLASSIFICATION - The codes for four street classifications are represented below. Basically, units are classified according the San Diego County MPAH and City classifications.

CODE	DESCRIPTION
A	Primary Arterial
C	Collector / Secondary
E	Local

SURFACE TYPE - A code was assigned to each inventory unit to describe surface type.

CODE	DESCRIPTION
AC	Asphalt Concrete
AAC	Asphalt Overlay over original AC construction
PCC	Portland Cement Concrete

LENGTH - The length of the section within each branch.

UNITS - The unit of measurement for the section length, typically linear feet (LF).

AREA - The area of each section within a branch.

UNITS - The unit of measurement for the section area, typically square feet (SF).

PCI - Pavement Condition Indices were calculated for inventory units based on severity and extent of distress manifestations observed within the inventory unit. Ranging between 0 and 100, a PCI of "100" corresponds to a pavement at the beginning of its life cycle, while a PCI of "0" corresponds to a badly deteriorated pavement which is at or near the end of its life cycle.

PCI CLIMATE, LOAD AND OTHER – reflects "Section Extrapolated Distress"; these values are shown within the Sample Distresses tab within the PCI window. Distresses are aggregated based on the type and severity level. For random samples, distress quantities are adjusted to reflect the extrapolated value based on the sections total area. Extrapolated distress deducts are classified as resulting from Climate, Load and Other distresses. The Distress Classification portion of the tab shows the "percent" of extrapolated distress deduct belonging to Climate, Load and Other (these %'s are shown within the PCI reports herein). These values are beneficial in that they support the decision whether to recommend preventative maintenance, overlay or reconstruction project for street sections.

Asphalt Distresses	Cause Classification	PCC Distresses	Cause Classification
Alligator cracking	Load	Blow up	Climate
Bleeding	Other	Corner break	Load
Block cracking	Climate	Divided Slab	Load
Bumps/Sags	Other	Durability cracking	Climate
Corrugation	Other	Faulting	Other
Depression	Other	Joint Seal cracking	Climate
Edge cracking	Load	Lane Shoulder Drop-off	Climate
Joint Reflection cracking	Climate	Linear cracking	Load
Lane Shoulder Drop-off	Climate	Small Patching	Other
L&T cracking	Climate	Large Patching	Other
Patch/Utility cut	Other	Polished Agg	Load
Polished Agg	Other	Popouts	Other
Pothole	Climate	Pumping	Other
RR Crossing	Other	Punchout	Load
Rutting	Load	RR Crossing	Other
Shoving	Other	Scaling/crazing	Other
Slippage cracking	Other	Shrinkage cracking	Other
Swell	Other	Corner Spall	Other
Raveling	Other	Joint Spall	Other
Weathering	Climate		

INSPECTION DATE – Represents the most recent inspection date performed on a given sections. PCI shown is historical in value and may not indicate what "today's" PCI is due to variance in time. Pavement deterioration calculations can be performed on a section(s) to demonstrate a deteriorated PCI based upon a new current date.

B. CONDITION DISTRIBUTION REPORT

This report depicts the distribution of the pavement condition throughout the street network by area.

The condition scheme ranges from "Very Good" to "Very Poor"; with a "Very Good" condition corresponding to a pavement at the beginning of its life cycle, and a "Very Poor" condition representing a badly deteriorated pavement with virtually no remaining life.

The table below shows the general description for each pavement condition:

Condition Description – PCI Range - Description

Condition Description	PCI Range	Description
Very Good	86-100	Minor to low distress, no significant distress; Low severity distresses with expection of utility patches in good condition or slight hairline cracks; minor weathering found
Good	75-85	Slight to moderately weathered, low to moderate distress severities, utility patching commonly found; moderate distress extents
Fair	60-74	Severly weathered or moderate levels of distress, generally limited to utility patching and climate related distress
Poor	41-59	Moderate to high distresses including load related types such as alligator cracking, greater distress extents
Very Poor	0-40	Severly distresses, large quanities of distortion or alligator cracking; Failure of the pavement, distress has surpassed tolerable rehabilitation limits

2023 City of Del Mar weighted average PCI is 76.1 (Good).

Figure 8 – Arterial/Collector Condition Distribution

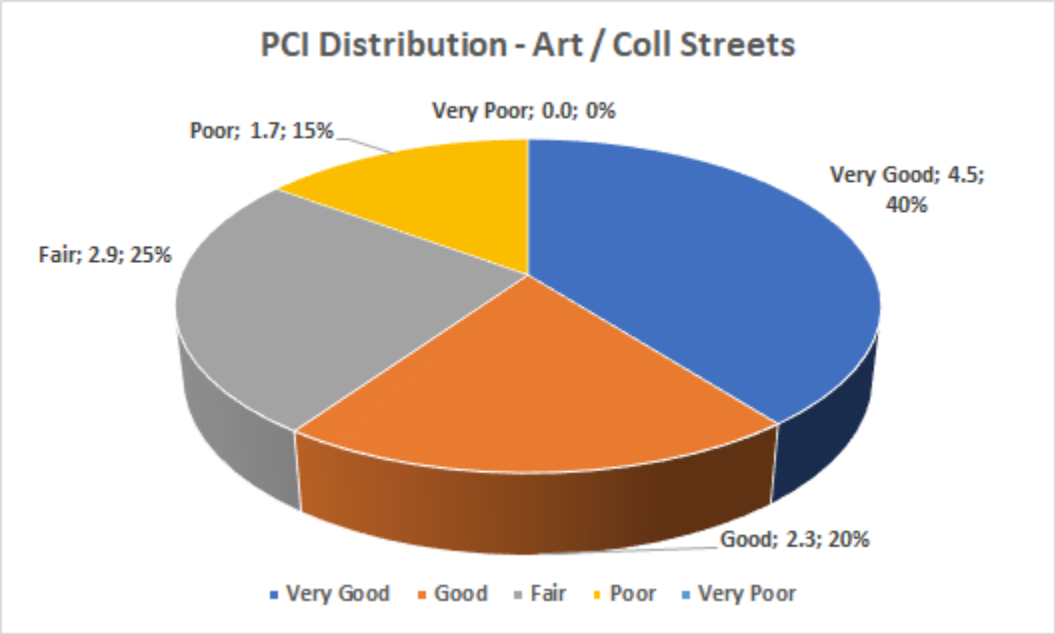


Figure 9 – Local Condition Distribution

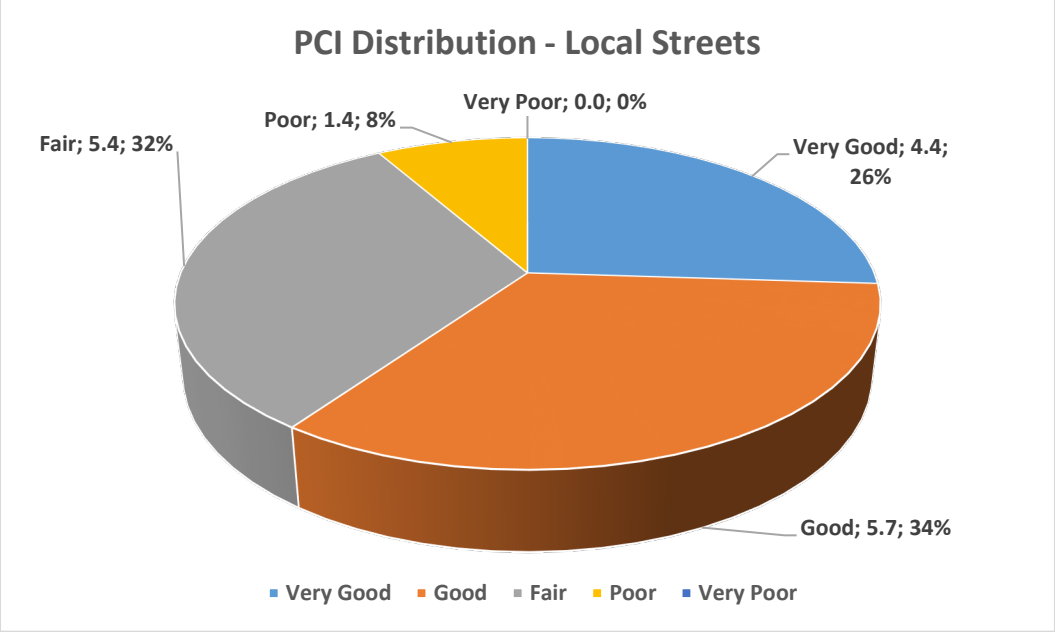
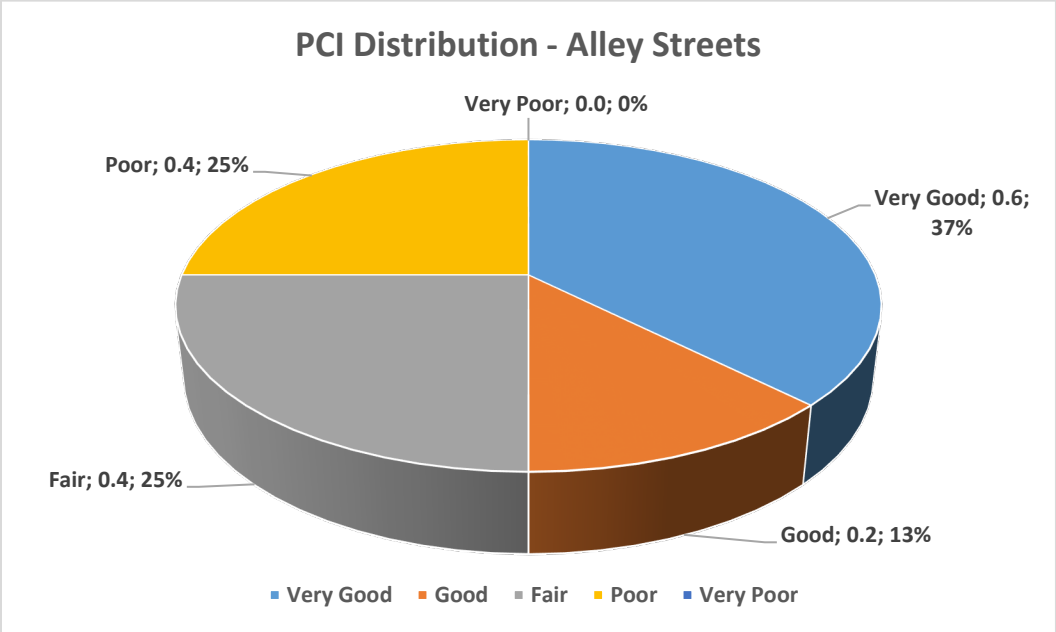


Figure 10 – Alley Condition Distribution



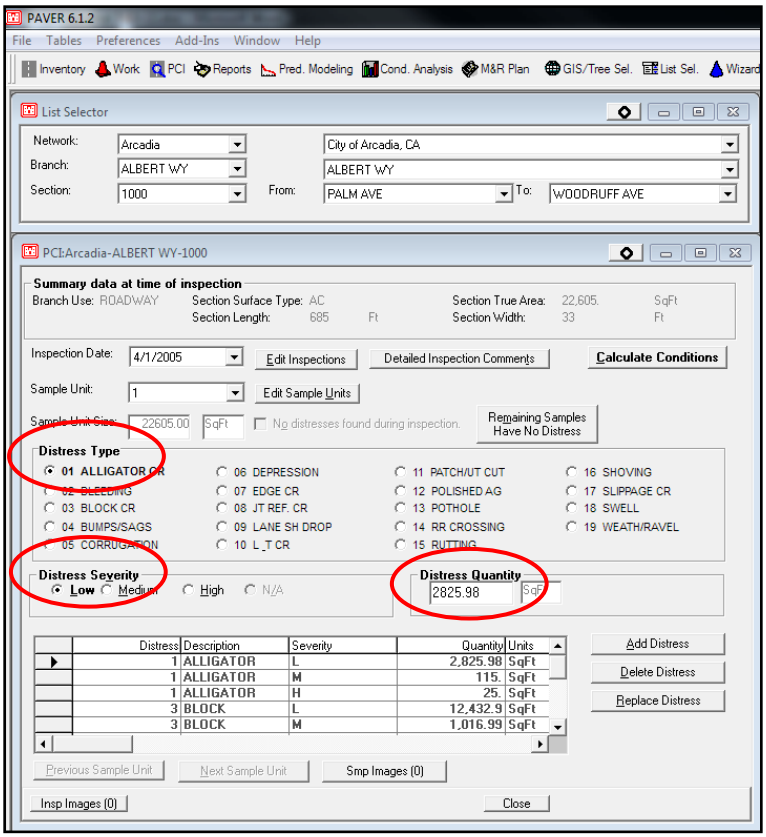
C. CALCULATION OF PCI

In order to calculate a Pavement Condition Index (PCI) value within MicroPAVER, specific street section data needs to be inputted into MicroPAVER to define the survey limits, asphalt types, pavement age and metrics. Pavement "sections" are pavement segments within the defined branch that have consistent pavement street classifications, construction/maintenance histories and use. Representative inspection samples are then selected and visually surveyed to locate distress data. This data is used to calculate the pavement sections Pavement Condition Index (PCI) which includes distress type, extent of the distress and its severity.

The PCI is a condition rating that ranges from 100 (pavement section that is in perfect condition) to 0 for a section that has structurally failed and deteriorated dramatically. The PCI is calculated from three major data entries from our inspectors:

1. Distress Type (one of 20 AC or 19 PCC types); these include alligator cracking, bleeding, block cracking, corrugations, depressions, long/trans cracking, patch/utility cut, potholes, rutting, weathering, raveling, etc.
2. Distress Quantity (the square footage, length or count of a specific distress)
3. Distress Severity (the level of severity determined for each distress found; low, medium or high)

Figure 11 – PCI Calculation Worksheet



D. DEL MAR MYROADS® WEB-PORTAL

Bucknam's MyRoads® is a great match for the Del Mar's PMP today and the future. **MyRoads® brings your PMP data to life within a dynamic dashboard!** Bucknam now provides all our PMP clients with a unique and agency driven "MyRoads®" web-portal that provides instantaneous access to your pavement management database. This "dashboard" allows users to toggle through individual sections via GIS mapping selections, zone queries, rank selection, PCI ranges, etc. to review all section metrics, latest/previous inspections, work histories generate filtered PCI reports and identify potential maintenance / rehabilitation costs based upon your unique needs.

Bucknam has shown below the current Del Mar MyRoads® account actively working! This tool will be accessed by City staff simply through a Username/Password methodology. As changes are made to the Del Mar PMP database the MyRoads® dataset is changed to reflect work history edits, PCI inspections and section changes.

In summary, MyRoads® allows the user perform the following dynamic functions:

- Query specific pavement segment(s) to view current/historic PCI, work history inspection;
- Filter for pavement sections within a defined PCI range, functional class, zone;
- Select a pavement section or grouping of section through the on-board GIS tool;
- Enter preventative maintenance, overlay & reconstruction unit costs to determine preliminary cost of maintenance and resulting citywide PCI
    - Display critical street / sidewalk / ROW assets along pavement section(s) that are critical to Engineering Bid development and solicitation (ADA ramps, utilities, manholes, trees, etc.
- Displays all final GIS project maps (PCI, work history, 5-yr forecasted maintenance, etc.)
- Bucknam will train Del Mar's staff on the simply use of the MyRoads® dashboard.

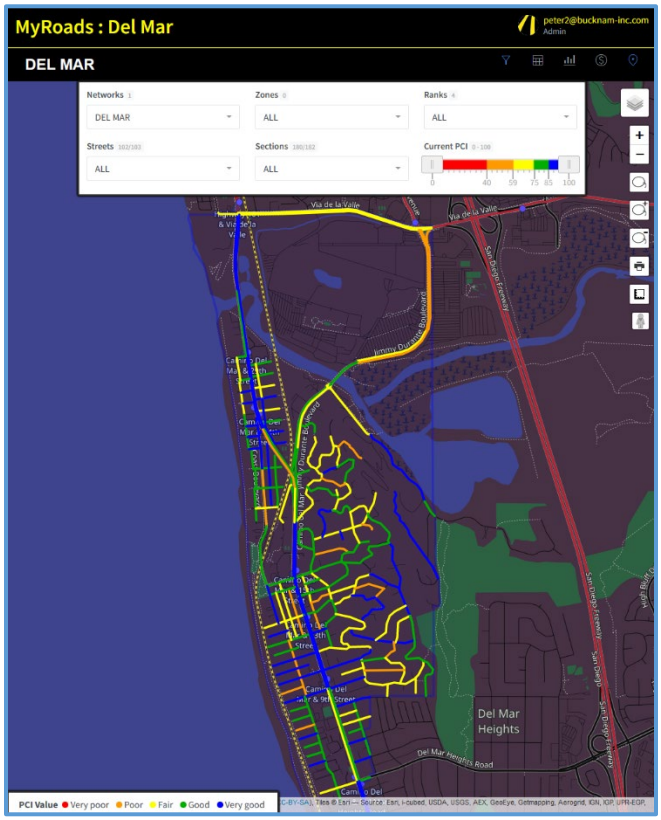


Figure 12 – Del Mar MyRoads® PMP Web-Portal

E. SAMPLE DISTRESS PHOTOS – RECOMMENDED TREATMENT (FIGURE 13)

Bucknam Infrastructure Group

1. Alligator Cracking

Cracks that form a chicken wire or alligator scale like pattern.

Low Severity: Thin parallel longitudinal cracks that may come together at certain points, but full alligator pattern is not present yet.
Medium Severity: Further development of cracks into alligator pattern. Cracks are starting to spall.
High Severity: Alligator pattern is heavily developed, and cracks are spalled to the point where individual pieces may become separated.

Typical Recommendation: Low severity, R&R – Patching, crack sealing; high severity R&R-overlay

2. Bleeding

Bleeding occurs when incorrectly mixed asphalt is applied and in hot weather the asphalt or tar rises to the surface.

Severity is determined by the amount of asphalt/tar present.

Typical Recommendation: Low severity, apply coarse sand; high severity, grind or heat planer excess, resurfacing may be necessary

3. Block Cracking

Longitudinal and transverse cracks that intersect to form smaller than 10x10 ft blocks. Creates uniform blocks with straight edges.

Low Severity: Cracking is less than 3/8 inches.
Medium Severity: Cracking between 3/8 and 3 inches.
High Severity: Cracking is over 3 inches.

Typical Recommendation: Low severity, crack sealing; high severity, R&R-overlay

4. Bumps and Sags

Small, localized, and linear upward or downward displacements of pavement, which can be caused by a variety of factors.

Severity is determined by the extent to which ride quality is diminished.

Typical Recommendation: R&R - Patching

5. Corrugation

Closely spaced Bumps and or Sags that form a washboard effect in the pavement.

Severity is determined by the extent to which ride quality is diminished.

Typical Recommendation: Low severity, R&R – Patching; high severity, R&R-overlay

6. Depression

Localized area of pavement with a lower elevation than the surrounding pavement.

Low Severity: depth of ½ to 1 inch.
Medium Severity: depth of 1 to 2 Inches.
High Severity: depth greater than 2 inches.

Typical Recommendation: R&R - Patching

7. Edge Cracking

Cracks that are parallel to the edge of the pavement that may cause a break up of pavement.

Low Severity: Low or Medium cracking with no breakup.
Medium Severity: Medium cracking with some breakup.
High Severity: Considerable breakup of pavement.

Typical Recommendation: R&R - Patching

8. Joint Reflective Cracking

Cracking that is reflected through AC pavement when it is overlaid on top of PCC pavement.

Low Severity: Cracking is less than 3/8 inches.
Medium Severity: Cracking between 3/8 and 3 inches.
High Severity: Cracking is over 3 inches.

Typical Recommendation: R&R - Overlay

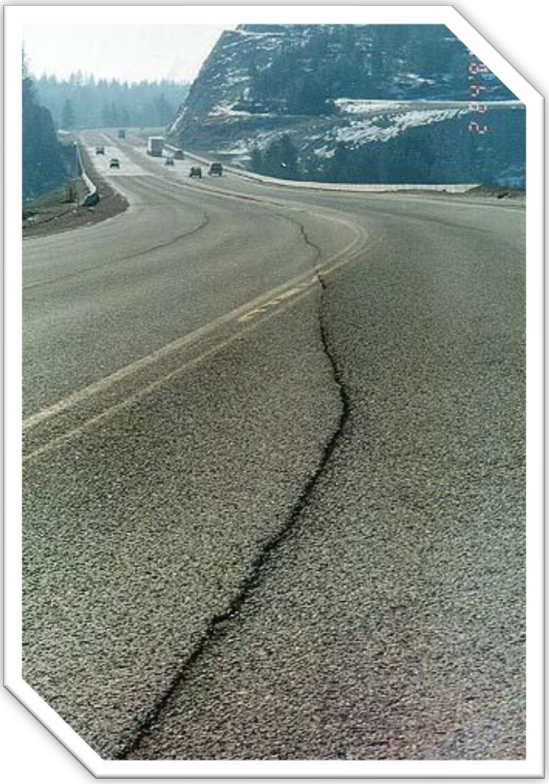
9. Lane / Shoulder Drop-off

Elevation change between pavement and shoulder.

Low Severity: Difference in elevation is between 1 and 2 inches.
Medium Severity: Difference in elevation is between 2 and 4 inches.
High Severity: Difference in elevation is over 4 inches.

Typical Recommendation: R&R – Patching or edge grinding

10. Linear & Transverse Cracking



Cracks that are generally either parallel or perpendicular to traffic.

Low Severity: Cracking is less than 3/8 inches.
Medium Severity: Cracking is between 3/8 and 3 inches.
High Severity: Cracking is over 3 inches.

Typical Recommendation: Low severity, crack sealing; high severity, R&R - Overlay

11. Patching

Area of pavement that has been replaced.

Severity is determined by the quality of the patch and the extent to which ride quality is diminished.

Typical Recommendation: R&R – structural / non-structural overlay

12. Polished Aggregate

Distress where traffic smooths the pavement surface so friction is diminished and cars can slide.

There are no Severity Levels for this distress.

13. Pothole

Severity Measured using the following Matrix.

	Average Diameter (in.) (mm)		
Maximum Depth Of Pothole (in.) (mm)	4 to 8 in. (100 to 200 mm)	8 to 18 in. (200 to 460 mm)	18 to 30 in. (460 to 760 mm)
1/2 to ≤ 1 in. (13 to 25 mm)	L	L	M
> 1 to ≤ 2 in. (25 to 50 mm)	L	M	H
> 2 in. (50 mm)	M	M	H

Typical Recommendation: low severity Pothole fill or R&R – Patching, high severity should be R&R-Overlay

14. RR Crossing

Pavement distresses caused by railroad crossings.

Severity is determined by the extent to which ride quality is diminished.

Typical Recommendation: R&R - Patching

15. Rutting

Linear depressions along wheel paths caused by traffic.

Low Severity: Depth is ¼ to ½ inches.
Medium Severity: Depth is ½ to 1 inch.
High Severity: is greater than 1 inch.

Typical Recommendation: Pavement with deeper ruts should be leveled and overlaid

16. Shoving

Displacement of pavement creating a "wave" over a more solid surface.

Severity is determined by the extent to which ride quality is diminished.

Typical Recommendation: R&R - Patching

17. Slippage Cracking

Half-moon shaped cracks where wheels cause pavement to slide.

Low Severity: Average crack width is less than 3/8 inch.
Medium Severity: Crack width is between 3/8 and 3/2 inches.
High Severity: Crack width is greater than 3/2 inches.

Typical Recommendation: R&R - Patching

18. Swell

Upward Bulges creating "wave-like" patterns.

Severity is determined by the extent to which ride quality is diminished.

Typical Recommendation: Low severity, R&R – Patching; high severity, R&R-overlay

19. Weathering

The wearing away of the asphalt binder.

Low Severity: Aggregate is starting to be exposed.
Medium Severity: Aggregate is exposed up to ¼ of its width.
High Severity: Aggregate is exposed to greater than ¼ of its width.

Typical Recommendation: naturally occurring, preventative maintenance

20. Raveling

The further weathering of asphalt so that coarse aggregate is separating out of pavement.

Medium Severity: Considerable loss of aggregate.

High Severity: Almost complete removal of coarse aggregate.

Typical Recommendation: Low severity, R&R – Patching; high severity, R&R-overlay

PORTLAND CEMENT CONCRETE (PCC)

1. Blowup

Buckling at cracks or joints where there is not enough room for slab expansion.

Severity is determined by the extent to which ride quality is diminished.

2. Corner Break

Crack close to corner of slab that creates a corner piece.

Low Severity: Crack is less than ½ inches wide.
Medium Severity: Crack is between ½ and 2 inches wide.
High Severity: Crack is wider than 2 inches.

3. Divided Slab

Slab that is broken up into four or more pieces by cracks.

Severity is determined by the following matrix.

Severity Of Majority Of Cracks	Number Of Pieces In Cracked Slab		
	4 to 5	6 to 8	More than 8
L	L	L	M
M	L	M	H
H	M	H	H

4. Durability Cracking

Pattern of cracks parallel to joints caused by freeze-thaw expansion of large aggregate.

Low Severity: Durability cracking covers less than 15 percent of slab.
Medium Severity: Durability cracking covers more than 15 percent of the slab.
High Severity: Durability cracking covers more than 15 percent of slab and most pieces have come out.

5. Faulting

Elevation Difference between slabs.

Low Severity: Elevation difference is between 1/8 and 3/8 inch.
Medium Severity: Elevation is between 3/8 and ¾ inch.
High Severity: Elevation is greater than ¾ inch.

6. Joint Seal Damage

Damage to sealant between joints that allows soil, rock, or water infiltration.

Low Severity: Joint sealant has only minor damage.
Medium Severity: Joint sealant is in fair condition. Water can infiltrate and vegetation may be present.
High Severity: Joint sealant is in poor condition. It may be missing and rocks may be present.

7. Lane / Shoulder Drop-Off

The Elevation difference between pavement and shoulder.

Low Severity: Elevation difference is between 1 and 2 inches.
Medium Severity: Elevation difference is between 2 and 4 inches.
High Severity: Elevation difference is greater than 4 inches.

8. Linear Cracking

Cracks that divide slab into two or three pieces.

Low Severity: Crack is less than ½ inch wide.
Medium Severity: Crack is between ½ and 2 inches wide.
High Severity: Crack is wider than 2 inches.

9. Large Patch

Patch that is larger than 5.5 sq ft.

Low Severity: Patch has little or no deterioration.
Medium Severity: Patch is moderately deteriorated.
High Severity: Patch is badly deteriorated.

10. Small Patch

Patch that is smaller than 5.5 sq ft.

Low Severity: Patch has little or no deterioration.
Medium Severity: Patch is moderately deteriorated.
High Severity: Patch is badly deteriorated.

11. Polished Aggregate

Distress where traffic smooths the pavement surface so friction is diminished and cars can slide.

There are no Severity Levels for this distress.

12. Popouts

Small piece of pavement that breaks loose from surface.

There are no Severity Levels for this distress, however popouts must cover 3 per sq. meter of the slab.

13. Pumping

Ejection of material from slab foundation through joints or cracks along with water.

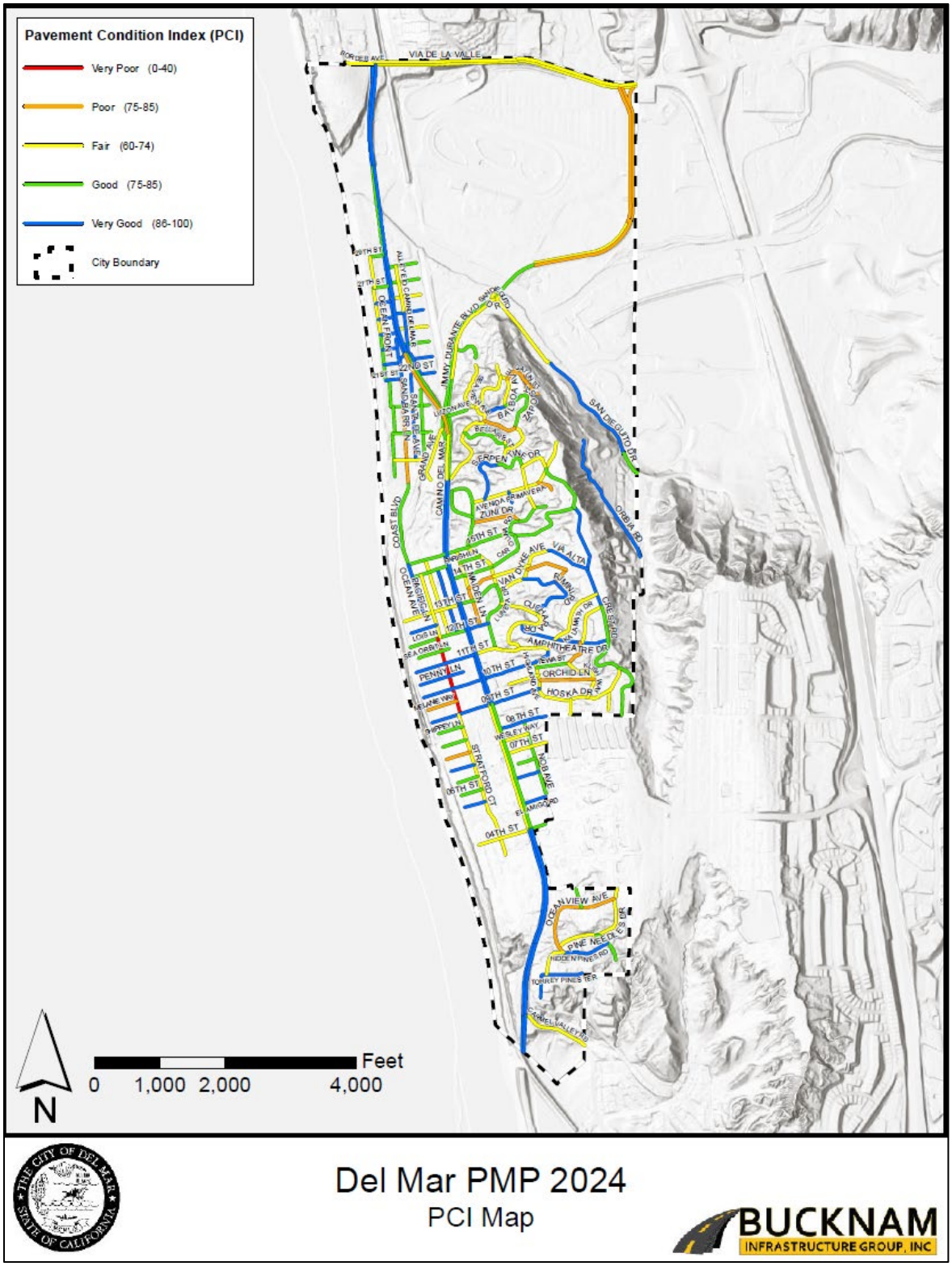
There are no Severity Levels for this distress.

14. Punchout

Localized area of a slab that is broken into many pieces.
Severity is determined by the following matrix.

Severity of Majority of Cracks	Number of Pieces		
	2 to 3	4 to 5	> 5
L	L	L	M
M	L	M	H
H	M	H	H

Figure 14 – 2023 Del Mar Pavement Condition Index (PCI) Map



BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
		Arterials / Collectors												
38	183S	CAMINO DEL MAR	COURT ST	JIMMY DURANTE BLVD	AC	A	0	1,415	26	36,790	54	67	12	21
38	59S	CAMINO DEL MAR	29TH ST	COURT ST	AC	A	0	1,552	31	48,112	93	91	0	9
38	60S	CAMINO DEL MAR	VIA DE LA VALLE	NORTH END OF CDM BRIDGE	AC	A	0	1,586	40	63,440	91	100	0	0
38	62S	CAMINO DEL MAR	JIMMY DURANTE BLVD	SEA VIEW AVE	AC	A	0	689	30	20,670	74	46	54	0
38	63S	CAMINO DEL MAR	SEA VIEW AVE	13TH ST	AC	A	0	1,932	26	50,232	91	53	47	0
38	64S	CAMINO DEL MAR	13TH ST	9TH ST	AC	A	0	1,609	26	41,834	97	100	0	0
38	65S	CAMINO DEL MAR	9TH ST	4TH ST	AC	A	0	2,008	30	60,240	70	52	30	18
38	66S	CAMINO DEL MAR	4TH ST	1090' N OF CARMEL VALLEY RD	AC	A	0	1,814	32	58,048	94	100	0	0
38	67S	CAMINO DEL MAR	NORTH END OF CDM BRIDGE	29TH ST	AC	A	0	1,363	22	29,986	81	59	18	23
38	68S	CAMINO DEL MAR	1090' N OF CARMEL VALLEY RD	CARMEL VALLEY RD	AC	A	0	1,088	28	30,464	95	100	0	0
38	69N	CAMINO DEL MAR	SEA VIEW AVE	JIMMY DURANTE BLVD	AC	A	0	686	26	17,836	76	60	31	9
38	70N	CAMINO DEL MAR	NORTH END OF CDM BRIDGE	VIA DE LA VALLE	AC	A	0	1,564	40	62,560	93	93	0	7
38	71N	CAMINO DEL MAR	29TH ST	NORTH END OF CDM BRIDGE	AC	A	0	1,363	22	29,986	89	93	0	7
38	72N	CAMINO DEL MAR	COURT ST	29TH ST	AC	A	0	1,544	32	49,408	91	59	26	15
38	73N	CAMINO DEL MAR	JIMMY DURANTE BLVD	COURT ST	AC	A	0	1,425	26	37,050	77	100	0	0
38	74N	CAMINO DEL MAR	13TH ST	SEA VIEW AVE	AC	A	0	1,918	27	51,786	93	72	28	0
38	75N	CAMINO DEL MAR	9TH ST	13TH ST	AC	A	0	1,611	26	41,886	98	100	0	0
38	76N	CAMINO DEL MAR	4TH ST	9TH ST	AC	A	0	2,007	35	70,245	78	90	5	5
38	77N	CAMINO DEL MAR	1090' N OF CARMEL VALLEY RD	4TH ST	AC	A	0	1,823	32	58,336	90	77	0	23
38	78N	CAMINO DEL MAR	CARMEL VALLEY RD	1090' N OF CARMEL VALLEY RD	AC	A	0	1,087	32	34,784	89	100	0	0
39	61S	CAMINO DEL MAR ON RAMP	JIMMY DURANTE BLVD	CAMINO DEL MAR	AC	A	1	498	16	7,968	79	46	52	2
40	79	CARMEL VALLEY RD	TORREY PINES RD N	CITY BOUNDARY	AC	A	0	1,052	42	44,184	65	75	15	10
42	81	COAST BLVD	20TH ST	365' S OF 18TH ST	AC	C	0	1,187	52	59,350	59	33	63	4
42	82	COAST BLVD	365' S OF 18TH ST	15TH ST	AC	C	0	1,276	40	51,040	79	19	81	0
42	83	COAST BLVD	20TH ST	CDS	AC	C	0	1,049	52	54,548	93	100	0	0
48	92	DEL MAR HEIGHTS RD	CAMINO DEL MAR	CITY BOUNDARY	AC	A	0	253	78	19,734	80	66	5	29
56	101S	JIMMY DURANTE BLVD	SAN DIEGUITO DR	RR MAINTENANCE BLDG	AC	A	0	1,478	20	29,560	81	45	54	1
56	102N	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	VIA DE LA VALLE	AC	A	0	2,377	40	95,080	50	18	68	14
56	103S	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	FAIR GROUNDS SOUTH ENTRANCE	AC	A	0	1,634	40	65,360	62	29	69	2
56	104N	JIMMY DURANTE BLVD	CAMINO DEL MAR	RR MAINTENANCE BLDG	AC	A	0	871	16	13,936	77	36	43	21
56	105S	JIMMY DURANTE BLVD	RR MAINTENANCE BLDG	CAMINO DEL MAR	AC	A	0	789	16	12,624	84	28	61	11
56	106	JIMMY DURANTE BLVD	FAIR GROUNDS SOUTH ENTRANCE	SAN DIEGUITO DR	AC	A	0	748	48	35,904	75	17	73	10
56	107S	JIMMY DURANTE BLVD	VIA DE LA VALLE	FAIR GROUNDS MAIN ENTRANCE	AC	A	0	2,091	42	87,822	50	20	64	16
56	108N	JIMMY DURANTE BLVD	FAIR GROUNDS SOUTH ENTRANCE	FAIR GROUNDS MAIN ENTRANCE	AC	A	0	1,699	40	67,960	49	20	73	7
56	109N	JIMMY DURANTE BLVD	RR MAINTENANCE BLDG	SAN DIEGUITO DR	AC	A	0	1,452	16	23,232	73	26	74	0
67	127S	NORTH TORREY PINES RD	CARMEL VALLEY RD	CITY BOUNDARY	AC	C	0	550	29	15,950	96	100	0	0
67	128N	NORTH TORREY PINES RD	CITY BOUNDARY	CARMEL VALLEY RD	AC	C	0	577	28	16,156	94	100	0	0
73	138	PACIFIC LN	12TH ST	ALLEY S/O 15TH ST	AC	C	0	1,017	19	19,323	66	59	27	14
81	146	RIMINI RD	CUCHARA DR	UMATULLA DR	AC	C	0	893	22	19,646	92	22	0	78
81	147	RIMINI RD	UMATILLA DR	VAN DYKE AVE	AC	C	0	526	22	11,572	85	47	28	25
98	171E	VIA DE LA VALLE	DEL MAR DOWNS DR	CITY BOUNDARY	AC	A	0	1,879	30	56,370	60	12	86	2
98	172E	VIA DE LA VALLE	CAMINO DEL MAR	DEL MAR DOWNS DR	AC	A	0	2,189	30	65,670	74	33	56	11
98	173W	VIA DE LA VALLE	DEL MAR DOWNS DR	CAMINO DEL MAR	AC	A	0	2,189	30	65,670	74	18	43	39
98	174W	VIA DE LA VALLE	CITY BOUNDARY	DEL MAR DOWNS DR	AC	A	0	1,877	30	56,310	71	20	79	1

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
		Locals												
1	1	4TH ST	CAMINO DEL MAR	CDS	AC	E	2	821	32	26,272	74	57	40	3
2	2	6TH ST	STRATFORD CT	CDS	AC	E	2	829	28	23,212	83	31	23	46
3	3	7TH ST	CDS	CITY BOUNDARY	AC	E	2	569	36	20,484	66	8	89	3
3	4	7TH ST	STRATFORD CT	CDS	AC	E	2	379	36	13,644	92	39	61	0
79	144	8TH ST	HOSKA DR	CITY BOUNDARY	AC	E	2	240	32	7,680	68	69	17	14
4	5	8TH ST	CAMINO DEL MAR	CITY BOUNDARY	AC	E	2	735	28	20,580	86	74	0	26
4	6	8TH ST	STRATFORD CT	CDS	AC	E	2	386	28	10,808	82	18	11	71
5	7	9TH ST	CAMINO DEL MAR	CDS	AC	E	2	948	32	30,336	94	83	0	17
5	8	9TH ST	CAMINO DEL MAR	HIGHLAND AVE	AC	E	2	782	38	29,716	92	100	0	0
6	10	10TH ST	CAMINO DEL MAR	CDS	AC	E	2	947	32	30,304	86	24	0	76
6	9	10TH ST	CAMINO DEL MAR	11TH ST	AC	E	2	1,125	30	33,750	86	52	0	48
7	11	11TH ST	CAMINO DEL MAR	10TH ST	AC	E	2	1,177	30	35,310	72	24	63	13
7	12	11TH ST	CAMINO DEL MAR	CDS	AC	E	2	951	35	33,285	91	56	0	44
8	13	12TH ST	CAMINO DEL MAR	CDS	AC	E	0	922	35	32,270	80	18	82	0
8	14	12TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	0	336	32	10,752	87	55	31	14
9	15	13TH ST	CAMINO DEL MAR	CDS	AC	E	2	880	26	22,880	63	22	78	0
9	16	13TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	659	28	18,452	83	35	22	43
10	17	14TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	624	35	21,840	76	29	59	12
11	18	15TH ST	CREST RD	CAROLINA RD	AC	E	2	1,272	22	33,072	76	37	25	38
11	19	15TH ST	LUNETA DR	CAROLINA RD	AC	E	2	714	28	19,992	81	43	38	19
11	20	15TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	353	33	11,649	80	49	47	4
11	21	15TH ST	COAST BLVD	CAMINO DEL MAR	AC	E	2	601	35	21,035	84	16	63	21
12	22	18TH ST	OCEAN FRONT	SANTA FE AVE	AC	E	2	453	22	9,966	72	37	50	13
13	23	19TH ST	OCEAN FRONT	CDS	AC	E	2	600	28	16,800	76	27	71	2
14	24	20TH ST	OCEAN FRONT	CDS	AC	E	2	588	26	15,288	78	39	56	5
15	25	21ST ST	COURT ST	CDS	AC	E	2	211	32	6,752	85	46	0	54
15	26	21ST ST	OCEAN FRONT	COAST BLVD	AC	E	2	251	28	7,028	91	100	0	0
16	27	22ND ST	COURT ST	CDS	AAC	E	2	298	34	10,132	90	100	0	0
16	28	22ND ST	OCEAN FRONT	COAST BLVD	AC	E	2	250	16	4,000	94	100	0	0
17	29	23RD ST	CAMINO DEL MAR	CDS	AC	E	2	402	35	14,070	84	99	0	1
17	30	23RD ST	OCEAN FRONT	COAST BLVD	AC	E	2	238	21	4,998	95	100	0	0
18	31	24TH ST	CAMINO DEL MAR	CDS	AC	E	2	457	27	11,425	69	27	36	37
18	32	24TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	250	30	7,500	100	0	0	0
19	33	25TH ST	CAMINO DEL MAR	CDS	AC	E	2	439	28	12,292	91	100	0	0
19	34	25TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	238	27	6,426	92	89	0	11
20	35	26TH ST	CAMINO DEL MAR	CDS	AC	E	2	429	32	13,728	62	23	43	34
20	36	26TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	238	20	4,760	94	100	0	0
21	37	27TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	239	26	6,214	83	51	32	17
21	38	27TH ST	CAMINO DEL MAR	CDS	AC	E	2	445	28	12,460	80	65	26	9
22	39	28TH ST	CAMINO DEL MAR	CDS	AC	E	2	443	28	12,404	77	28	26	46
23	40	29TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	213	32	6,816	77	27	70	3
33	52	AMPHITHEATRE DR	CREST RD	CUCHARA DR	AC	E	2	1,470	28	41,160	89	61	0	39
34	53	AVENIDA PRIMAVERA	LUNETA DR	SERPENTINE DR	AC	E	2	1,307	22	28,754	67	17	67	16
34	54	AVENIDA PRIMAVERA	CREST RD	SERPENTINE DR	AC	E	2	831	20	16,620	76	26	23	51
35	55	BALBOA AVE	ZAPO ST	SEA VIEW AVE	AC	E	2	362	18	6,516	93	100	0	0
35	56	BALBOA AVE	CDS	ZAPO ST	AC	E	2	723	17	12,291	70	51	47	2

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
36	57	BELLAIRE ST	SEA VIEW AVE	ZAPO ST	AC	E	2	814	18	14,652	78	39	30	31
37	58	BORDER AVE	CAMINO DEL MAR	CITY BOUNDARY	AC	E	0	420	38	15,960	73	37	45	18
41	80	CAROLINA RD	LUNETA DR	ZUNI DR	AC	E	0	1,066	24	25,584	83	62	38	0
43	84	COURT ST	COAST BLVD	21ST ST	AC	E	0	605	18	10,890	94	100	0	0
44	85	CREST RD	KLISH WAY	15TH ST	AC	E	0	1,618	23	37,214	87	70	19	11
44	86	CREST RD	HOSKA DR	KLISH WAY	AC	E	0	1,353	24	32,472	79	17	74	9
44	87	CREST RD	HOSKA DR	CITY BOUNDARY	AC	E	0	907	27	24,489	83	18	50	32
45	88	CUCHARA DR	LUNETA DR	RIMINI RD	AC	E	0	585	20	11,700	66	24	68	8
45	89	CUCHARA DR	11TH ST	RIMINI RD	AC	E	0	1,028	27	27,756	61	33	21	46
46	90	CULEBRA ST	SEA VIEW AVE	ZAPO ST	AC	E	0	527	20	10,540	59	22	58	20
47	91	DAVID WAY	JIMMY DURANTE BLVD	CDS	AC	E	0	473	21	9,933	78	27	71	2
49	93	EL AMIGO RD	CAMINO DEL MAR	CITY BOUNDARY	AC	E	0	361	26	9,386	98	100	0	0
50	94	FOREST WAY	ZUNI DR	SERPENTINE DR	AC	E	0	660	22	14,520	68	15	34	51
51	95	GATUN ST	BALBOA AVE	CDS	AC	E	0	680	21	14,280	53	23	40	37
52	96	GRAND AVE	CAMINO DEL MAR ON RAMP	CDS	AC	E	0	845	18	15,210	73	66	33	1
53	97	HIDDEN PINES LN	PINE NEEDLES DR	CDS	AC	E	0	531	22	11,682	77	40	23	37
182	98	HIDDEN PINES RD	OCEAN VIEW AVE	HIDDEN PINES LN	AC	E	0	716	30	21,480	94	69	0	31
54	99	HIGHLAND AVE	HOSKA DR	10TH ST	AC	E	0	573	22	12,606	69	42	13	45
55	100	HOSKA DR	HIGHLAND AVE	CREST RD	AC	E	0	1,400	29	40,600	61	24	71	5
57	110	KALAMATH DR	CREST RD	AMPHITHEATRE DR	AC	E	0	1,009	28	28,252	72	16	31	53
58	111	KLISH WAY	AMPHITHEATRE DR	CREST RD	AC	E	0	691	30	20,730	73	29	71	0
58	112	KLISH WAY	KLISH WAY	AMPHITHEATRE DR	AC	E	0	426	25	10,650	57	7	49	44
58	113	KLISH WAY	HOSKA DR	TEWA ST	AC	E	0	816	20	16,320	62	38	32	30
59	114	LA AMATISTA RD	CAMINO DEL MAR	NOB AVE	AC	E	0	379	23	8,717	93	67	0	33
61	116	LOIS LN	PACIFIC LN	CDS	AC	E	0	416	20	8,320	89	71	25	4
62	117	LUNETA DR	15TH ST	STRATFORD WAY	AC	E	0	1,146	22	25,212	76	51	0	49
62	118	LUNETA DR	13TH ST	15TH ST	AC	E	0	763	24	18,312	62	30	35	35
62	119	LUNETA DR	11TH ST	13TH ST	AC	E	0	1,094	24	26,256	85	63	31	6
63	120	LUZON AVE	SEA VIEW AVE	BALBOA AVE	AC	E	0	725	16	11,600	73	43	47	10
63	121	LUZON AVE	JIMMY DURANTE BLVD	CDS	AC	E	0	285	18	5,130	75	15	41	44
64	122	MAIDEN LN	15TH ST	ALLEY N/O 13TH ST	AC	E	0	604	16	9,664	63	52	42	6
64	123	MAIDEN LN	12TH ST	ALLEY N/O 13TH ST	AC	E	0	604	16	9,664	56	25	72	3
65	124	MELANIE WAY	STRATFORD CT	CDS	AC	E	0	471	16	7,536	53	23	71	6
66	125	NOB AVE	8TH ST	CITY BOUNDARY	AC	E	0	1,148	29	33,292	76	43	57	0
66	126	NOB AVE	OCEAN VIEW AVE	CITY BOUNDARY	AC	E	0	300	26	7,800	82	16	0	84
68	129	OCEAN AVE	13TH ST	15TH ST	AC	E	0	806	24	19,344	86	26	57	17
69	130	OCEAN FRONT	27TH ST	24TH ST	AC	E	0	718	18	12,924	62	37	52	11
69	131	OCEAN FRONT	24TH ST	21ST ST	AC	E	0	705	16	11,280	85	56	0	44
69	132	OCEAN FRONT	21ST ST	CDS	AC	E	0	1,483	16	23,728	77	43	14	43
69	133	OCEAN FRONT	29TH ST	27TH ST	AC	E	0	478	18	8,604	73	46	34	20
70	134	OCEAN VIEW AVE	HIDDEN PINES RD	PINE NEEDLES DR	AC	E	0	1,574	30	47,220	56	26	65	9
70	135	OCEAN VIEW AVE	TORREY PINES TER	HIDDEN PINES RD	AC	E	0	503	26	13,078	70	28	35	37
99	175	OCEAN VIEW AVE W	TORREY PINES TER	CDS	AC	E	0	328	19	6,232	92	100	0	0
71	136	ORCHID LN	HIGHLAND AVE	KLISH WAY	AC	E	0	834	16	13,344	53	29	11	60
72	137	ORIBIA RD	CITY BOUNDARY	CDS	AC	E	0	2,090	16	33,440	90	29	2	69
74	139	PARISH LN	MAIDEN LN	LUNETA DR	AC	E	0	311	20	6,220	75	26	30	44
76	141	PENNY LN	CDS	CDS	AC	E	0	698	20	13,960	93	68	32	0
77	142	PINE NEEDLES DR	OCEAN VIEW AVE	OCEAN VIEW AVE	AC	E	0	1,518	28	42,504	71	27	33	40

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
78	143	PRIMAVERA LN	AVENIDA PRIMAVERA	CDS	AC	E	0	172	13	2,236	91	77	0	23
80	145	RACETRACK VIEW DR	SAN DIEGUITO DR	CITY BOUNDARY	AC	E	0	371	22	8,162	82	19	50	31
82	148	SAN DIEGUITO DR	JIMMY DURANTE BLVD	GRAND AVE OVERLOOK	AC	E	0	1,543	24	37,032	72	45	43	12
82	149	SAN DIEGUITO DR	GRAND AVE OVERLOOK	RACTRACK VIEW DR	AC	E	0	1,838	22	40,436	88	29	37	34
84	151	SANTA FE AVE	18TH ST	CDS	AC	E	0	1,059	28	29,652	81	82	5	13
85	152	SEA CLIFF WAY	STRATFORD CT	CDS	AC	E	0	331	20	6,620	95	100	0	0
86	153	SEA ORBIT LN	CDS	CDS	AC	E	0	502	18	9,036	78	57	28	15
87	154	SEA VIEW AVE	CAMINO DEL MAR	CULEBRA ST	AC	E	0	1,321	16	21,136	72	14	34	52
87	155	SEA VIEW AVE	CULEBRA ST	CDS	AC	E	0	1,056	18	19,008	67	33	54	13
88	156	SERPENTINE DR	AVENIDA PRIMAVERA	ZAPO ST	AC	E	0	881	20	17,620	91	72	0	28
88	157	SERPENTINE DR	ZAPO ST	FOREST WAY	AC	E	0	554	20	11,080	75	52	10	38
88	158	SERPENTINE DR	AVENIDA PRIMAVERA	CDS	AC	E	0	448	20	8,960	69	12	65	23
88	159	SERPENTINE DR	FOREST WAY	AVENIDA PRIMAVERA	AC	E	0	510	18	9,180	65	25	33	42
89	160	SHERRIE LN	STRATFORD CT	CDS	AC	E	0	331	20	6,620	85	39	0	61
90	161	SHIPPEY LN	STRATFORD CT	CDS	AC	E	0	381	20	7,620	83	31	0	69
91	162	STRATFORD CT	12TH	15TH	AC	E	0	1,205	25	30,125	70	4	74	22
91	163	STRATFORD CT	12TH ST	9TH ST	AC	E	0	1,206	28	33,768	42	25	48	27
91	164	STRATFORD CT	9TH ST	SEA FOREST CT	AC	E	0	2,279	37	84,323	69	32	45	23
92	165	STRATFORD WAY	LUNETA DR	LUNETA DR	AC	E	0	592	18	10,656	76	59	36	5
93	166	TEWA ST	HIGHLAND AVE	KLISH WAY	AC	E	0	492	28	13,776	79	55	0	45
94	167	TORREY PINES TER	OCEAN VIEW AVE W	CDS	AC	E	0	651	24	15,624	92	64	36	0
95	168	UMATILLA RD	RIMINI RD	VAN DYKE AVE	AC	E	0	258	20	5,160	57	27	31	42
96	169	VAN DYKE AVE	LUNETA DR	VIA ALTA	AC	E	0	1,058	28	29,624	71	27	61	12
97	170	VIA ALTA	VAN DYKE AVE	CREST RD	AC	E	0	680	28	19,040	90	45	0	55
100	176	WESLEY WAY	CAMINO DEL MAR	NOB AVE	AC	E	0	382	20	7,640	73	57	0	43
101	177	ZAPO ST	CULEBRA ST	BALBOA AVE	AC	E	0	915	22	20,130	80	55	24	21
101	178	ZAPO ST	SERPENTINE DR	CULEBRA ST	AC	E	0	807	20	16,140	70	8	24	68
102	179	ZUNI DR	LUNETA DR	CAROLINA RD	AC	E	0	753	20	15,060	59	19	23	58
102	180	ZUNI DR	CAROLINA RD	CDS	AC	E	0	521	16	8,336	85	63	0	37
102	181	ZUNI DR	AVENIDA PRIMAVERA	CDS	AC	E	0	261	20	5,220	56	13	71	16
		Alleys												
24	A200	ALLEY E/O CAMINO DEL MAR	25TH ST	28TH ST	AC	O	1	722	20	14,440	64	21	67	12
24	A201	ALLEY E/O CAMINO DEL MAR	COURT ST	25TH ST	AC	O	1	628	20	12,560	94	86	0	14
26	A205	ALLEY N/O 13TH ST	MAIDEN LN	LUNETA DR	AC	O	1	444	18	7,992	56	60	39	1
26	A207	ALLEY N/O 13TH ST	VAN DYKE AVE	LUNETA DR	AC	O	1	559	18	10,062	60	9	72	19
27	A202	ALLEY N/O BELLAIRE ST	BELLAIRE ST	CDS	AC	O	1	105	19	1,995	60	28	59	13
28	A206	ALLEY N/O UMATILLA RD	VAN DYKE AVE	UMATILLA DR	AC	O	1	633	13	8,229	50	21	45	34
30	A208	ALLEY S/O 10TH ST	HIGHLAND AVE	CDS	AC	O	1	473	18	8,514	62	92	0	8
31	A204	ALLEY S/O 15TH ST	OCEAN AVE	CAMINO DEL MAR	AC	O	1	573	18	10,314	84	49	51	0
29	A210	ALLEY S/O 7TH ST	NOB AVE	CDS	AC	O	1	275	20	5,500	83	55	45	0
103	A203	DEL MAR LN	ALL S/O 15T ST	12TH ST	AC	O	0	1,018	18	18,324	53	24	44	32
32	A209	HOSKA LN	HOSKA DR	CDS	AC	O	1	305	16	4,880	69	10	6	84
60	115	LITTLE ORPHAN ALY	STRATFORD CT	CDS	AC	O	0	384	20	7,680	52	45	41	14
83	150	SAND BARR LN	18TH ST	CDS	PCC	O	0	1,319	14	18,466	100	0	0	100

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
		Arterials / Collectors												
56	108N	JIMMY DURANTE BLVD	FAIR GROUNDS SOUTH ENTRANCE	FAIR GROUNDS MAIN ENTRANCE	AC	A	0	1,699	40	67,960	49	20	73	7
56	107S	JIMMY DURANTE BLVD	VIA DE LA VALLE	FAIR GROUNDS MAIN ENTRANCE	AC	A	0	2,091	42	87,822	50	20	64	16
56	102N	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	VIA DE LA VALLE	AC	A	0	2,377	40	95,080	50	18	68	14
38	183S	CAMINO DEL MAR	COURT ST	JIMMY DURANTE BLVD	AC	A	0	1,415	26	36,790	54	67	12	21
42	81	COAST BLVD	20TH ST	365' S OF 18TH ST	AC	C	0	1,187	52	59,350	59	33	63	4
98	171E	VIA DE LA VALLE	DEL MAR DOWNS DR	CITY BOUNDARY	AC	A	0	1,879	30	56,370	60	12	86	2
56	103S	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	FAIR GROUNDS SOUTH ENTRANCE	AC	A	0	1,634	40	65,360	62	29	69	2
40	79	CARMEL VALLEY RD	TORREY PINES RD N	CITY BOUNDARY	AC	A	0	1,052	42	44,184	65	75	15	10
73	138	PACIFIC LN	12TH ST	ALLEY S/O 15TH ST	AC	C	0	1,017	19	19,323	66	59	27	14
38	65S	CAMINO DEL MAR	9TH ST	4TH ST	AC	A	0	2,008	30	60,240	70	52	30	18
98	174W	VIA DE LA VALLE	CITY BOUNDARY	DEL MAR DOWNS DR	AC	A	0	1,877	30	56,310	71	20	79	1
56	109N	JIMMY DURANTE BLVD	RR MAINTENANCE BLDG	SAN DIEGUITO DR	AC	A	0	1,452	16	23,232	73	26	74	0
98	172E	VIA DE LA VALLE	CAMINO DEL MAR	DEL MAR DOWNS DR	AC	A	0	2,189	30	65,670	74	33	56	11
98	173W	VIA DE LA VALLE	DEL MAR DOWNS DR	CAMINO DEL MAR	AC	A	0	2,189	30	65,670	74	18	43	39
38	62S	CAMINO DEL MAR	JIMMY DURANTE BLVD	SEA VIEW AVE	AC	A	0	689	30	20,670	74	46	54	0
56	106	JIMMY DURANTE BLVD	FAIR GROUNDS SOUTH ENTRANCE	SAN DIEGUITO DR	AC	A	0	748	48	35,904	75	17	73	10
38	69N	CAMINO DEL MAR	SEA VIEW AVE	JIMMY DURANTE BLVD	AC	A	0	686	26	17,836	76	60	31	9
38	73N	CAMINO DEL MAR	JIMMY DURANTE BLVD	COURT ST	AC	A	0	1,425	26	37,050	77	100	0	0
56	104N	JIMMY DURANTE BLVD	CAMINO DEL MAR	RR MAINTENANCE BLDG	AC	A	0	871	16	13,936	77	36	43	21
38	76N	CAMINO DEL MAR	4TH ST	9TH ST	AC	A	0	2,007	35	70,245	78	90	5	5
42	82	COAST BLVD	365' S OF 18TH ST	15TH ST	AC	C	0	1,276	40	51,040	79	19	81	0
39	61S	CAMINO DEL MAR ON RAMP	JIMMY DURANTE BLVD	CAMINO DEL MAR	AC	A	1	498	16	7,968	79	46	52	2
48	92	DEL MAR HEIGHTS RD	CAMINO DEL MAR	CITY BOUNDARY	AC	A	0	253	78	19,734	80	66	5	29
56	101S	JIMMY DURANTE BLVD	SAN DIEGUITO DR	RR MAINTENANCE BLDG	AC	A	0	1,478	20	29,560	81	45	54	1
38	67S	CAMINO DEL MAR	NORTH END OF CDM BRIDGE	29TH ST	AC	A	0	1,363	22	29,986	81	59	18	23
56	105S	JIMMY DURANTE BLVD	RR MAINTENANCE BLDG	CAMINO DEL MAR	AC	A	0	789	16	12,624	84	28	61	11
81	147	RIMINI RD	UMATILLA DR	VAN DYKE AVE	AC	C	0	526	22	11,572	85	47	28	25
38	71N	CAMINO DEL MAR	29TH ST	NORTH END OF CDM BRIDGE	AC	A	0	1,363	22	29,986	89	93	0	7
38	78N	CAMINO DEL MAR	CARMEL VALLEY RD	1090' N OF CARMEL VALLEY RD	AC	A	0	1,087	32	34,784	89	100	0	0
38	77N	CAMINO DEL MAR	1090' N OF CARMEL VALLEY RD	4TH ST	AC	A	0	1,823	32	58,336	90	77	0	23
38	60S	CAMINO DEL MAR	VIA DE LA VALLE	NORTH END OF CDM BRIDGE	AC	A	0	1,586	40	63,440	91	100	0	0
38	72N	CAMINO DEL MAR	COURT ST	29TH ST	AC	A	0	1,544	32	49,408	91	59	26	15
38	63S	CAMINO DEL MAR	SEA VIEW AVE	13TH ST	AC	A	0	1,932	26	50,232	91	53	47	0
81	146	RIMINI RD	CUCHARA DR	UMATULLA DR	AC	C	0	893	22	19,646	92	22	0	78
38	70N	CAMINO DEL MAR	NORTH END OF CDM BRIDGE	VIA DE LA VALLE	AC	A	0	1,564	40	62,560	93	93	0	7
38	59S	CAMINO DEL MAR	29TH ST	COURT ST	AC	A	0	1,552	31	48,112	93	91	0	9
38	74N	CAMINO DEL MAR	13TH ST	SEA VIEW AVE	AC	A	0	1,918	27	51,786	93	72	28	0
42	83	COAST BLVD	20TH ST	CDS	AC	C	0	1,049	52	54,548	93	100	0	0
38	66S	CAMINO DEL MAR	4TH ST	1090' N OF CARMEL VALLEY RD	AC	A	0	1,814	32	58,048	94	100	0	0
67	128N	NORTH TORREY PINES RD	CITY BOUNDARY	CARMEL VALLEY RD	AC	C	0	577	28	16,156	94	100	0	0
38	68S	CAMINO DEL MAR	1090' N OF CARMEL VALLEY RD	CARMEL VALLEY RD	AC	A	0	1,088	28	30,464	95	100	0	0
67	127S	NORTH TORREY PINES RD	CARMEL VALLEY RD	CITY BOUNDARY	AC	C	0	550	29	15,950	96	100	0	0
38	64S	CAMINO DEL MAR	13TH ST	9TH ST	AC	A	0	1,609	26	41,834	97	100	0	0
38	75N	CAMINO DEL MAR	9TH ST	13TH ST	AC	A	0	1,611	26	41,886	98	100	0	0
								11.4		**1,888,662**				

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
		Locals												
91	163	STRATFORD CT	12TH ST	9TH ST	AC	E	0	1,206	28	33,768	42	25	48	27
65	124	MELANIE WAY	STRATFORD CT	CDS	AC	E	0	471	16	7,536	53	23	71	6
71	136	ORCHID LN	HIGHLAND AVE	KLISH WAY	AC	E	0	834	16	13,344	53	29	11	60
51	95	GATUN ST	BALBOA AVE	CDS	AC	E	0	680	21	14,280	53	23	40	37
64	123	MAIDEN LN	12TH ST	ALLEY N/O 13TH ST	AC	E	0	604	16	9,664	56	25	72	3
102	181	ZUNI DR	AVENIDA PRIMAVERA	CDS	AC	E	0	261	20	5,220	56	13	71	16
70	134	OCEAN VIEW AVE	HIDDEN PINES RD	PINE NEEDLES DR	AC	E	0	1,574	30	47,220	56	26	65	9
95	168	UMATILLA RD	RIMINI RD	VAN DYKE AVE	AC	E	0	258	20	5,160	57	27	31	42
58	112	KLISH WAY	KLISH WAY	AMPHITHEATRE DR	AC	E	0	426	25	10,650	57	7	49	44
46	90	CULEBRA ST	SEA VIEW AVE	ZAPO ST	AC	E	0	527	20	10,540	59	22	58	20
102	179	ZUNI DR	LUNETA DR	CAROLINA RD	AC	E	0	753	20	15,060	59	19	23	58
55	100	HOSKA DR	HIGHLAND AVE	CREST RD	AC	E	0	1,400	29	40,600	61	24	71	5
45	89	CUCHARA DR	11TH ST	RIMINI RD	AC	E	0	1,028	27	27,756	61	33	21	46
69	130	OCEAN FRONT	27TH ST	24TH ST	AC	E	0	718	18	12,924	62	37	52	11
58	113	KLISH WAY	HOSKA DR	TEWA ST	AC	E	0	816	20	16,320	62	38	32	30
20	35	26TH ST	CAMINO DEL MAR	CDS	AC	E	2	429	32	13,728	62	23	43	34
62	118	LUNETA DR	13TH ST	15TH ST	AC	E	0	763	24	18,312	62	30	35	35
64	122	MAIDEN LN	15TH ST	ALLEY N/O 13TH ST	AC	E	0	604	16	9,664	63	52	42	6
9	15	13TH ST	CAMINO DEL MAR	CDS	AC	E	2	880	26	22,880	63	22	78	0
88	159	SERPENTINE DR	FOREST WAY	AVENIDA PRIMAVERA	AC	E	0	510	18	9,180	65	25	33	42
45	88	CUCHARA DR	LUNETA DR	RIMINI RD	AC	E	0	585	20	11,700	66	24	68	8
3	3	7TH ST	CDS	CITY BOUNDARY	AC	E	2	569	36	20,484	66	8	89	3
87	155	SEA VIEW AVE	CULEBRA ST	CDS	AC	E	0	1,056	18	19,008	67	33	54	13
34	53	AVENIDA PRIMAVERA	LUNETA DR	SERPENTINE DR	AC	E	2	1,307	22	28,754	67	17	67	16
79	144	8TH ST	HOSKA DR	CITY BOUNDARY	AC	E	2	240	32	7,680	68	69	17	14
50	94	FOREST WAY	ZUNI DR	SERPENTINE DR	AC	E	0	660	22	14,520	68	15	34	51
54	99	HIGHLAND AVE	HOSKA DR	10TH ST	AC	E	0	573	22	12,606	69	42	13	45
18	31	24TH ST	CAMINO DEL MAR	CDS	AC	E	2	457	27	11,425	69	27	36	37
88	158	SERPENTINE DR	AVENIDA PRIMAVERA	CDS	AC	E	0	448	20	8,960	69	12	65	23
70	135	OCEAN VIEW AVE	TORREY PINES TER	HIDDEN PINES RD	AC	E	0	503	26	13,078	70	28	35	37
91	162	STRATFORD CT	12TH	15TH	AC	E	0	1,205	25	30,125	70	4	74	22
35	56	BALBOA AVE	CDS	ZAPO ST	AC	E	2	723	17	12,291	70	51	47	2
101	178	ZAPO ST	SERPENTINE DR	CULEBRA ST	AC	E	0	807	20	16,140	70	8	24	68
96	169	VAN DYKE AVE	LUNETA DR	VIA ALTA	AC	E	0	1,058	28	29,624	71	27	61	12
77	142	PINE NEEDLES DR	OCEAN VIEW AVE	OCEAN VIEW AVE	AC	E	0	1,518	28	42,504	71	27	33	40
87	154	SEA VIEW AVE	CAMINO DEL MAR	CULEBRA ST	AC	E	0	1,321	16	21,136	72	14	34	52
7	11	11TH ST	CAMINO DEL MAR	10TH ST	AC	E	2	1,177	30	35,310	72	24	63	13
12	22	18TH ST	OCEAN FRONT	SANTA FE AVE	AC	E	2	453	22	9,966	72	37	50	13
82	148	SAN DIEGUITO DR	JIMMY DURANTE BLVD	GRAND AVE OVERLOOK	AC	E	0	1,543	24	37,032	72	45	43	12
57	110	KALAMATH DR	CREST RD	AMPHITHEATRE DR	AC	E	0	1,009	28	28,252	72	16	31	53
58	111	KLISH WAY	AMPHITHEATRE DR	CREST RD	AC	E	0	691	30	20,730	73	29	71	0
69	133	OCEAN FRONT	29TH ST	27TH ST	AC	E	0	478	18	8,604	73	46	34	20
37	58	BORDER AVE	CAMINO DEL MAR	CITY BOUNDARY	AC	E	0	420	38	15,960	73	37	45	18
52	96	GRAND AVE	CAMINO DEL MAR ON RAMP	CDS	AC	E	0	845	18	15,210	73	66	33	1
100	176	WESLEY WAY	CAMINO DEL MAR	NOB AVE	AC	E	0	382	20	7,640	73	57	0	43
63	120	LUZON AVE	SEA VIEW AVE	BALBOA AVE	AC	E	0	725	16	11,600	73	43	47	10

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
1	1	4TH ST	CAMINO DEL MAR	CDS	AC	E	2	821	32	26,272	74	57	40	3
63	121	LUZON AVE	JIMMY DURANTE BLVD	CDS	AC	E	0	285	18	5,130	75	15	41	44
88	157	SERPENTINE DR	ZAPO ST	FOREST WAY	AC	E	0	554	20	11,080	75	52	10	38
74	139	PARISH LN	MAIDEN LN	LUNETA DR	AC	E	0	311	20	6,220	75	26	30	44
66	125	NOB AVE	8TH ST	CITY BOUNDARY	AC	E	0	1,148	29	33,292	76	43	57	0
10	17	14TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	624	35	21,840	76	29	59	12
13	23	19TH ST	OCEAN FRONT	CDS	AC	E	2	600	28	16,800	76	27	71	2
34	54	AVENIDA PRIMAVERA	CREST RD	SERPENTINE DR	AC	E	2	831	20	16,620	76	26	23	51
62	117	LUNETA DR	15TH ST	STRATFORD WAY	AC	E	0	1,146	22	25,212	76	51	0	49
92	165	STRATFORD WAY	LUNETA DR	LUNETA DR	AC	E	0	592	18	10,656	76	59	36	5
11	18	15TH ST	CREST RD	CAROLINA RD	AC	E	2	1,272	22	33,072	76	37	25	38
91	164	STRATFORD CT	9TH ST	SEA FOREST CT	AC	E	0	2,279	37	84,323	69	32	45	23
53	97	HIDDEN PINES LN	PINE NEEDLES DR	CDS	AC	E	0	531	22	11,682	77	40	23	37
22	39	28TH ST	CAMINO DEL MAR	CDS	AC	E	2	443	28	12,404	77	28	26	46
23	40	29TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	213	32	6,816	77	27	70	3
69	132	OCEAN FRONT	21ST ST	CDS	AC	E	0	1,483	16	23,728	77	43	14	43
47	91	DAVID WAY	JIMMY DURANTE BLVD	CDS	AC	E	0	473	21	9,933	78	27	71	2
86	153	SEA ORBIT LN	CDS	CDS	AC	E	0	502	18	9,036	78	57	28	15
14	24	20TH ST	OCEAN FRONT	CDS	AC	E	2	588	26	15,288	78	39	56	5
36	57	BELLAIRE ST	SEA VIEW AVE	ZAPO ST	AC	E	2	814	18	14,652	78	39	30	31
44	86	CREST RD	HOSKA DR	KLISH WAY	AC	E	0	1,353	24	32,472	79	17	74	9
93	166	TEWA ST	HIGHLAND AVE	KLISH WAY	AC	E	0	492	28	13,776	79	55	0	45
21	38	27TH ST	CAMINO DEL MAR	CDS	AC	E	2	445	28	12,460	80	65	26	9
8	13	12TH ST	CAMINO DEL MAR	CDS	AC	E	0	922	35	32,270	80	18	82	0
101	177	ZAPO ST	CULEBRA ST	BALBOA AVE	AC	E	0	915	22	20,130	80	55	24	21
11	20	15TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	353	33	11,649	80	49	47	4
11	19	15TH ST	LUNETA DR	CAROLINA RD	AC	E	2	714	28	19,992	81	43	38	19
84	151	SANTA FE AVE	18TH ST	CDS	AC	E	0	1,059	28	29,652	81	82	5	13
66	126	NOB AVE	OCEAN VIEW AVE	CITY BOUNDARY	AC	E	0	300	26	7,800	82	16	0	84
4	6	8TH ST	STRATFORD CT	CDS	AC	E	2	386	28	10,808	82	18	11	71
80	145	RACETRACK VIEW DR	SAN DIEGUITO DR	CITY BOUNDARY	AC	E	0	371	22	8,162	82	19	50	31
41	80	CAROLINA RD	LUNETA DR	ZUNI DR	AC	E	0	1,066	24	25,584	83	62	38	0
90	161	SHIPPEY LN	STRATFORD CT	CDS	AC	E	0	381	20	7,620	83	31	0	69
21	37	27TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	239	26	6,214	83	51	32	17
2	2	6TH ST	STRATFORD CT	CDS	AC	E	2	829	28	23,212	83	31	23	46
9	16	13TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	2	659	28	18,452	83	35	22	43
44	87	CREST RD	HOSKA DR	CITY BOUNDARY	AC	E	0	907	27	24,489	83	18	50	32
11	21	15TH ST	COAST BLVD	CAMINO DEL MAR	AC	E	2	601	35	21,035	84	16	63	21
17	29	23RD ST	CAMINO DEL MAR	CDS	AC	E	2	402	35	14,070	84	99	0	1
62	119	LUNETA DR	11TH ST	13TH ST	AC	E	0	1,094	24	26,256	85	63	31	6
102	180	ZUNI DR	CAROLINA RD	CDS	AC	E	0	521	16	8,336	85	63	0	37
69	131	OCEAN FRONT	24TH ST	21ST ST	AC	E	0	705	16	11,280	85	56	0	44
89	160	SHERRIE LN	STRATFORD CT	CDS	AC	E	0	331	20	6,620	85	39	0	61
15	25	21ST ST	COURT ST	CDS	AC	E	2	211	32	6,752	85	46	0	54
6	10	10TH ST	CAMINO DEL MAR	CDS	AC	E	2	947	32	30,304	86	24	0	76
4	5	8TH ST	CAMINO DEL MAR	CITY BOUNDARY	AC	E	2	735	28	20,580	86	74	0	26
68	129	OCEAN AVE	13TH ST	15TH ST	AC	E	0	806	24	19,344	86	26	57	17
6	9	10TH ST	CAMINO DEL MAR	11TH ST	AC	E	2	1,125	30	33,750	86	52	0	48

BranchID	Sec ID	Name	From	To	Type	Rank	Lanes	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other
44	85	CREST RD	KLISH WAY	15TH ST	AC	E	0	1,618	23	37,214	87	70	19	11
8	14	12TH ST	CAMINO DEL MAR	LUNETA DR	AC	E	0	336	32	10,752	87	55	31	14
82	149	SAN DIEGUITO DR	GRAND AVE OVERLOOK	RACTRACK VIEW DR	AC	E	0	1,838	22	40,436	88	29	37	34
33	52	AMPHITHEATRE DR	CREST RD	CUCHARA DR	AC	E	2	1,470	28	41,160	89	61	0	39
61	116	LOIS LN	PACIFIC LN	CDS	AC	E	0	416	20	8,320	89	71	25	4
72	137	ORIBIA RD	CITY BOUNDARY	CDS	AC	E	0	2,090	16	33,440	90	29	2	69
97	170	VIA ALTA	VAN DYKE AVE	CREST RD	AC	E	0	680	28	19,040	90	45	0	55
16	27	22ND ST	COURT ST	CDS	AAC	E	2	298	34	10,132	90	100	0	0
15	26	21ST ST	OCEAN FRONT	COAST BLVD	AC	E	2	251	28	7,028	91	100	0	0
88	156	SERPENTINE DR	AVENIDA PRIMAVERA	ZAPO ST	AC	E	0	881	20	17,620	91	72	0	28
7	12	11TH ST	CAMINO DEL MAR	CDS	AC	E	2	951	35	33,285	91	56	0	44
78	143	PRIMAVERA LN	AVENIDA PRIMAVERA	CDS	AC	E	0	172	13	2,236	91	77	0	23
19	33	25TH ST	CAMINO DEL MAR	CDS	AC	E	2	439	28	12,292	91	100	0	0
3	4	7TH ST	STRATFORD CT	CDS	AC	E	2	379	36	13,644	92	39	61	0
94	167	TORREY PINES TER	OCEAN VIEW AVE W	CDS	AC	E	0	651	24	15,624	92	64	36	0
19	34	25TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	238	27	6,426	92	89	0	11
5	8	9TH ST	CAMINO DEL MAR	HIGHLAND AVE	AC	E	2	782	38	29,716	92	100	0	0
99	175	OCEAN VIEW AVE W	TORREY PINES TER	CDS	AC	E	0	328	19	6,232	92	100	0	0
35	55	BALBOA AVE	ZAPO ST	SEA VIEW AVE	AC	E	2	362	18	6,516	93	100	0	0
59	114	LA AMATISTA RD	CAMINO DEL MAR	NOB AVE	AC	E	0	379	23	8,717	93	67	0	33
76	141	PENNY LN	CDS	CDS	AC	E	0	698	20	13,960	93	68	32	0
43	84	COURT ST	COAST BLVD	21ST ST	AC	E	0	605	18	10,890	94	100	0	0
5	7	9TH ST	CAMINO DEL MAR	CDS	AC	E	2	948	32	30,336	94	83	0	17
16	28	22ND ST	OCEAN FRONT	COAST BLVD	AC	E	2	250	16	4,000	94	100	0	0
20	36	26TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	238	20	4,760	94	100	0	0
182	98	HIDDEN PINES RD	OCEAN VIEW AVE	HIDDEN PINES LN	AC	E	0	716	30	21,480	94	69	0	31
17	30	23RD ST	OCEAN FRONT	COAST BLVD	AC	E	2	238	21	4,998	95	100	0	0
85	152	SEA CLIFF WAY	STRATFORD CT	CDS	AC	E	0	331	20	6,620	95	100	0	0
49	93	EL AMIGO RD	CAMINO DEL MAR	CITY BOUNDARY	AC	E	0	361	26	9,386	98	100	0	0
18	32	24TH ST	CAMINO DEL MAR	OCEAN FRONT	AC	E	2	250	30	7,500	100	0	0	0
								16.9		**2,205,030**				
		Alleys												
28	A206	ALLEY N/O UMATILLA RD	VAN DYKE AVE	UMATILLA DR	AC	O	1	633	13	8,229	50	21	45	34
60	115	LITTLE ORPHAN ALY	STRATFORD CT	CDS	AC	O	0	384	20	7,680	52	45	41	14
103	A203	DEL MAR LN	ALL S/O 15T ST	12TH ST	AC	O	0	1,018	18	18,324	53	24	44	32
26	A205	ALLEY N/O 13TH ST	MAIDEN LN	LUNETA DR	AC	O	1	444	18	7,992	56	60	39	1
26	A207	ALLEY N/O 13TH ST	VAN DYKE AVE	LUNETA DR	AC	O	1	559	18	10,062	60	9	72	19
27	A202	ALLEY N/O BELLAIRE ST	BELLAIRE ST	CDS	AC	O	1	105	19	1,995	60	28	59	13
30	A208	ALLEY S/O 10TH ST	HIGHLAND AVE	CDS	AC	O	1	473	18	8,514	62	92	0	8
24	A200	ALLEY E/O CAMINO DEL MAR	25TH ST	28TH ST	AC	O	1	722	20	14,440	64	21	67	12
32	A209	HOSKA LN	HOSKA DR	CDS	AC	O	1	305	16	4,880	69	10	6	84
29	A210	ALLEY S/O 7TH ST	NOB AVE	CDS	AC	O	1	275	20	5,500	83	55	45	0
31	A204	ALLEY S/O 15TH ST	OCEAN AVE	CAMINO DEL MAR	AC	O	1	573	18	10,314	84	49	51	0
24	A201	ALLEY E/O CAMINO DEL MAR	COURT ST	25TH ST	AC	O	1	628	20	12,560	94	86	0	14
83	150	SAND BARR LN	18TH ST	CDS	PCC	O	0	1,319	14	18,466	100	0	0	100
								1.4		**128,956**				

SECTION IV
FORECAST MAINTENANCE & REHABILITATION (FMR) REPORT

A. $750,000 Annual Budget, Five Year Plan – FY 2024-2029

A. FORECAST MAINTENANCE / REHABILITATION REPORT

Listed in chronological order by plan year then alphabetically by street name, this report presents the year and action corresponding to the next recommended work activity for each segment within the pavement network.

ANNUAL $750,000 BUDGET – A $750k/five-yr budget was utilized for the City to demonstrate how its existing Public Works M&R/CIP budget allocation would perform against the current citywide conditions.

We have sorted the following report by functional class (rank) for easy review (Arterial – Local, A to Z order).

In general sections are chosen first and foremost on available budget; secondly, the square footage of each section plays a large factor. The software initially chooses the draft sections that will increase PCI, sustain PCI or slow PCI deterioration within the budgeted timeframe. Additionally, the types of distress, extents of distress and severities of distress (high, medium, low) also determine how sections are/can be selected.

****All multi-year budget projections include an annual 5% unit cost inflation rate for the term of the budget forecast, as well as a 25% contingency on material costs which typically cover additional project costs for design, bidding, contract management, inspection, staff labor and construction contingency.***

The City of Del Mar makes all final decisions on what pavement sections are scheduled for improvement and within which fiscal year.

FY	BranchID	Sec ID	Name	From	To	Type	Rank	L	W	Area	PCI	PCI Pct Climate	PCI Pct Load	PCI Pct Other	Maint. Type	Total $
Arterials / Collectors, Locals and Alleys																
2023-24	38	183S	CAMINO DEL MAR	COURT ST	JIMMY DURANTE BLVD	AC	A	1,415	26	36,790	54	67	12	21	AC Overlay	Funded / Scheduled
2023-24	38	73N	CAMINO DEL MAR	JIMMY DURANTE BLVD	COURT ST	AC	A	1,425	26	37,050	77	100	0	0	AC Overlay	Funded / Scheduled
2023-24	66	126	NOB AVE	OCEAN VIEW AVE	CITY BOUNDARY	AC	E	300	26	7,800	82	16	0	84	AC Overlay	Funded / Scheduled
2023-24	70	134	OCEAN VIEW AVE	HIDDEN PINES RD	PINE NEEDLES DR	AC	E	1,574	30	47,220	56	26	65	9	AC Overlay	Funded / Scheduled
2024-25	Stratford Ct sections part of City's Underground project for FY 2024-25		STRATFORD CT	9TH	12TH	AC	E	Listed four (4) sections include 118,100 SF of AC; section PCI's (based on survey limits for 4th St to 12th St) are 48 & 69							3" Grind - AC Overlay	$537,500
2024-25			STRATFORD CT	4TH ST INTERSECTION	4TH ST INTERSECTION	AC	E								3" Grind - AC Overlay	
2024-25			STRATFORD CT	4TH ST	LITTLE ORPHAN ALLEY	AC	E								1.5" Edge Grind-Overlay	
2024-25			STRATFORD CT	REMAINING SECTIONS BETWEEN 4TH AND 12TH		AC	E								Asphalt Emulsion Slurry	
2024-25	28	A206	ALLEY N/O UMATILLA RD	VAN DYKE AVE	UMATILLA DR	AC	O	633	13	8,229	50	21	45	34	1.5" Grind - AC Overlay	$36,043
2024-25	55	100	HOSKA DR	HIGHLAND AVE	CREST RD	AC	E	1,400	29	40,600	61	24	71	5	2" Grind - AC Overlay	$185,136
2024-25	56	103S	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	FAIR GROUNDS SOUTH ENTRANCE	AC	A	1,634	40	65,360	62	29	69	2	2.5" Grind - ARHM Overlay	$416,997
2024-25	60	115	LITTLE ORPHAN ALY	STRATFORD CT	CDS	AC	O	384	20	7,680	52	45	41	14	1.5" Grind - AC Overlay	$33,638
2024-25	88	158	SERPENTINE DR	AVENIDA PRIMAVERA	CDS	AC	E	448	20	8,960	69	12	65	23	2" Grind - AC Overlay	$40,858
2024-25	88	159	SERPENTINE DR	FOREST WAY	AVENIDA PRIMAVERA	AC	E	510	18	9,180	65	25	33	42	1.5" Grind - AC Overlay	$40,208
2024-25	102	181	ZUNI DR	AVENIDA PRIMAVERA	CDS	AC	E	261	20	5,220	56	13	71	16	2" Grind - AC Overlay	$23,803
										121,869						**$1,314,183**
2025-26	24	A200	ALLEY E/O CAMINO DEL MAR	25TH ST	28TH ST	AC	O	722	20	14,440	64	21	67	12	1.5" Grind - AC Overlay	$66,424
2025-26	103	A203	ALLEY E/O STRATFORD	ALL S/O 15T ST	12TH ST	AC	O	1,018	18	18,324	53	24	44	32	1.5" Grind - AC Overlay	$84,290
2025-26	56	108N	JIMMY DURANTE BLVD	FAIR GROUNDS SOUTH ENTRANCE	FAIR GROUNDS MAIN ENTRANCE	AC	A	1,699	40	67,960	49	20	73	7	2.5" Grind - ARHM Overlay	$455,332
2025-26	87	155	SEA VIEW AVE	CULEBRA ST	CDS	AC	E	1,056	18	19,008	67	33	54	13	2" Grind - AC Overlay	$91,048
2025-26	102	179	ZUNI DR	LUNETA DR	CAROLINA RD	AC	E	753	20	15,060	59	19	23	58	1.5" Grind - AC Overlay	$69,276
																$766,371
2026-27	42	81	COAST BLVD	20TH ST	365' S OF 18TH ST	AC	C	1,187	52	59,350	59	33	63	4	2.5" Grind - ARHM Overlay	$417,231
2026-27	46	90	CULEBRA ST	SEA VIEW AVE	ZAPO ST	AC	E	527	20	10,540	59	22	58	20	2" Grind - AC Overlay	$53,016
2026-27	58	112	KLISH WAY	KLISH WAY	AMPHITHEATRE DR	AC	E	426	25	10,650	57	7	49	44	2" Grind - AC Overlay	$48,564
2026-27	64	122	MAIDEN LN	15TH ST	ALLEY N/O 13TH ST	AC	E	604	16	9,664	63	52	42	6	1.5" Grind - AC Overlay	$46,677
2026-27	64	123	MAIDEN LN	12TH ST	ALLEY N/O 13TH ST	AC	E	604	16	9,664	56	25	72	3	2" Grind - AC Overlay	$48,610
2026-27	71	136	ORCHID LN	HIGHLAND AVE	KLISH WAY	AC	E	834	16	13,344	53	29	11	60	1.5" Grind - AC Overlay	$64,452
2026-27	95	168	UMATILLA RD	RIMINI RD	VAN DYKE AVE	AC	E	258	20	5,160	57	27	31	42	1.5" Grind - AC Overlay	$24,923
										118,372						**$703,472**
2027-28	56	102N	JIMMY DURANTE BLVD	FAIR GROUNDS MAIN ENTRANCE	VIA DE LA VALLE	AC	A	2,377	40	95,080	50	18	68	14	2.5" Grind - ARHM Overlay	$702,641
2027-28	58	113	KLISH WAY	HOSKA DR	TEWA ST	AC	E	816	20	16,320	62	38	32	30	1.5" Grind - AC Overlay	$82,742
										111,400						**$785,384**
2028-29	56	107S	JIMMY DURANTE BLVD	VIA DE LA VALLE	FAIR GROUNDS MAIN ENTRANCE	AC	A	2,091	42	87,822	50	20	64	16	2.5" Grind - ARHM Overlay	$680,621
2028-29	62	118	LUNETA DR	13TH ST	15TH ST	AC	E	763	24	18,312	62	30	35	35	1.5" Grind - AC Overlay	$97,420
2028-29	65	124	MELANIE WAY	STRATFORD CT	CDS	AC	E	471	16	7,536	53	23	71	6	2" Grind - AC Overlay	$41,749
										113,670						**$819,790**