CHAPTER 8
INFRASTRUCTURE

CHAPTER 8 SECTIONS
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801. INTRODUCTION

Infrastructure refers to the physical services—such as roadways, lighting, sewers, water, and utilities—that provide a base for the City structure. Land value increases with infrastructure improvements. Infrastructure unable to meet the requirements of development and out of sync with the community character can defeat the achievement of the community's vision.

Infrastructure is crucial to the Specific Plan because it is a major factor in carrying out the proposed plan. At the same time, the Specific Plan is a tool for making improvements to that built environment. This chapter of the Specific Plan addresses the sewer, storm drain, and water areas of the City's infrastructure. The streets, alleys, and sidewalks portions of the infrastructure are treated separately under Chapter 6, Circulation, and Chapter 10, Landscape/Streetscape Design Standards.

Two factors determine the adequacy of existing infrastructure. The first is its life span. Some of the existing infrastructure will need to be replaced; some of it will not. The replacement of old infrastructure, as determined in the Specific Plan, is crucial for the maintenance of facilities in the Pier Bowl area. Secondly, the capacity of existing infrastructure has been taken into consideration. In some areas, projected growth will dictate the necessity for increasing the capacity of the facilities. By looking at projections for new development, projected infrastructure needs can be estimated and addressed before development occurs. The existing infrastructure and its adequacy are addressed in the following section.

802. PUBLIC SERVICES/FACILITIES

Public services and facilities are key components of any specific plan. A primary goal of the Pier Bowl Specific Plan is to ensure adequate capital facilities (sewers, storm drains, water, and utilities) based on the level of development called for by the land-use component of the plan.
Utilities have been surveyed to determine the need for improvements, based both on condition and need for additional capacity. The results of this survey are favorable for the aforementioned subsurface improvements. Aside from relatively minor "spot" improvements, utility-system capacities are adequate for build-out. A major exception is the need to improve the beach trunk-line sanitary sewer which is already operating at capacity.

Perhaps the greatest challenge for public services and facilities is providing funding for needed improvements. Beyond the capital facilities noted above, substantial capital costs will be involved in needed street, alley, pedestrian sidewalk/path, bicycle facilities, and streetscape improvements. The Specific Plan provides preliminary cost estimates for all capital improvements, and it schedules implementation of the proposed improvements in five-year intervals with the twenty-year Pier Bowl Phasing Plan. The intent of the Phasing Plan is to provide a twenty-year strategy to help set priorities and to provide a guideline for new public facilities in the Pier Bowl.

803. SEWER SYSTEM

City-wide, the present sewage treatment demand on the newly constructed plant averages approximately four (4) million gallons a day (MGD), with an ultimate capacity of seven (7) MGD. The increase of effluent generated by the ultimate buildout of the Pier Bowl area itself would not pose a significant impact on the plant capacity. The City must consider, however, all capacity commitments made for San Clemente Sewer Assessment District 85-1 and the overall future development of the City.

The collector and main sewer lines, constructed of glazed vitrified clay pipe and installed during the City's development in the 1920's and 1930's, show little deterioration. Historically, the Pier Bowl area has not suffered the utility problems caused by slope instability and root intrusions that plague other parts of the City. Sixty- to seventy-year-old pipes, which have been exposed during unrelated excavation, appear to be in very good condition and should last the next twenty years. Localized problems, however, should be anticipated. The underlying sewers should be video inspected prior to paving any of the area streets. For budgeting purposes, an estimated ten (10) percent of the sewer replacement cost is used in preparation for repairing these isolated areas (see Table 4). Rerouting of service to Casa Romantica (1) during Phase I improvements may be considered due to the anticipated problem of maintaining the existing lateral located in the steep hillside facing the beach. Because of grade problems, the unusual expense required for relocation may not make the improvement cost effective.
# TABLE 4
## SEWER SYSTEM

<table>
<thead>
<tr>
<th>SEWER</th>
<th>PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Casa Romantica LATERAL RELOCATION</td>
<td>I</td>
</tr>
<tr>
<td>(2) Extend Pier Lateral</td>
<td></td>
</tr>
<tr>
<td>Beach Trunk Study (Pier Area Only)</td>
<td>15,000</td>
</tr>
<tr>
<td>(3) Linda Lane Lift Station and Parallel Trunk Line from Pier to Linda Lane</td>
<td>440,000</td>
</tr>
</tbody>
</table>
A. SERVICE AREA

At present, sewer service is provided to the entire Pier Bowl area. The only exception is the addition of the restaurant at the end of the pier as outlined in Phase III. This will require an extension of the sewer lateral (2) that presently ends three-fourths of the way out the pier. Grade restrictions may require that the entire lateral be re-laid or a lift station may be needed.

B. CAPACITY

The existing system of sewer collectors and mains can accommodate the increase in development in Phases I-IV, excepting the beach trunk line. This entire line was identified in the 1982 Wastewater Master Plan as being at capacity. During the summer peak-use periods, sewage occasionally backs up in the line from the Linda Lane Pump Station to Calafia Park creating a potential for an overflow onto the beach. Therefore, any increase in development in the Pier Bowl area will impact this line. At this time it is not known whether the capacity problem lies with the beach trunk line, the Linda Lane Pump Station, or both. The possibility of deficiencies in both should be anticipated. A study is recommended to determine if all or only part of the existing beach trunk line system is under capacity. The confluence point and connecting main with the Avenida Victoria line should be closely evaluated as a possible bottle neck. It is assumed the installation of a parallel line (3) from the pier to the Linda Lane pump station would be required and the capacity of the existing pumps will have to be increased. It is most likely that an additional pump station would need to be built as recommended by the aforementioned Wastewater Master Plan as a method of increasing the capacity of the beach trunk.

The limits of the recommended improvements take into consideration the anticipated needs of the Pier Bowl area only. The actual design and construction should incorporate the requirements of the entire beach trunk line.

804. STORM-DRAIN FACILITIES

The existing storm and surface-water drainage system serving the Pier Bowl area and adjacent contributing neighborhoods is a gravity-flow combination of surface street/alley drainage and underground drain pipes.
A. CONDITION

Most of the existing underground storm drains that are constructed of reinforced concrete pipe are in good condition. The underground storm-drain system on Corto and Acebo Lanes was constructed in 1989. This system should not require replacement for the next twenty (20) years other than some possible spot repairs. The following segments of storm drains, which are constructed of corrugated metal pipe (CMP), are not as durable and should be replaced (or lined if possible) in conjunction with the construction of phased improvements or sooner. The twelve-inch (12") CMP (1) draining the Arenoso Lane cul-de-sac to the railroad tracks is due for immediate replacement. The twelve-inch (12") CMP (2) extending down the coastal bluff from Corto Lane should be video-inspected; and even if it is found currently sound, replacement should be considered by Phase IV. Similarly, the Coastal Bluff storm drain (3) located on the northerly side of the Casa Romantica also needs to be video-inspected so replacement may be considered with Phase I improvements. The catch basin has deteriorated and is under capacity, and it should be replaced as soon as possible. The thirty-six inch (36") corrugated aluminum piping (8) at the Pier was installed in 1986. These pipes outfall on the beach where they are subject to wave-wash and the harsh demands of the marine environment. Visual observation of the exposed ends show signs of heavy corrosion and the need for replacement of most of these pipes. The sub-surface segment should be inspected and possible replacement anticipated in Phase III.

B. CAPACITY

Other than, those concerns previously stated, there are no known capacity problems with the existing storm-drain system, and the proposed development will add little to the overall impermeable drainage area.

C. SYSTEM EXPANSION

The construction of two (2) new eighteen (18) inch storm-drain laterals and catch basins is recommended to pick up nuisance water fed by springs. The springs create constant wet areas that promote algae growth. This condition is an unsightly maintenance and liability problem.

The first spring is located in the southeast loop of Capistrano Lane. It is recommended to run four hundred (400) feet of eighteen (18) inch storm drain (4) from the catch basin at the spring to Avenida Victoria. Construction should be considered for Phase III, a junction structure and a lateral stubout to Avenida Santa Ana (5), if paving of Victoria is done in Phase II.
## TABLE 5
**STORM-DRAIN FACILITIES**

<table>
<thead>
<tr>
<th>STORM DRAINS</th>
<th>PHASE</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(1)</em> Arenoso Lane S.D. Replacement</td>
<td>34,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(2)</em> Corto Lane Bluff S.D. Replacement</td>
<td>100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(3)</em> Casa Romantica S.D. Replacement</td>
<td>33,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(4)</em> Santa Ana S.D. Installation (to Victoria Stubout)</td>
<td>50,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(5)</em> Santa Ana S.D. Stubout Installation to Victoria</td>
<td>18,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(6)</em> Victoria and Alameda Lane S.D. Installation</td>
<td>21,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(7)</em> Victoria and Monterey Lane C.B. Modification</td>
<td>2,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(8)</em> Pier Storm-Drain Replacement</td>
<td>10,000</td>
<td>60,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The second spring is located in the most northerly curb return of Avenida Victoria and Alameda Lane. Construction of a catch basin and seventy-five (75) feet of eighteen (18) inch lateral (6) is recommended to be included in any parking lot improvements made in Phase I. The catch basin (7) at the south easterly corner of Avenida Victoria and Monterey Lane needs to be modified to provide a side inlet to eliminate grate clogging problems. This modification should be considered in Phase II or before.

**805. WATER-DISTRIBUTION SYSTEM**

The Pier Bowl Specific Plan area is supplied water by Tri-Cities Water District. Storage and distribution service are provided by the City Water Department. At present, there is adequate supply and storage capacity for all the development proposed in the Pier Bowl Specific Plan. Any additional development of the Pier Bowl will, however, impact the City's water demand and should be considered with the over-all development of the City.

A. **CONDITION**

The existing distribution system consists of six (6) inch diameter asbestos cement mains. These mains were primarily installed during the City's development in the 1920's and 1930's. Sixty- to seventy-year-old pipes recently exposed during unrelated excavations show little deterioration and should last for the next twenty (20) years. The valves on these mains are constructed of iron, however, and are subject to corrosion from the area's high sulphate soils. The need for replacement of the valves and installation of cathodic protection is determined upon inspection and should be considered a maintenance item, best scheduled during the phased street paving. For budgeting purposes, it is estimated that thirty (30) percent of the valves will require replacement. Replacement of deteriorated or substandard service laterals, meters, and appurtenances are another maintenance item, which should be scheduled prior to paving. It is anticipated that thirty (30) of these service laterals will require replacement.

B. **CAPACITY**

The current network of six (6) inch mains are sufficient to provide the existing and proposed development with domestic water needs; however, the fire-flow capacities need to be verified.

The fire-flow requirements for the Casa Romantica and the Radisson Resort Hotel will depend upon the square footage of the building, type of construction, and other
## TABLE 6
WATER-DISTRIBUTION SYSTEM

<table>
<thead>
<tr>
<th>WATER</th>
<th>PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>(1) Coronado and Monterey Lane Main</td>
<td></td>
</tr>
<tr>
<td>(2) Alameda Lane Main</td>
<td></td>
</tr>
<tr>
<td>(3) Pier End Restaurant Main</td>
<td></td>
</tr>
</tbody>
</table>
variables. To provide adequate capacity, it is anticipated that the Avenida Victoria main may require a parallel line installed via Coronado Lane and Monterey Lane. If found to be required, this main would need to be installed prior to the construction of the Radisson Hotel proposed in Phase II.

C. SERVICE AREA

At present, water is provided to the entire Pier Bowl area. Two (2) of the proposed developments will require domestic and fire service: the Alameda Lane development in Phase I, and the possible addition of commercial development at the end of the pier.

806. STREET NETWORK

Access into the Pier Bowl area is served by three main arteries: Avenida Palizada, Avenida Del Mar, and Avenida Victoria.

- Avenida Palizada: It is a two-lane roadway with a right-of-way of fifty feet (50') and a pavement width of forty feet (40').

- Avenida Victoria: It is also a two-lane roadway with a right-of-way of fifty feet (50') and a pavement width of forty feet (40').

- Avenida Del Mar: This two-lane roadway is considered the main entrance road into the Pier Bowl. It has a right-of-way of eighty feet (80') and a pavement width of sixty feet (60') with diagonal parking on both sides to approximately the middle of the 200 block. The street narrows into a right-of-way of sixty feet (60') and a pavement width of forty feet (40').

The other roadways within the Pier Bowl Specific Plan area are much narrower. Their right of way widths vary from fifty (50) to thirty (30) feet, while their pavement width varies from forty (40) to twenty (20) feet.

Avenida Del Mar was reconstructed from El Camino Real to Calle Seville in 1985. The remainder of Avenida Del Mar, with a portion of Avenida Victoria, was rehabilitated in the early 1980's. Avenida Victoria, from El Camino Real to Elena Lane, is scheduled to be reconstructed during the 1992-93 fiscal year.

The pavement condition of the remainder of the roadways within the Pier Bowl Specific Plan area is poor and the need for reconstruction of all these streets is imminent. Table 7
### TABLE 9
#### STREET NETWORK

<table>
<thead>
<tr>
<th>#s</th>
<th>Street</th>
<th>Location</th>
<th>Length (ft.)</th>
<th>Pavement Width (ft.)</th>
<th>R.O.W. (ft.)</th>
<th>Rehabilitation Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Avenida Del Mar</td>
<td>El Camino Real to Seville</td>
<td>2094</td>
<td>60</td>
<td>80</td>
<td>$753,800</td>
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<tr>
<td></td>
<td></td>
<td>Seville to Avenida Granada</td>
<td>520</td>
<td>40</td>
<td>60</td>
<td>$124,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avenida Granada to Avenida Victoria</td>
<td>1121</td>
<td>40</td>
<td>60</td>
<td>$269,000</td>
</tr>
<tr>
<td>2</td>
<td>Avenida Victoria</td>
<td>El Camino Real to Elena Lane</td>
<td>2945</td>
<td>40</td>
<td>60</td>
<td>$706,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elena Lane to Avenida Del Mar</td>
<td>1494</td>
<td>40</td>
<td>60</td>
<td>$358,600</td>
</tr>
<tr>
<td>3</td>
<td>Avenida Palizada</td>
<td>El Camino Real to Avenida Granada</td>
<td>3344</td>
<td>40</td>
<td>50</td>
<td>$802,600</td>
</tr>
<tr>
<td>4</td>
<td>Avenida Granada</td>
<td>Avenida Del Mar to Avenida Palizada</td>
<td>395</td>
<td>40</td>
<td>50</td>
<td>$94,800</td>
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<tr>
<td></td>
<td></td>
<td>Sub-Total</td>
<td>$3,110,400</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Arenoso Lane</td>
<td>Avenida Palizada to its terminus</td>
<td>450</td>
<td>30</td>
<td>40</td>
<td>$81,000</td>
</tr>
<tr>
<td>6</td>
<td>Capistrano Lane</td>
<td>Avenida Del Mar to Santa Ana Lane</td>
<td>414</td>
<td>20</td>
<td>30</td>
<td>$49,700</td>
</tr>
<tr>
<td>7</td>
<td>Cazador Lane</td>
<td>Avenida Victoria to Elena Lane</td>
<td>604</td>
<td>30</td>
<td>40</td>
<td>$108,700</td>
</tr>
<tr>
<td>8</td>
<td>Corona Lane</td>
<td>Avenida Victoria to Monterey Lane</td>
<td>321</td>
<td>24</td>
<td>30</td>
<td>$46,200</td>
</tr>
<tr>
<td>9</td>
<td>Coronado Lane</td>
<td>Avenida Del Mar to Monterey Lane</td>
<td>552</td>
<td>20</td>
<td>30</td>
<td>$66,200</td>
</tr>
<tr>
<td>10</td>
<td>Corto Lane</td>
<td>Avenida Palizada to its terminus</td>
<td>235</td>
<td>33</td>
<td>40</td>
<td>$46,500</td>
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<tr>
<td>11</td>
<td>Encino Lane</td>
<td>Linda Lane to Avenida Palizada</td>
<td>295</td>
<td>32</td>
<td>40</td>
<td>$56,600</td>
</tr>
<tr>
<td>12</td>
<td>Linda Lane</td>
<td>Encino Lane to its terminus</td>
<td>856</td>
<td>32</td>
<td>40</td>
<td>$164,400</td>
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<tr>
<td>13</td>
<td>Monterey Lane</td>
<td>Avenida Victoria to Avenida Victoria</td>
<td>1021</td>
<td>24</td>
<td>30</td>
<td>$147,000</td>
</tr>
<tr>
<td>14</td>
<td>N. Alameda Lane</td>
<td>Avenida Del Mar to Avenida Del Mar</td>
<td>556</td>
<td>30</td>
<td>40</td>
<td>$100,100</td>
</tr>
<tr>
<td>15</td>
<td>Pasadena Ct.</td>
<td>Cazador Lane to its terminus</td>
<td>210</td>
<td>23</td>
<td>30</td>
<td>$29,000</td>
</tr>
<tr>
<td>16</td>
<td>S. Alameda Lane</td>
<td>Avenida Del Mar to Monterey Lane</td>
<td>502</td>
<td>20</td>
<td>30</td>
<td>$60,200</td>
</tr>
<tr>
<td>17</td>
<td>Santa Ana Lane</td>
<td>Avenida Del Mar to Monterey Lane</td>
<td>483</td>
<td>20</td>
<td>30</td>
<td>$58,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sub-total</td>
<td>$1,013,600</td>
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<tr>
<td></td>
<td></td>
<td>Total Cost</td>
<td>$4,124,000</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** Phasing of the reconstruction of these streets will be on an as-needed basis, and in relation to new development.
shows all the streets within the Pier Bowl Specific Plan area, including the three (3) main arteries to the Pier Bowl.

The cost for reconstruction is estimated at $4,124,000. Perhaps the greatest challenge in developing a street reconstruction plan for the Pier Bowl is providing funding for the needed improvements. Since none of these streets are part of the County's Master Plan for Arterial Highways (MPAH), and only Avenida Del Mar, Avenida Victoria, and a portion of Avenida Palizada are on the Federal Aid Urban System (FAU), they therefore do not qualify for any Federal or County grants. It is recommended that all of the streets within the Specific Plan area be reconstructed and phased over the next twenty (20) years. The phasing of the reconstruction of these streets will be on an as-needed basis and improved in relation to the location of new development in the area.