

**CITY OF CHULA VISTA  
PEDESTRIAN BRIDGE DEVELOPMENT IMPACT FEE  
REPORT FOR OTAY RANCH VILLAGE 11  
FEBRUARY 11, 2003**

**Prepared by:**

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**CITY OF CHULA VISTA  
PEDESTRIAN BRIDGE DEVELOPMENT IMPACT FEE REPORT**

**INDEX**

<u>DESCRIPTION</u>	<u>PAGE</u>
<b>1. Background and Purpose of Report</b>	<b>2</b>
<b>2. Description of Pedestrian Bridges and Cost Estimates</b>	<b>3</b>
<b>3. Area of Benefit</b>	<b>4</b>
<b>4. Development within the Area of Benefit</b>	<b>5</b>
<b>5. Pedestrian Bridge Development Impact Fee Methodology</b>	<b>6</b>
<hr/>	
<b>Map of Pedestrian Bridge Locations</b>	<b>Exhibit 1</b>
<b>Area of Benefit</b>	<b>Exhibit 2</b>
<b>Summary of Pedestrian Bridge Development Impact Fee</b>	<b>Exhibit 3</b>
<b>Pedestrian Bridge Planning Study (Simon Wong Engineering, dated June 20, 2002)</b>	<b>Exhibit 4</b>
<b>Pedestrian Bridge Development Impact Fee Ordinance</b>	<b>Exhibit 5</b>

## 1. Background and Purpose of Report

The Pedestrian Bridge Development Impact Fee Report ("Report") is being prepared at the request of Brookfield Shea Otay, LLC ("Brookfield Shea"). In connection with developing residential and non-residential property in Village 11, the Brookfield Shea area is currently conditioned or will be conditioned through the mapping process to construct two pedestrian bridges. The enactment of a pedestrian bridge development impact fee is one method of securing a reimbursement process for landowners that construct facilities in excess of their fee obligations.

It is the City's intent that the cost of the two pedestrian bridges be shared among the various beneficiaries of such bridges. The purpose of the Report is to determine an appropriate pedestrian bridge development impact fee based on the cost of the two pedestrian bridges, the area of benefit, the type of land use and its corresponding benefit. The two bridges described in this Report are considered an additional facility need of the City arising as a result of new development. Government Code Section 66000 requires that a City establish a reasonable relationship or "nexus" between a development project or class of development projects, and the public improvements for which a development impact fee is charged.

To meet the requirements of Government Code 66000, the Report must demonstrate compliance with the following items:

- Identify the purpose of the fee;
- Identify the use to which the fee will be put;
- Determine how there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed (i.e., a "type" nexus); and
- Determine how there is a reasonable relationship between the need for the public facility and the type of development project on which the fee is imposed (i.e., a "burden" nexus). In addition, when a city imposes a fee as a condition of development approval, it must determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of that facility attributable to the development on which the fee is imposed.

Government Code Section 66000 also requires that a public agency segregate and account for the fees received separate from the general fund. Additionally, if a public agency has had possession of a developer fee for five years or more and has not committed or expended the funds for a public facility, then the public agency must make a finding describing the continuing need for the fees each fiscal year after the five year period has expired.

## 2. Description of Pedestrian Bridges and Cost Estimates

The two pedestrian bridges included within this Report are described as follows: (i) Hunte Parkway, and (ii) Eastlake Parkway. The location of each bridge is depicted on the map attached to this Report as Exhibit 1. Also, included on the map in Exhibit 1 is the Village 11 pathway system and its linkage with the pedestrian bridges described in this Report. A summary of the total estimated cost of constructing each bridge, including soft cost are summarized as follows:

	Hunte Pky Bridge	Eastlake Pky. Bridge
<u>Hard Cost:</u>		
Construction Cost	\$ 1,211,447	\$ 713,075
Contingency @ 25%	<u>302,862</u>	<u>178,269</u>
Total Hard Cost	<u>1,514,309</u>	<u>891,344</u>
<u>Soft Cost:</u>		
Design Cost @ 15%	227,146	133,702
Construction & Special Inspection Cost @ 15%	227,146	133,702
Project Admin. (Audit) @ 2%	30,286	17,827
Program Administration @ 5%	75,715	44,567
Contingency @ 10%	<u>56,029</u>	<u>32,980</u>
Total Soft Cost	<u>616,322</u>	<u>362,777</u>
Total Hard & Soft Cost	<u>\$2,130,631</u>	<u>\$1,254,121</u>

The hard construction cost estimate for each bridge was prepared by Simon Wong Engineering, and the details of such estimate are described in Exhibit 4. The two bridges will be constructed using cast-in-place reinforced concrete. Aesthetic features include columns and abutments with simulated stone fascia, rectangular columns with a 2-way taper, walkway accent lighting and concrete stain on exposed concrete surfaces. The Hunte Parkway Bridge is planned to be 12 feet wide with a 10 foot wide walkway, a total vertical clearance of 18 feet 6 inches, and 556 feet in length. The Eastlake Parkway Bridge is planned to be 12 feet wide with a 10 foot wide walkway, a total vertical clearance of 18 feet 6 inches, and 295 feet in length. A hard cost contingency factor of 25% has been applied to both the Hunte Parkway Bridge and the Eastlake Parkway Bridge.

The design cost includes the cost of preparing design-related plans, including the cost associated with checking and reviewing such plans. The construction and special inspection cost includes the City inspection cost and the cost of retaining an outside firm with special experience in bridge inspections. The project administration cost includes the City's cost associated with verifying and auditing bridge expenditures and related documentation. The program administration cost includes the City's cost associated with monitoring and updating this fee program including, but not limited to, tracking building permits and changes in land use, collecting the fee, and revising cost estimates to ensure the adequacy of this fee program.

### 3. Area of Benefit

The Otay Ranch Village Eleven Sectional Planning Area (“SPA”) Plan - Parks, Recreation, Open Space, and Trails Master Plan has been designed, in part, to promote the pedestrian and bicycle trails as alternatives to using an automobile to access the village core, neighboring SPA’s, which will serve as the commercial hub for Village 11 and the Otay Valley Regional Park. A map depicting the General Development Plan land uses of Village 11 is enclosed in Exhibit 2. Pedestrian trails have also been designed to provide access to schools, parks, residential neighborhoods, and open space within villages, as well as between SPA’s. The pedestrian bridges described in this Report are an integral part of the pedestrian trail system for the system to operate as designed.

The Eastlake Parkway Bridge crosses Eastlake Parkway between Olympic Parkway and Hunte Parkway near the intersection of Birch Road and serves to connect the existing pedestrian trail system within Freeway Commercial/Easter Urban Center to the planned pedestrian trail system within Village 11. Land within Village 11 will benefit from the installation of this bridge primarily due to: (i) its location and proximity to the bridge, and (ii) its ease of access to the bridge based on the trail configuration. One half of the Eastlake Parkway Bridge cost will be included in a future pedestrian bridge development impact fee program prepared for the Freeway Commercial/Eastern Urban Center.

The Hunte Parkway Bridge crosses Hunte Parkway about equal distance between Eastlake Parkway and the SDG&E and San Diego County Water Authority Easement. This bridge serves to connect the pedestrian trail system in Village 11 to the planned pedestrian trail system in Village 10 (University Village). Land within Villages 11 and 10 will benefit from the installation of this bridge primarily due to: (i) its location and proximity to the bridge, and (ii) its ease of access to the bridge based on the trail configuration. It is anticipated that one-half of the Hunte Parkway Bridge cost will be included in a future pedestrian bridge development impact fee program to be prepared for Village 10 prior to developing this area.

A summary of the two pedestrian bridges and the three areas of benefit (“AOB”) based on the discussion above are as follows.

	Hunte Parkway Bridge	Eastlake Pky. Bridge
Village 11	AOB	AOB
Village 10	AOB(a)	
Freeway Commercial/Eastern Urban Center		AOB(a)

(a) This Village will be included in a future pedestrian bridge impact fee program to fund ½ of the cost of the applicable bridge.

#### 4. Development within the Area of Benefit

The properties within the AOB described in this Report are in various stages of the entitlement process. Property within the AOB has development approvals ranging from General Plan Designation to a Tentative Map. An "A" Map allows the transfer of ownership of individual neighborhood areas. A "B" Map functions as a final map and allows property owners to obtain building permits and create individual lots. The current entitlement status and land use for property within the AOB by Village, is as follows:

##### **Brookfield/Shea Otay LLC:**

- Village 11: This area is at Tentative Map entitlement status and consists of 2,282 residential units, 4.4 acres of community purpose facility, 2.9 acres of mixed use and 7.7 acres of parks. Approval of "B" Maps which function as a final map and allows property owners to obtain building permits and create individual lots is anticipated in the near future.

The approved tentative tract map land uses for Village 11 for residential dwelling units and non-residential acres are described in greater detail in Exhibit 3. The land use assumptions in Exhibit 3 will serve as the basis for allocating the benefit of the two pedestrian bridges and determining the pedestrian bridge development impact fee in this Report.

The residential land uses within Village 11 will have different degrees of benefit from the installation of the two pedestrian bridges. Residential units containing larger square footage will typically hold more people per household than the residential units containing smaller square footage. As such, residential units with a larger number of people per household will inure greater benefit from using the pedestrian trail system and its two bridges than residential units with a smaller number of people per household. The City utilizes people per household factors ("PPHF") in determining the amount of parkland dedication required by new development projects pursuant to City Ordinance, Chapter 17.10, as modified and approved on November 12, 2002. The PPHF used in Chapter 17.10 can serve as a reasonable method of allocating the bridge benefit to different residential uses. Chapter 17.10.040 applies PPHF to the following residential uses:

Single Family Detached ("SFD")	3.52 people per household
Multi Family ("MF")	2.61 people per household

For purposes of clarification and the ease of program administration, we have developed the following definitions for the above mentioned residential land use categories:

"SFD" means a single residential unit on a single assessor's parcel in within a tract with a density of less than or equal to 8 residential units per acre.

“MF” means any residential unit within a tract with a density greater than 8 residential units per acre.

For purposes of allocating the bridge benefit to different types of residential uses, the PPHF’s described in the preceding table were used in this Report. Brookfield Shea has provided, as noted in Exhibit 3, the estimated residential product types anticipated to be developed for each planning area.

The non-residential property consisting of mixed use, community purpose facility, schools, and parks is considered to inure insignificant benefit from the installation of the two bridges. A small number of employees related to the mixed use and community purpose facility uses may utilize the pedestrian trail system and its two bridges for fitness and recreation purposes during and after work hours, however the degree of this use and benefit inured to these types of properties is considered immaterial and insignificant. The school and park uses are designed to serve and accommodate the residential users in the villages. These land uses do not generate pedestrian trail users, instead their purpose is to serve or accommodate the residential users in the villages. As such, mixed use, community purpose facility, school and park uses within Village 11 are considered exempt from the pedestrian bridge fee obligation described in this Report.

## **5. Pedestrian Bridge Development Impact Fee Methodology**

The Steps or methodology used to develop the pedestrian bridge development impact fee applicable to residential units within Village 11 is as follows:

Step 1: Determine the total construction cost estimate for each of the two bridges.

Step 2: Multiply the total construction cost estimate of the Eastlake Parkway Bridge from Step 1 by 50 % to account for costs allocable to Freeway Commercial and Eastern Urban Center in connection with an existing development impact fee program. Multiply the total construction cost estimate of the Hunte Parkway Bridge from Step 1 by 50% to account for costs allocable to Village 10 in connection with a future development impact fee program.

Step 3: Subtract from the total construction cost estimate in Step 1 the cost estimate in Step 2 to determine the net bridge cost estimate allocable to Village 11.

Step 4: For each bridge and corresponding AOB, determine the total number of people per planning area by multiplying the actual and/or planned residential units within the planning area by the applicable PPHF.

Step 5: For each bridge and corresponding AOB, determine the total number of people within the AOB by summing the results of each planning area from Step 4.

Step 6: For each bridge and corresponding AOB, determine the bridge cost allocable to a planning area by multiplying the applicable bridge cost in Step 3 by the fraction

obtained by dividing the total number of people per planning area as determined in Step 4 by the total number of people within the AOB as determined in Step 5.

Step 7: For each bridge and corresponding AOB, determine the applicable bridge cost per residential unit by dividing the bridge cost allocable to the planning area as determined in Step 6 by the actual and/or planned residential units within each planning area.

Step 8: For each bridge and corresponding AOB, determine the combined cost of all bridges per residential unit by aggregating the results of Step 7 for all bridges and related AOB.

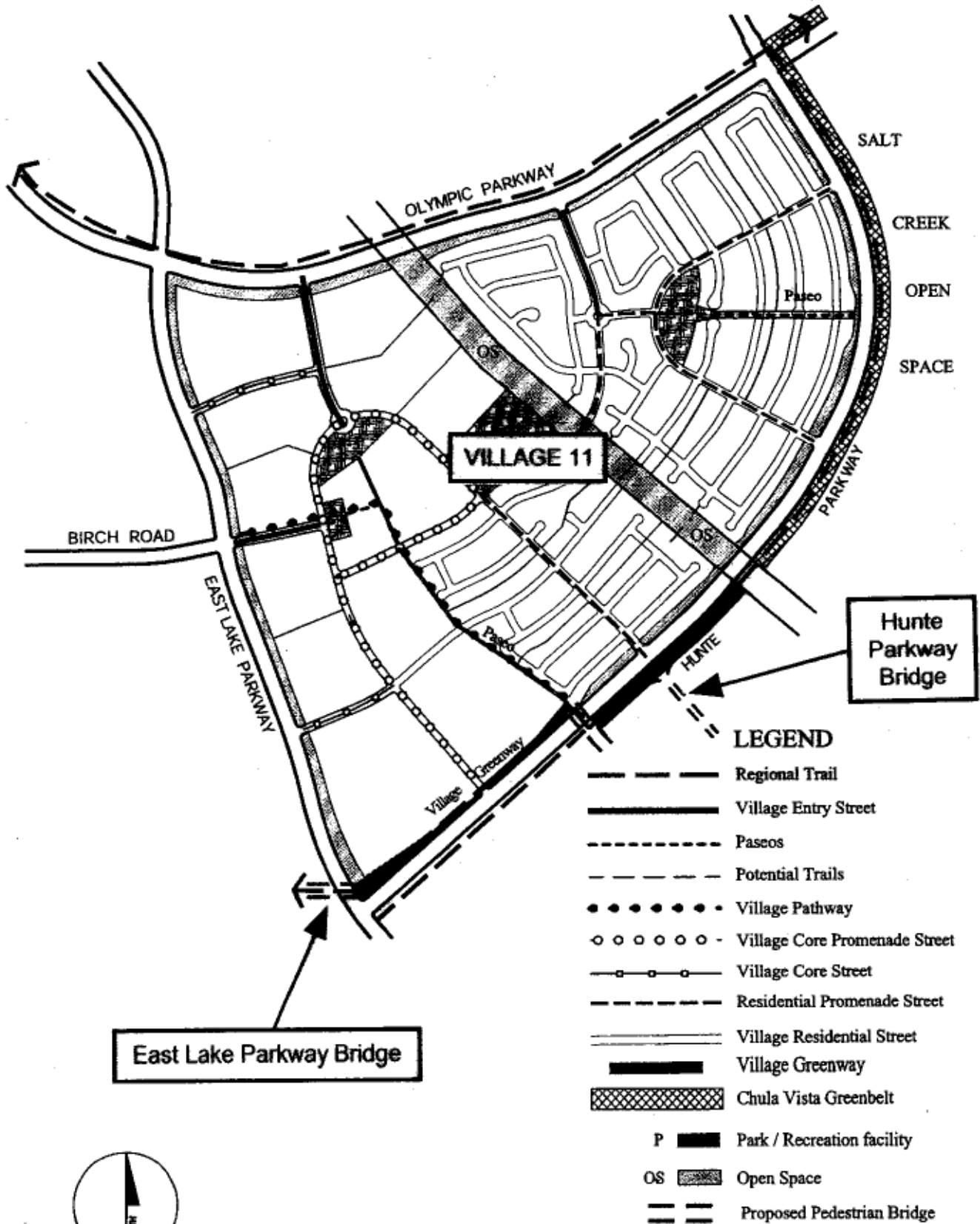
Exhibit 3 outlines on a detailed basis the methodology used to calculate the pedestrian bridge development impact fee applicable to residential units within Village 11.



# EXHIBIT 1

## PEDESTRIAN BRIDGE DEVELOPMENT IMPACT FEE REPORT

### MAP OF PEDESTRIAN BRIDGE LOCATIONS



Parks, Recreation, Open Space & Trails Plan

# Exhibit 2

## Pedestrian Bridge Development Impact Fee Report Area of Benefit



EXHIBIT 3

SUMMARY OF PEDESTRIAN BRIDGE DEVELOPMENT  
IMPACT FEE PER UNIT

	<u>Hunte Parkway Bridge</u>	<u>Eastlake Parkway Bridge</u>	<u>Total</u>
<b>Village Eleven:</b>			
SFD - Fee per Unit	<u>\$521</u>	<u>\$307</u>	<u>\$827</u>
MF - Fee per Unit	<u>\$386</u>	<u>\$227</u>	<u>\$614</u>

**EXHIBIT 3**  
**CALCULATION OF PEDESTRIAN BRIDGE DEVELOPMENT IMPACT FEE**  
**HUNTE PARKWAY BRIDGE**

Planning Area	Product Type	Density	Units (1)	Acres	Persons per Household Factor (2)	Total No. of Persons per Household (1) * (2)	Cost per Planning Area	Cost per Unit
<b>Village Eleven:</b>								
R-1	SFD	8.4	163	19.4	3.52	573.8	\$84,903	\$521
R-2	SFD	4.4	47	10.6	3.52	165.4	24,481	521
R-3	SFD	4.1	46	11.1	3.52	161.9	23,960	521
R-4	SFD	5.6	55	9.8	3.52	193.6	28,648	521
R-5	SFD	6.0	34	5.7	3.52	119.7	17,710	521
R-6	SFD	6.1	38	6.2	3.52	133.8	19,793	521
R-7	SFD	7.8	67	8.6	3.52	235.8	34,899	521
R-8	SFD	7.1	58	8.2	3.52	204.2	30,211	521
R-9	SFD	7.0	60	8.6	3.52	211.2	31,253	521
R-10	SFD	6.7	89	13.2	3.52	313.3	46,358	521
R-11	SFD	6.0	34	5.7	3.52	119.7	17,710	521
R-12	SFD	6.9	57	8.3	3.52	200.6	29,690	521
R-13	SFD	6.0	54	9.0	3.52	190.1	28,127	521
R-14	SFD	6.6	54	8.2	3.52	190.1	28,127	521
R-15	SFD	8.3	67	8.1	3.52	235.8	34,899	521
R-16	SFD	9.7	59	6.1	3.52	207.7	30,732	521
R-17	SFD	7.6	118	15.5	3.52	415.4	61,463	521
R-18	MF	14.7	125	8.5	2.61	326.3	48,277	386
R-19	MF	12.9	167	12.9	2.61	435.9	64,498	386
R-20	SFD	8.2	78	9.5	3.52	274.6	40,628	521
R-21	SFD	8.1	95	11.8	3.52	334.4	49,483	521
R-22	MF	12.8	105	8.2	2.61	274.1	40,553	386
R-23	SFD	7.1	119	16.7	3.52	418.9	61,984	521
R-24	MF	13.5	169	12.5	2.61	441.1	65,271	386
R-25	MF	23.0	200	8.7	2.61	522.0	77,243	386
MU-1	MF	11.5	115	10.0	2.61	300.2	44,415	386
CPF-1	CPF	-	-	4.4	-	-	-	-
P-1	Park	-	-	7.7	-	-	-	-
MU - 1	Comm.	-	-	2.9	-	-	-	-
<b>Grand Total Village Eleven</b>			<u>2,273</u>	<u>276.1</u>		<u>7,199.3</u>	<u>\$1,065,316</u>	

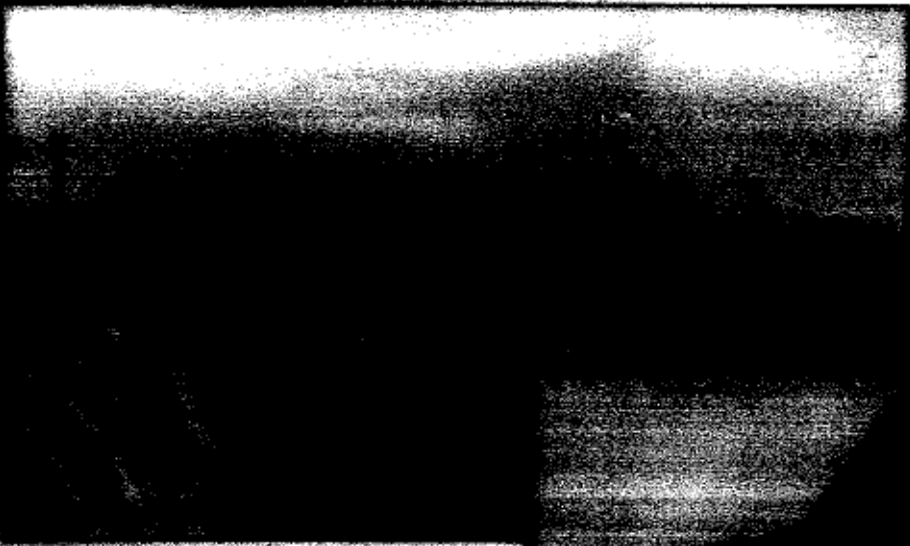
1,065,316  
2,130,631

**EXHIBIT 3**  
**CALCULATION OF PEDESTRIAN BRIDGE DEVELOPMENT IMPACT FEE**  
**EASTLAKE PARKWAY BRIDGE**

Planning Area	Product Type	Density	Units (1)	Acres	Persons per Household Factor (2)	Total No. of Persons per Household (1) * (2)	Cost per Planning Area	Cost per Unit
<b>Village Eleven:</b>								
R-1	SFD	8.4	163	19.4	3.52	573.8	\$49,975	\$307
R-2	SFD	4.4	47	10.6	3.52	165.4	14,410	307
R-3	SFD	4.1	46	11.1	3.52	161.9	14,103	307
R-4	SFD	5.6	55	9.8	3.52	193.6	16,863	307
R-5	SFD	6.0	34	5.7	3.52	119.7	10,424	307
R-6	SFD	6.1	38	6.2	3.52	133.8	11,651	307
R-7	SFD	7.8	67	8.6	3.52	235.8	20,542	307
R-8	SFD	7.1	58	8.2	3.52	204.2	17,782	307
R-9	SFD	7.0	60	8.6	3.52	211.2	18,396	307
R-10	SFD	6.7	89	13.2	3.52	313.3	27,287	307
R-11	SFD	6.0	34	5.7	3.52	119.7	10,424	307
R-12	SFD	6.9	57	8.3	3.52	200.6	17,476	307
R-13	SFD	6.0	54	9.0	3.52	190.1	16,556	307
R-14	SFD	6.6	54	8.2	3.52	190.1	16,556	307
R-15	SFD	8.3	67	8.1	3.52	235.8	20,542	307
R-16	SFD	9.7	59	6.1	3.52	207.7	18,089	307
R-17	SFD	7.6	118	15.5	3.52	415.4	36,178	307
R-18	MF	14.7	125	8.5	2.61	326.3	28,417	227
R-19	MF	12.9	167	12.9	2.61	435.9	37,965	227
R-20	SFD	8.2	78	9.5	3.52	274.6	23,914	307
R-21	SFD	8.1	95	11.8	3.52	334.4	29,127	307
R-22	MF	12.8	105	8.2	2.61	274.1	23,870	227
R-23	SFD	7.1	119	16.7	3.52	418.9	36,485	307
R-24	MF	13.5	169	12.5	2.61	441.1	38,419	227
R-25	MF	23.0	200	8.7	2.61	522.0	45,467	227
MU-1	MF	11.5	115	10.0	2.61	300.2	26,143	227
CPF-1	CPF	-	-	4.4	-	-	-	-
P-1	Park	-	-	7.7	-	-	-	-
MU - 1	Comm.	-	-	2.9	-	-	-	-
<b>Grand Total Village Eleven</b>			<u>2,273</u>	<u>276.1</u>		<u>7,199.3</u>	<u>\$627,060</u>	

**EXHIBIT 4**  
**Pedestrian Bridge Planning Study**

# Study



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7-20



May 16, 2002

Brookfield Homes  
12865 Pointe Del Mar, Suite 200  
Del Mar, CA 92014-3859

Attention: Dale Gleed

**SUBJECT: OTAY RANCH VILLAGE 11 PEDESTRIAN BRIDGE PLANNING STUDY**

Dear Mr. Gleed:

Simon Wong Engineering is pleased to provide the Draft Otay Ranch Village 11 Pedestrian Bridge Planning Study, for your review and comment.

Included in the study are recommended design features, cost estimates, elevation and plan views for the following structures:

- Hunte Parkway POC
- Eastlake Parkway POC

Cost estimates for the approach trails and grading of embankment slopes were not included in this report.

If we can be of further assistance, please call.

Andrew N. Sanford, P.E.  
Simon Wong Engineering

Attachments



**EXECUTIVE SUMMARY**

Two bridges are proposed for Otay Ranch Village 11. In order to define the bridge configuration, material types, architectural features, and approximate costs, Simon Wong Engineering has prepared this Planning Study. The results are summarized below:

**Bridge Geometry**

The two bridges are on a tangent alignment, 0° skew, with Hunte Parkway, and Eastlake Parkway. Each bridge is assumed to be 12' wide with a 10' clear walkway, with the anticipated bridge lengths as follows:

- Hunte Parkway POC - 556' long
- Eastlake Parkway POC - 295' long

**Structure Type and Estimates**

The architectural theme for Otay Ranch Village 11 is based upon the designs of Irvin Gill. To closely resemble this style and to match existing structures, currently located within the Otay Ranch Community, Cast-in-Place Reinforced Concrete was selected as the building material for both structures.

The total project cost for both bridges is as follows:

Bridge	Hunte Parkway	Eastlake Parkway
Bridge Construction Estimate	\$1,515,000	\$892,000
<b>Construction Total:</b>	<b>\$1,515,000</b>	<b>\$892,000</b>
Add-on Costs	\$150,000	\$150,000
Average cost per lineal foot bridge (\$/LF)	\$ 2,995	\$ 3,532

**Design Features**

A number of design features were included in the costs noted above. These features are intended to resemble the architectural style of Irvin Gill.

- Haunched girders in each span
- Rectangular columns with arched opening at each bent
- Flat exterior face of bridge without overhangs
- Column capitals at each bent



## A. INTRODUCTION

Simon Wong Engineering is pleased to present this Planning Study for the Otay Ranch Village 11 Pedestrian Overcrossings. Our scope of work for this phase of the project includes a study of possible bridge material types, span arrangements, and alternative aesthetic features. Based upon comments from Dale Gleed of Brookfield homes, selected features have been included in this study.

There are two Pedestrian Overcrossings (POC) proposed for the Otay Ranch Village 11:

- Hunte Parkway POC
- Eastlake Parkway POC

For this study, both the Hunte Parkway POC and Eastlake Parkway POC superstructures are comprised of two haunched exterior girders supporting the walkway between them.

The Hunte Parkway POC crosses Hunte Parkway, a Prime Arterial / Ranch Theme street, to provide access to the Salt Creek Open Space Preserve and University site. The bridge is aligned with one of the Village 11 pathways that provide pedestrian access throughout the Otay Ranch Community, with an approximate length of 556'. The Eastlake Parkway POC is located approximately 350' north of the intersection with Hunte Parkway, and has a total length of approximately 295'. It crosses Eastlake Parkway, a Prime Arterial / Ranch Theme street, providing access to Village 12 located to the east.

## B. Bridge Geometry

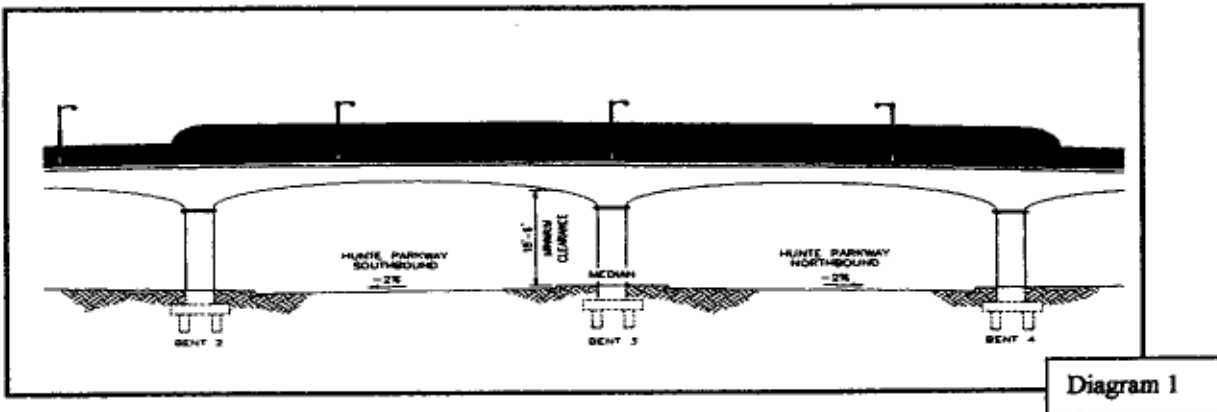
The bridge layouts are based on information provided by Hunsaker & Associates, with P&D Consultants providing assumed characteristics of Village 12 located to the east. Both bridges are assumed to be on tangent alignments and cross the roadways at a 90° angle (0° skew). It is anticipated that the Hunte Parkway structure will have a long pathway leading to the structure on the north, but will require a ramping portion on the south due to uncertainties in the future grading of the University Site. The Eastlake Parkway structure is anticipated to have long pathways leading up to the structure on both sides of the bridge.

Due to the preliminary nature of the project grading plans, the bridge locations and lengths are approximate. Assumptions have been made for the grading, which may result in an overestimation of the bridge lengths and project costs. Adjustments to the grading on the south side of Hunte Parkway that would provide an embankment slope would shorten the bridge considerably. The construction of fill embankments, where space is available, is usually less expensive than the building of a bridge structure.

The horizontal clearance at each bridge was based on requirements found in the Caltrans Highway Design Manual and the Caltrans Bridge Design Aids Manual. Columns adjacent to the roadway shoulders and within the median will require Metal Beam Guard Railing (MBGR) or equivalent protection for the traveling public. In order to resemble the Irving Gill style, columns are proposed adjacent to the outside shoulders and within the 16' median for both bridges, (see Diagram 1).

Simon Wong  
Engineering





The vertical clearance at each bridge was also based on requirements found in the Caltrans Highway Design Manual and the Caltrans Bridge Design Aids Manual. The standard minimum vertical clearance from the traveled way below a freeway or expressway is 16'-6". With an assumed posted speed of 45 MPH, Hunte Parkway and Eastlake Parkway should both be considered expressways. For pedestrian overcrossings, the standard of practice is to add 2' to the minimum required height for a total vertical clearance in this case of 18'-6" (See Diagram 1). The additional vertical clearance is justified by the higher probability of significant structural damage to the bridge in the event of an impact with an oversized vehicle. Both the bridges will meet or exceed this minimum clearance.

The bridge profile grades define the elevation change along the length of the structure and provide for drainage of the walkway surface. The maximum acceptable slope of the walkway surface is 8.33% (or 1' in 12') with landings provided for every 30" change in elevation. In addition, a handrail for use by the disabled must be provided where the slope is greater than 5%. For Eastlake Parkway, the assumed grading plans do not require a change in elevation to meet the vertical clearance over the roadway, and therefore can be designed with relatively flat profiles. In order to minimize the embankment heights and to provide for drainage of the walkway surface, the proposed profile grade includes a maximum of 2½% slope on either side of the main bridge span and a parabolic curve transition between. At Hunte Parkway, a ramp system is proposed for the south side of the structure with a maximum grade of 8.333% with intermediate landings to accommodate access to the structure.

Determination of the walkway width for a pedestrian overcrossing requires a site-specific analysis. The width is not mandated by code except as required for disabled accessibility. However, the standard of practice is to provide a minimum clear width of 8' for all overcrossing structures. Currently the structure located across La Media Road has a clear walkway width of 15'. Other Planning Studies have been completed that identify 10' clear walkways for structures that cross Olympic Parkway and La Media Road. For the two bridges included in this planning study, cost estimates are provided for 10' clear walkway widths for both Hunte Parkway and Eastlake Parkway.



In summary for the two structures, the following assumptions were made:

- Tangent alignment with 0° skew
- Columns located adjacent to the roadway and in the 16' median
- Minimum 18'-6" vertical clearance
- Maximum 2½% profile grade without landings (Eastlake Parkway POC)
- Maximum 8.333% profile grade with Landings (Hunte Parkway POC)
- Walkway widths of 10'-0"

**C. Superstructure Type**

The most important type selection decision for a bridge project is the superstructure material type and configuration. It is also the decision that will define the character of the bridge. There are many possible material types and construction methods available for this project. The following table lists some of the options:

<b>PEDESTRIAN OVERCROSSING STRUCTURE TYPES</b>		
<b>TYPE</b>	<b>COST \$/SF</b>	<b>COMMENTS</b>
Concrete Slab	70-140	Details and form work simplest of any type. Best for short spans less than 60' for POCs.
Concrete T-Beam	80-140	More complicated form work but economical for spans of 50' – 80' for POCs.
Concrete Box Girder	90-165	Best suited for spans of 50' – 120'. Clean lines and good appearance. Usually more economical than steel or precast concrete girders.
Post-Tension Box Girder	100-180	Similar to non-post-tensioned option but can be used for spans up to 600'.
Precast I-Girders	110-190	Good for areas where falsework is difficult to place for widenings with low vertical clearance. Span range from 50' – 120'.
Steel Girder	120-220	Similar to precast I-Girders for use, but initial cost is generally higher and requires periodic painting.
Steel Truss	120-500	Prefabricated bridges available for POCs. Optional self-weathering finish has "rural" appearance and does not require periodic painting. Falsework not required for installation.
Timber Truss	120-500	Glu-lam members allow for longer span and economical structures. Can achieve "rural" look.

Based on previous comments by Brookfield Homes, to resemble the architectural style of Irvin Gill, the selected superstructure type for Hunte Parkway POC and Eastlake Parkway POC is cast-in-place reinforced concrete with haunched exterior girders supporting the pathway above. At the supports each structure is supported on multi-column bents with an arched opening between them.



The superstructure configuration for Hunte Parkway and Eastlake Parkway match the architectural styling of Irving Gill. Gill's use of simple forms, arches, colonnades, and smooth finishes are included in these structures. Existing pedestrian structures located within the Villages of Otay Ranch utilize stained concrete on the superstructure and stone façade at the abutments and columns. These features are not present in the Hunte Parkway and Eastlake Parkway structures. However the common use of arches, rectangular columns, and reinforced concrete will tie the structures together visually.

The concrete bridge type is typically the lowest in initial cost, has a design life span of over 75 years, and has relatively low maintenance costs. Concrete can be colored or stained to achieve a weathered look or to meet other aesthetic goals. Architectural treatment can also be added to the vertical faces. The walkway surface for the two structures is a concrete deck. Examples of concrete pedestrian overcrossings are shown in Figures 1, 2, and 3.



Leucadia Boulevard POC

Figure 1



Calle Barcelona POC

Figure 2



La Media Road POC

Figure 3



Cost estimates for the bridges are as follows:

<b>OTAY RANCH PEDESTRIAN OVERCROSSING BRIDGE PLANNING STUDY</b>		
<b>Bridge</b>	<b>Hunte Parkway</b>	<b>Eastlake Parkway</b>
Bridge Construction Estimate	\$1,515,000	\$892,000
<b>Construction Total:</b>	<b>\$1,515,000</b>	<b>\$ 892,000</b>
Add-on Costs	\$150,000	\$150,000
Average cost per lineal foot bridge (\$/LF)	\$ 2,995	\$ 3,532

Individual General Plan Estimates are included in Appendix A and include a 25% contingency. Costs for the approach trails have not been included in the cost estimate, but bridge railing, and bridge lighting has. The add-on costs have been estimated at approximately \$150,000 each and include bridge design, construction engineering, and inspection. The actual add-on costs will be based on the final bridge type selection and an approved consultant's cost proposal. Agency review and permit fees are not included in the cost estimates.

Although shallow spread footings were used for La Media Road POC, deep foundations are assumed for all options in Village 11. Further refinement of the foundation system estimate will proceed after detailed field investigations of the subsurface conditions are completed. The foundations make up approximately 20% of the total bridge construction cost.

**D. Column Type**

The selected column type for both bridges is a multi-column bent with rectangular columns and arched opening between the columns. This simulates the colonnades of Irvin Gill and creates an openness to the structures.

**E. Bridge Railing and Lighting**

The general requirements for the bridge handrailing are based on the Caltrans Highway Design Manual and Bridge Design Aids Manual. Railings are necessary to prevent pedestrians and bicyclists from accidentally falling from the structure.

In the case of overcrossings, protective railing is necessary to prevent objects from being thrown, dropped or discharged onto the roadway below. While it is not possible to completely eliminate this serious problem, installing a protective mesh on the portions of the bridge over the roadway can significantly reduce the risk. A vinyl coated wire mesh with 1" maximum size openings and an overall height of approximately 8' has been adopted by Caltrans as the standard for this situation. Wire mesh alternatives include vinyl coated steel chain-link and vinyl coated crimped wire mesh.



The minimum railing height assumed for these two structures is as follows:

- For bicycle and pedestrian railings: 4'-6"
- Over roadways: 8'-0" with protective screening

The selected bridge railing is similar to that on the existing structure over La Media Road. This metal railing will may be colored to match existing railing found throughout the Otay Ranch Villages.

The bridge lighting options are anticipated to be similar to those on La Media Road and include walkway lighting along the approach trails and on the bridge.

Walkway lights are similar to streetlights but on a reduced scale. Final decision of the style and location of the lighting will take place during the design of the bridge.

Maintenance of the lights, consisting of replacing light bulbs, will require the use of a ladder for the walkway lights on the approach trails and bridge.

Bridge walkway surface lighting costs are generally between \$75 - \$170 per linear foot of bridge, with a project total of approximately \$130,000 for the bridge portion of this project.



APPENDIX A  
PLANNING STUDY ESTIMATES



<b>OTAY RANCH VILLAGE 11 PEDESTRIAN OVERCROSSING PLANNING STUDY</b>		
<b>Bridge</b>	<b>Hunte Parkway</b>	<b>Eastlake Parkway</b>
Bridge Construction Estimate	\$1,515,000	\$892,000
<b>Construction Total:</b>	<b>\$1,515,000</b>	<b>\$892,000</b>
Add-on Costs	\$150,000	\$150,000
Average cost per lineal foot bridge (\$/LF)	\$2,995	\$3,532
<b>Total Project:</b>	<b>\$1,665,000</b>	<b>\$1,042,000</b>

Individual General Plan Estimates are included in Appendix A and include a 25% contingency. The add-on costs have been estimated at approximately \$150,000 for each bridge, and include bridge design, construction engineering, and inspection. The actual add-on costs will be based on the final bridge type selection and an approved consultant's cost proposal. Agency review and permit fees are not included in the cost estimates.

**PLANNING STUDY ESTIMATE (BRIDGE ITEMS)**

ENGINEER: A. SANFORD                                      COMPANY: SIMON WONG ENGINEERING  
 REVIEWED BY:    DATE: 5/16/02  
 STRUCTURE: HUNTE PARKWAY PEDESTRAIN OVERCROSSING

LENGTH: 556'-0"    WIDTH: 12'-0"    DECK AREA (SF): 6672

ITEM NO.	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	468	\$55.00	\$25,740.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	284	\$45.00	\$12,780.00
3	STRUCTURE EXCAVATION (RET WALL)	CY	89	\$40.00	\$3,560.00
4	STRUCTURE BACKFILL (RET WALL)	CY	274	\$45.00	\$12,330.00
5	STRUCTURAL CONCRETE, BRIDGE	CY	771	\$650.00	\$501,150.00
6	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	141	\$400.00	\$56,400.00
7	STRUCTURAL CONCRETE, RET WALL	CY	50	\$350.00	\$17,500.00
8	BAR REINFORCING STEEL (BRIDGE)	LB	174,050	\$0.65	\$113,132.50
9	BAR REINFORCING STEEL (RET WALL)	LB	2,666	\$0.65	\$1,732.90
10	METAL BRIDGE RAILING (4'-6")	LF	862	\$70.00	\$60,340.00
11	METAL BRIDGE RAILING (8'-0")	LF	250	\$165.00	\$41,250.00
12	JOINT SEALS	LF	24	\$50.00	\$1,200.00
13	PILES DRIVE (CLASS 70C)	EA	62	\$2,000.00	\$124,000.00
14	PILES FURNISH (CLASS 70C)	LF	1860	\$20.00	\$37,200.00
15	BRIDGE LIGHTING	LS	1	\$85,000.00	\$85,000.00
16	MINOR CONCRETE (RAMPS)	LS	1	\$8,000.00	\$8,000.00
SUBTOTAL					\$1,101,315.40
MOBILIZATION (10%)					\$110,131.54
SUBTOTAL					\$1,211,446.94
CONTINGENCIES (25%)					\$302,861.74
TOTAL					\$1,514,308.68
FOR BUDGET PURPOSE USE					\$1,515,000.00
SQ FT COST					\$ 181.57

**COMMENTS:**

Pile foundations assume with depth of piles and number of piles estimated. Actual foundation will be determined during design once Soils Report has been provided.

Includes only bridge items of work and concrete for ramp system. Site grading, Bridge embankment construction and metal beam guardrail not included in this estimate.

Legend:            CY -Cubic Yards  
                       EA - Each  
                       LB - Pounds  
                       LF - Linear Feet

7-31

## PLANNING STUDY ESTIMATE

ENGINEER: A. SANFORD                                      COMPANY: SIMON WONG ENGINEERING  
 REVIEWED BY:    DATE: 5/13/02  
 STRUCTURE: EASTLAKE PARKWAY PEDESTRIAN OVER CROSSING

LENGTH: 295'-0"                                      WIDTH: 12'-0"                                      DECK AREA (SF) : 3540

ITEM NO.	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)	CY	295	\$55.00	\$16,225.00
2	STRUCTURE BACKFILL (BRIDGE)	CY	190	\$45.00	\$8,550.00
3	STRUCTURAL CONCRETE, BRIDGE	CY	460	\$650.00	\$299,000.00
4	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	65	\$400.00	\$26,000.00
5	BAR REINFORCING STEEL (BRIDGE)	LB	96,500	\$0.75	\$72,375.00
6	METAL BRIDGE RAILING 4'-6"	LF	330	\$100.00	\$33,000.00
7	METAL BRIDGE RAILING 8'-0"	LF	260	\$165.00	\$42,900.00
8	JOINT SEALS	LF	24	\$50.00	\$1,200.00
11	PILES DRIVE (CLASS 70C)	EA	40	\$2,000.00	\$80,000.00
12	PILES FURNISH (CLASS 70C)	LF	1200	\$20.00	\$24,000.00
13	BRIDGE LIGHTING	LS	1	\$45,000.00	\$45,000.00
				SUBTOTAL	\$648,250.00
				MOBILIZATION (10%)	\$64,825.00
				SUBTOTAL	\$713,075.00
				CONTINGENCIES (25%)	\$178,268.75
				TOTAL	\$891,343.75
				FOR BUDGET PURPOSE USE	\$892,000.00
				SQ FT COST	\$ 201.43

**COMMENTS:**

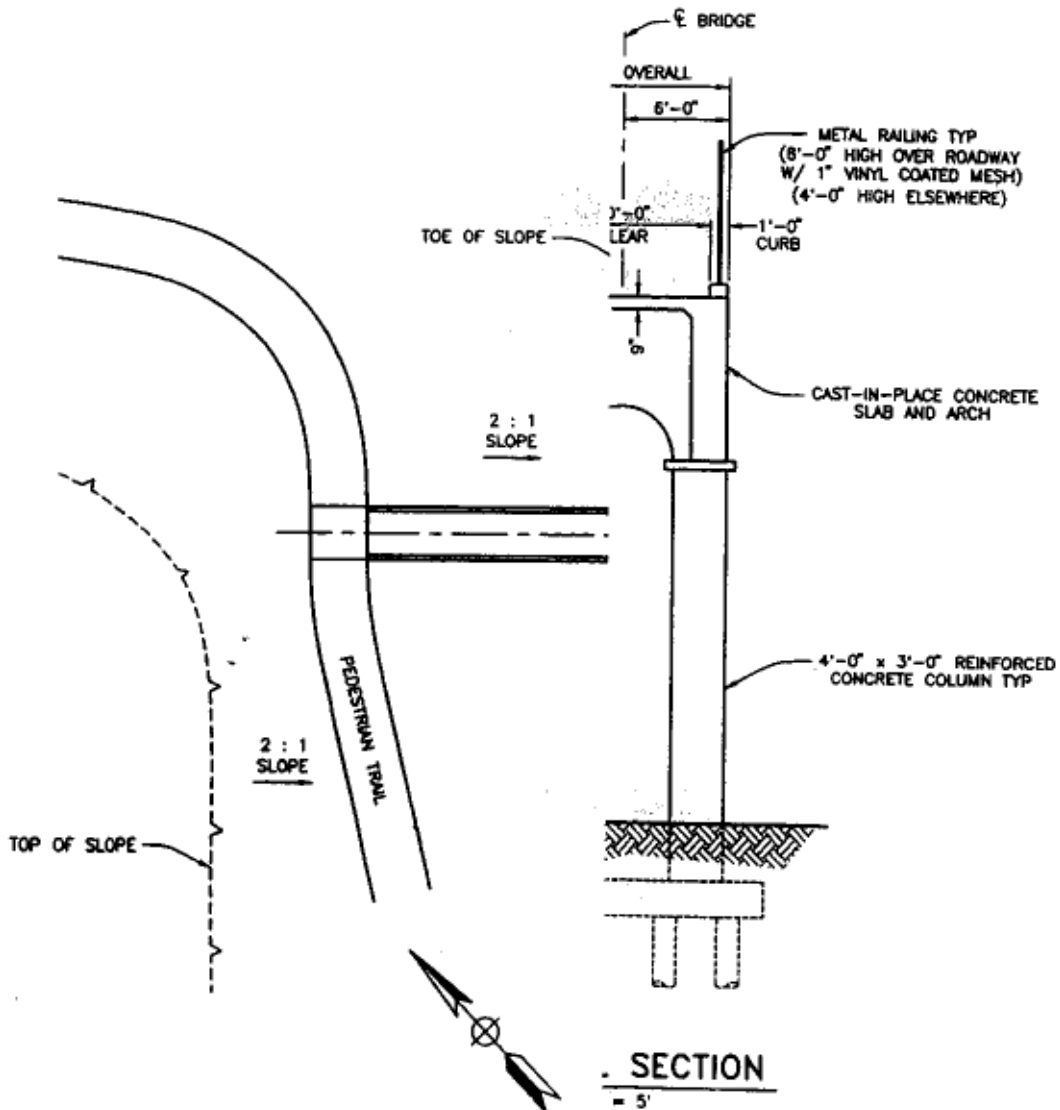
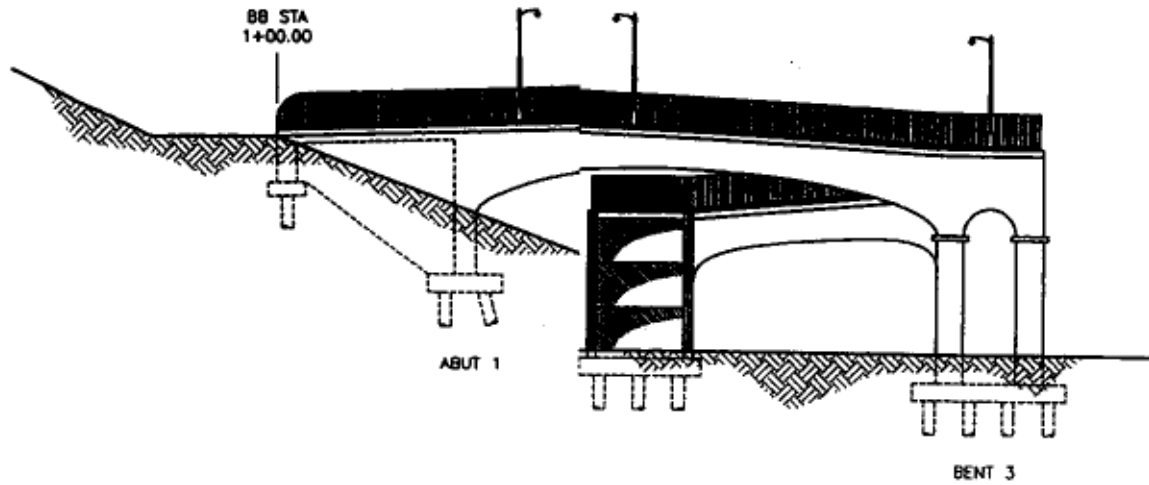
Pile foundations assume with depth of piles and number of piles estimated. Actual foundation will be determined during design once Soils Report has been provided.

Includes only bridge items of work. Site grading, Bridge embankment construction and metal beam guardrail not included in this estimate.

Legend:            CY -Cubic Yards  
                       EA - Each  
                       LB - Pounds  
                       LF - Linear Feet

7-32

APPENDIX B  
CONCEPTUAL BRIDGE ELEVATIONS



SIMON WONG ENCL

7-34

