The Navy office uses for Alternative D would be located in either the Business Core or the City College subareas. Office uses are designated through a large portion of these subareas, although more intensive office uses such as the offsite Navy office would generally be more compatible in the Business Core, where urban design guidelines suggest FARs of approximately 6, versus 3 to 4 in the City College area. The Business Core has extended into the College Subarea, and this is recognized by the 1989 Concept Plan.

Alternative C would be generally compatible with the Columbia Subarea, as it focuses Navy uses on Blocks 1 and 2 and replaces Navy uses on Blocks 3 and 4 with waterfront-oriented uses. This alternative would be beneficial with respect to achieving certain goals of the Columbia Subarea. However, this alternative would not be compatible with the goal of providing a plaza along Broadway, and would, therefore, conflict with a locally adopted land use goal. Although this would not be a change from existing conditions, the goals were created to guide future development of the site. Therefore, this alternative would result in a significant effect related to inconsistency with a locally adopted land use goal.

Alternative E would be similarly incompatible with the goal of providing a plaza along Broadway. This alternative would not meet other expressed goals of the Columbia Subarea since it would limit public access between the downtown core and the waterfront by locating parking lots on the eastern half of Blocks 1, 2, and 3, plus all of Block 4. Thus, this alternative would not be compatible with the stated goals of the Columbia Subarea, and would create a significant impact related to inconsistency with a locally adopted land use goal.

Alternative G would not implement any of the stated goals of the Columbia Subarea. However, because no new development is proposed with this alternative, local land use goals would not be applicable. Therefore, no impact would result from this alternative.

Redevelopment Plan Compatibility

The development of Blocks 1 and 2 under each alternative would be compatible with the Columbia Redevelopment Project, which includes "commercial/office/hotel"-designated land uses directly northeast and "housing/commercial/office"-designated land uses directly to the east of these blocks. Alternatives A, B, C, D, and F would provide a beneficial impact to land use compatibility, in that they provide a logical and complementary transition between the uses to the east and the waterfront. Although it does not provide the same type of transitional land uses, Alternative E includes office development on Blocks 1 and 2 that would be compatible with similarly designated land uses to the east.

Alternative G would neither enhance land use compatibility nor create any land use incompatibilities related to designated land uses to the east of Blocks 1 and 2. There are no current operations (which would be retained with Alternative G) that would be incompatible with designated land uses to the east and northeast of these blocks.

None of the proposed alternatives include development on Blocks 3 and 4 that would be potentially incompatible with the Marina Redevelopment Project. Alternatives A, B, C, D, and F all include hotel uses on these blocks, with Alternative F also including commercial office uses on Block 3. This would be compatible with the "residential/nonresidential mix" and the "commercial recreation" mix located to the east.

Alternative E includes low-rise Navy office development in the western area of Block 3 and surface parking in the eastern area of Block 3 and on the entire Block 4. It does not provide the same level of compatibility as the alternatives discussed above, but would not create any incompatibilities with the designated land uses to the east. Although it would not create a land use incompatibility, the Marina Redevelopment Plan specifies that all parking spaces should be in enclosed parking structures.

Alternative G would neither enhance land use compatibility, nor would it create any land use incompatibilities related to designated land uses to the east of Blocks 3 and 4. There are no current operations (which would be retained with Alternative G) that would be incompatible with designated land uses to the east of these blocks.

Compatibility With the Urban Design Program

Alternatives A, B, and F, and the onsite component of Alternative D would be compatible with the Centre City Urban Design Program. Pedestrian-oriented streets would be provided along Harbor Drive, Broadway, Pacific Highway, and Market Street. Development along the gateway streets--Market Street, Broadway, and Pacific Highway--would be designed to be visually attractive at the street level as well as at a distance. Broadway would be made into an active pedestrian area, with wide sidewalks and an open space area (Alternatives A and F) or plaza area (Alternatives B and D) at Harbor Drive. The open space at the foot of Broadway shown in Alternatives A and F could be extended to the north to create up to 10 acres of open space that is compatible with the planned pedestrian corridors and facilities, as shown in the urban design program (Figure 4-5, page 4-11).

In addition to these features, these alternatives would open E, F, and G Streets, which are currently closed through the Navy Broadway Complex, to pedestrians and vehicles and would provide wide, pedestrian-oriented walkways to encourage pedestrian flow through the site. This would be a beneficial impact of the project with regard to urban design, especially as it relates to G Street, where pedestrian access would be opened up through the site, connecting the Marina residential area to the east to the G Street Mole and the waterfront to the west.

The location of the offsite Navy office development associated with Alternative D is east of the Urban Design Program study area.

Alternative C would be generally compatible with the Urban Design Program, except that the pedestrian orientation along Broadway would not be provided, primarily because no open space would be established at the foot of Broadway. This would be a significant impact of this alternative because it would not be compatible with a locally adopted goal.

Alternative E would not be compatible with the Urban Design Program. None of the design features described in the Urban Design Program (e.g., pedestrian-oriented streets and an open space at the foot of Broadway) would be implemented. As such, this alternative would have a significant impact because it is not consistent with a locally adopted goal.

Alternative G would not implement any of the plans found in the Urban Design Program. However, because no new development would result from this alternative, consistency with the program is not applicable. Therefore, no significant impacts would result.

MITIGATION MEASURES

Significant adverse environmental effects related to compatibility with the Centre City Community Plan and the Centre City Urban Design Program would result from implementation of Alternatives C and E because they would not provide an open space or plaza at the foot of Broadway. Building 1 would need to be retained at the foot of Broadway with either alternative, so mitigation of this impact is not feasible and an unavoidable adverse impact would result.

ENDNOTES:

1 Centre City Development Corporation, 1983.
2 San Diego Unified Port District, 1980 (revised 1987).
3 Ibid.
4 California Coastal Zone Conservation Commission, 1975.
5 San Diego Unified Port District, 1976.
6 City of San Diego, 1985.
7 City of San Diego, 1976a.
8 Ibid.
9 Ibid., page 105.
10 Ibid.
11 City of San Diego, 1988.
12 Centre City Development Corporation, 1983.

4.2 TRANSPORTATION/CIRCULATION

The analysis presented herein is a summary of a traffic study prepared by Korve Engineering, Inc. for the proposed project. A complete copy of the study is available for review at the Broadway Complex Project office, 555 West Beech Street, Suite 101, San Diego, California 92101-2937.

4.2.1 AFFECTED ENVIRONMENT

The Navy Broadway Complex is served by a variety of transportation systems, and is located close to a major freeway (I-5), an intercity and commuter rail line (AMTRAK), the San Diego Trolley light rail transit (LRT) system, and an extensive bus network. This system is described in detail below.

Circulation Characteristics

Major Street System

The project vicinity is served by several major roadways within the jurisdiction of the City of San Diego. Regional access to the project vicinity is provided by I-5, the principal regional north-south route. Local access is depicted on Figure 4-9. I-5 runs northwest/southeast along the perimeter of San Diego's Centre City. Northbound access to I-5 is provided from the south via ramps at the Grape/Hawthorn one-way couplet, First Street, the 5th/6th one-way couplet, B Street, C Street, E Street, and J Street. Southbound access to I-5 is provided from ramps at Hawthorn Street, the Front/First one-way couplet, the 10th/11th one-way couplet, B Street, and Imperial Avenue. Pacific Highway, Ash Street, Broadway, Market Street and G Street are the major corridors connecting the project area to the freeway system serving Centre City.

The local roadways affecting travel patterns in the project vicinity include Harbor Drive, Pacific Highway, the Kettner/India couplet, the Front/First couplet, Laurel Street, the Hawthorn/Grape couplet, Ash Street, Broadway, Market Street, and G Street. The most heavily traveled north-south routes are Harbor Drive and Pacific Highway. Laurel Street and the Hawthorn/Grape couplet, which provide access to I-5 ramps, are the most heavily used east-west routes. The number of lanes on each of these routes is shown on Figure 4-9. Note that Figure 4-9 depicts the planned realignment of Harbor Drive south of the project site.

Traffic Volumes

Traffic count data from 1988 were provided by the Traffic Division of the City of San Diego (see Figure 4-10).[1] These counts are the most current available, and are used as the basis for modeling traffic conditions through the year 2010.

The largest traffic volumes in the project vicinity occur on Harbor Drive and Laurel Street north of the project site. Most of this traffic is composed primarily of traffic traveling between I-5 and the Airport/Point Loma area. Pacific Highway and the Hawthorn/Grape couplet form a corridor between the Central Bayfront and I-5 that caries heavy traffic volumes to the north of the project site.

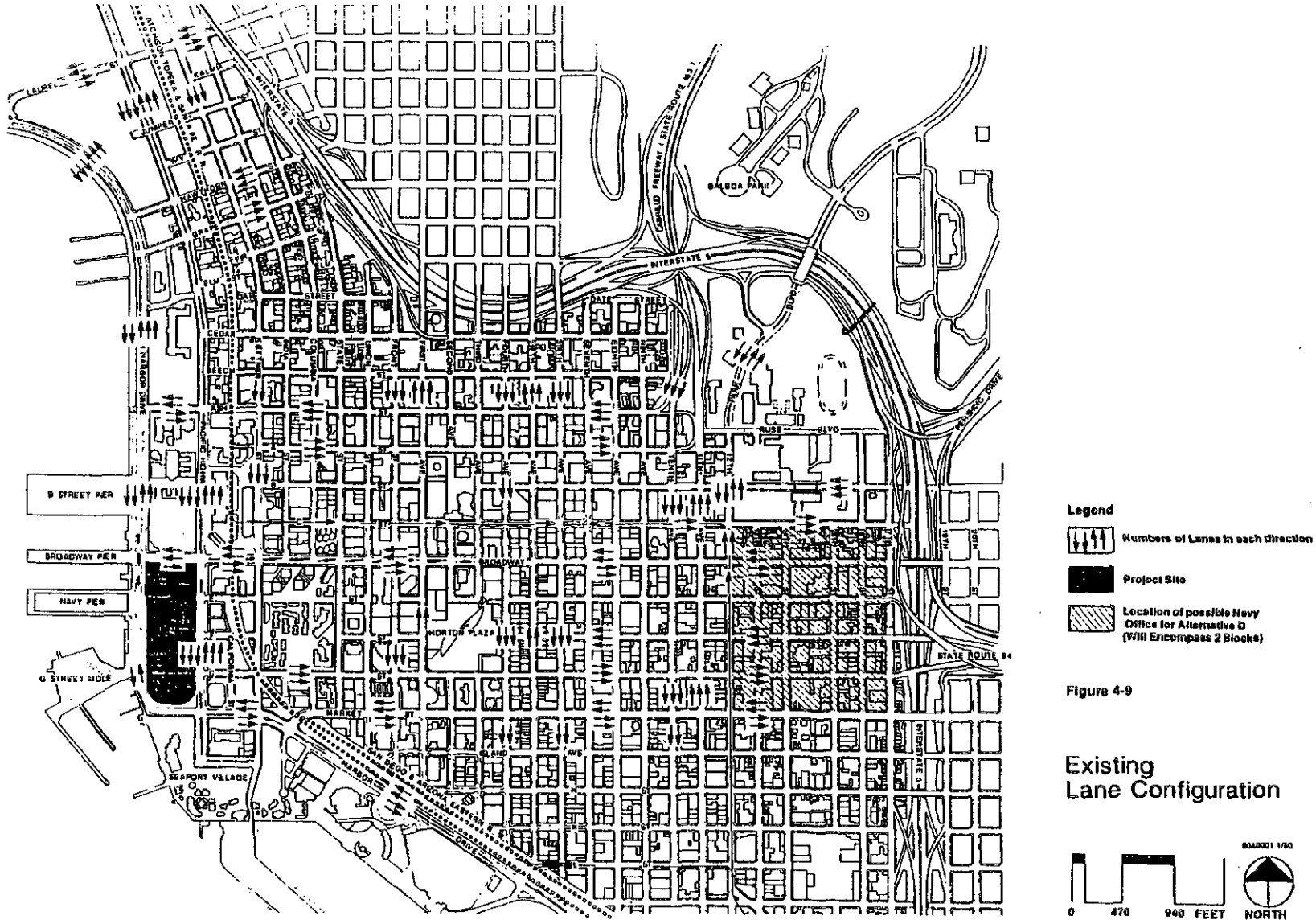
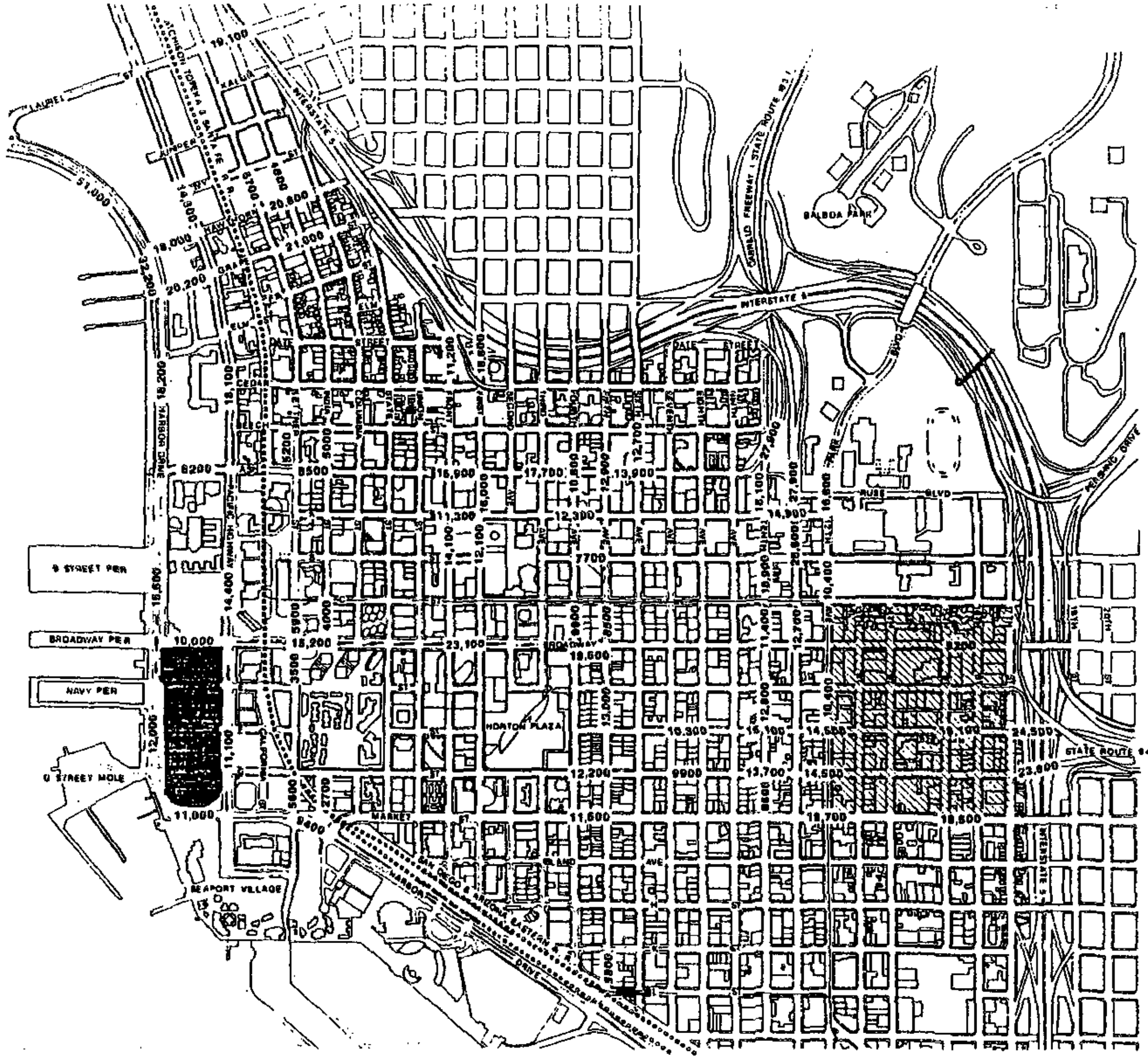


Figure 4-9

Existing
Lane Configuration



Legend

25,300 — Average Daily Trips

Project Site

Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

Figure 4-10

Average Daily Traffic for Major Streets

0 470 940 FEET — NORTH

SOURCE: SANDAG

Roadway Capacities

Traffic volumes are useful in understanding the general nature of traffic in an area but alone do not indicate the ability of the street network to carry traffic. To provide a measure of the current level of roadway use, the daily volumes on each roadway link are compared with the maximum desirable daily volumes. The maximum desirable daily volumes cited in the following analysis are based on City of San Diego street design standards.[2] The comparison of current volumes to roadway capacities results in the development of a volume-to-capacity (V/C) ratio for each of the roadway segments evaluated. This V/C ratio is an indicator of the quality of traffic flow on each route.

The V/C ratios for the major routes in the project vicinity are shown in Table 4.2-1. The Grape-Hawthorn couplet currently operates at 80 percent of its daily capacity and is the primary connector between I-5 and the Pacific Highway corridor. It serves as a primary route to and from the San Diego Airport (Lindbergh Field) and is heavily congested. The remaining roadway segments have V/C ratios of less than 0.70.

Intersection Capacities

Levels of service referred to in this report are calculated by the "intersection capacity utilization (ICU)" methodology as set forth by the Transportation Division of the City of San Diego. The ICU analysis is the methodology used for traffic studies conducted for the City of San Diego. The p.m. peak period is used for this analysis as it represents the time of the day with the highest traffic volumes. The traffic conditions were evaluated for 13 signalized intersections in the project vicinity for the evening peak period. Turning movement counts were conducted for these intersections on October 25, 1988 and October 26, 1988. The peak hour for these intersections occurs between 4:30 and 5:30 p.m. This is characteristic of downtown areas, where p.m. peak volumes are higher than a.m. peak volumes due to the concentration of retail uses, which generate much lower traffic levels during the a.m. peak hour. The service levels are shown in Table 4.2-2.

During the p.m. peak hour, the intersections of Grape/Harbor and Grape/Pacific operate at service level B, which indicates good operating conditions. Surveys indicated that long queues exist on Grape Street during the evening peak period. This queueing of vehicles occurs because of capacity constraints at the on-ramps to I-5 and are not related to capacity limitations at adjacent intersections. The remaining intersections operate at service level A. This indicates very good intersection operations with little delay to vehicles.

Public Transit/Transportation

The transit needs in the project vicinity are served by the San Diego Transit Corporation, Strand Express, the San Diego Trolley, Inc., and AMTRAK. Surveys of travel modes to Centre City indicate that transit use represents approximately 7 percent of all daily trips.[3] The local transit routes are shown on Figure 4-11.

The 10 SDTC bus routes operating in the project area carry a total of approximately 12.6 million passengers annually.[4] The highest volume transit lines are routes 2, 4, 7, 29, and 34. The two Strand Express bus routes serve 1.7 million passengers annually. The San Diego Trolley, which carries the highest ridership of any single transit line, served 9.3 million passengers in 1986. The San Diego line of AMTRAK carried 1.4 million passengers in 1986.[5]

TABLE 4.2-1

COMPARISON OF CURRENT VOLUMES

Street Segment	Approximate Max. Desirable Daily Volumes	Existing Conditions Daily Traffic	Volume/ Capacity
Ash Street			
w/Pacific Highway	46,000	8,200	0.16
w/India	46,000	8,500	0.16
Broadway			
w/Pacific Highway	30,000	10,000	0.30
w/India	30,000	15,200	0.45
G Street			
w/Kettner	23,000	1,500	0.06
w/India	23,000	2,800	0.11
Grape			
w/Pacific Highway	23,000	20,200	0.78
w/India	23,000	21,000	0.81
Hawthorn			
w/Pacific Highway	23,000	18,000	0.70
w/India	23,000	20,800	0.80
Harbor			
n/Grape	46,000	32,200	0.62
n/Ash	46,000	18,200	0.35
n/Broadway	30,000	15,500	0.46
s/Broadway	15,000	12,000	0.71
e/Pacific Highway	30,000	9,400	0.28
India			
n/Hawthorn	23,000	4,800	0.19
n/Ash	23,000	5,000	0.19
n/Broadway	23,000	4,000	0.15

Note: The notation accompanying each segment indicates a directional reference. For example, "w/Pacific Highway" signifies a location west of Pacific Highway.

TABLE 4.2-1 (continued)

Street Segment	Approximate Max. Desirable Daily Volumes	Existing Conditions Daily Traffic	Volume/ Capacity
Kettner			
n/Hawthorn	23,000	6,700	0.26
n/Ash	23,000	5,200	0.20
n/Broadway	23,000	5,900	0.23
Laurel			
w/Pacific Highway	30,000	30,400	0.90
Pacific Highway			
n/Hawthorn	46,000	14,800	0.29
n/Ash	46,000	18,100	0.35
n/Broadway	46,000	14,400	0.28
n/G Street	46,000	11,100	0.21
Market Street			
w/Fifth	30,000	11,500	0.34

Source: SANDAG, City of San Diego.

TABLE 4.2-2

INTERSECTION SERVICE LEVELS
Existing P.M. Peak Hour Conditions

Intersection	ICU[a]	Service Level
Hawthorn/Harbor	0.48	A
Grape/Harbor	0.61	B
Grape/Pacific	0.64	B
Broadway/Kettner	0.51	A
Ash/Pacific	0.45	A
N. Harbor/Pacific	0.52	A
Ash/Harbor	0.41	A
N. Harbor/Kettner	0.53	A
Broadway/Kettner	0.44	A
Broadway/Pacific	0.45	A
Hawthorn/Pacific	0.41	A
Broadway/Front	0.40	A
Ash/Front	0.34	A

a Intersection Capacity Utilization

Source: Korve Engineering, Inc. 1989.

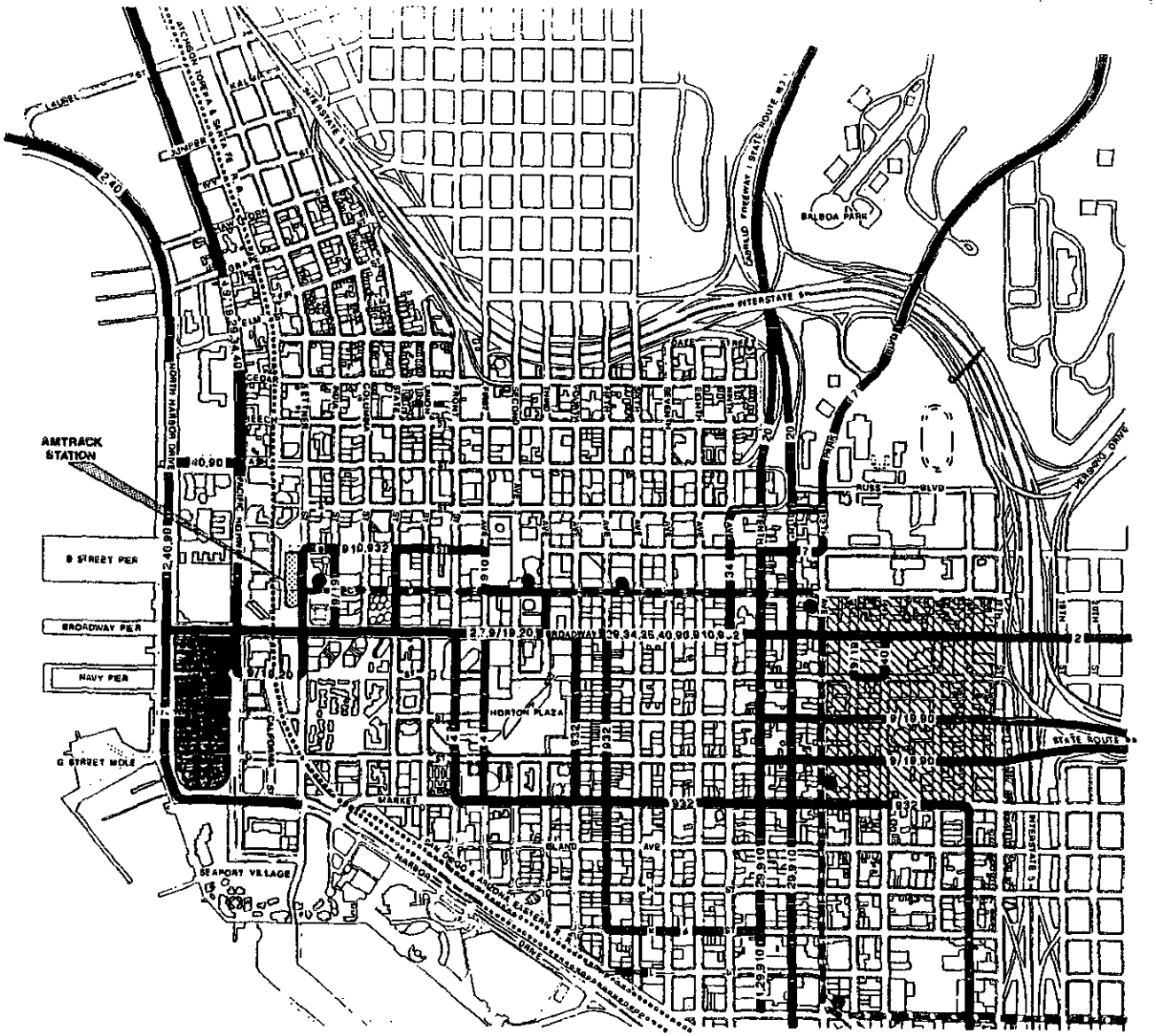


Figure 4-11

Transit Routes

Navy Broadway Complex Project

The SDTC operates approximately twenty bus lines into Centre City area and ten of these lines provide service within two blocks of the project site. The midday frequencies for most of these routes are about 30 minutes. Evening peak-hour frequencies are generally in the 10- to 15-minute range. Lines 2, 4, 7, 20, 29, and 34 are the high-volume bus routes in the project vicinity. These bus routes operate along Harbor Drive, Pacific Highway, or Broadway. Route 27 provides express service from Tierrasanta to the County Administrative Center through one morning and one evening run.

The Strand Express provides regional bus service from the Centre City to both Imperial Beach and the San Ysidro International Border. Both routes approach the project area on Broadway and make their turnaround on Kettner at the Santa Fe Station.

The San Diego Trolley has the highest daily ridership levels for any single transit line in the Centre City area. The "South Line" runs from the Santa Fe Station (Kettner/C Street) to the east along C Street into the core of Centre City. It then travels south along a 15.9-mile route to the Mexican border. The South Line operates at 30-minute intervals during early morning and late evening hours, and 15-minute intervals between 7:00 a.m. and 7:00 p.m.

The recently expanded "East Line" of the San Diego Trolley runs from the Centre City transfer station at Imperial and 12th Street east to El Cajon. It spans over 17.3 miles and operates at 30 minute intervals during off-peak hours. It runs at 15 minute intervals in each direction during peak hours.

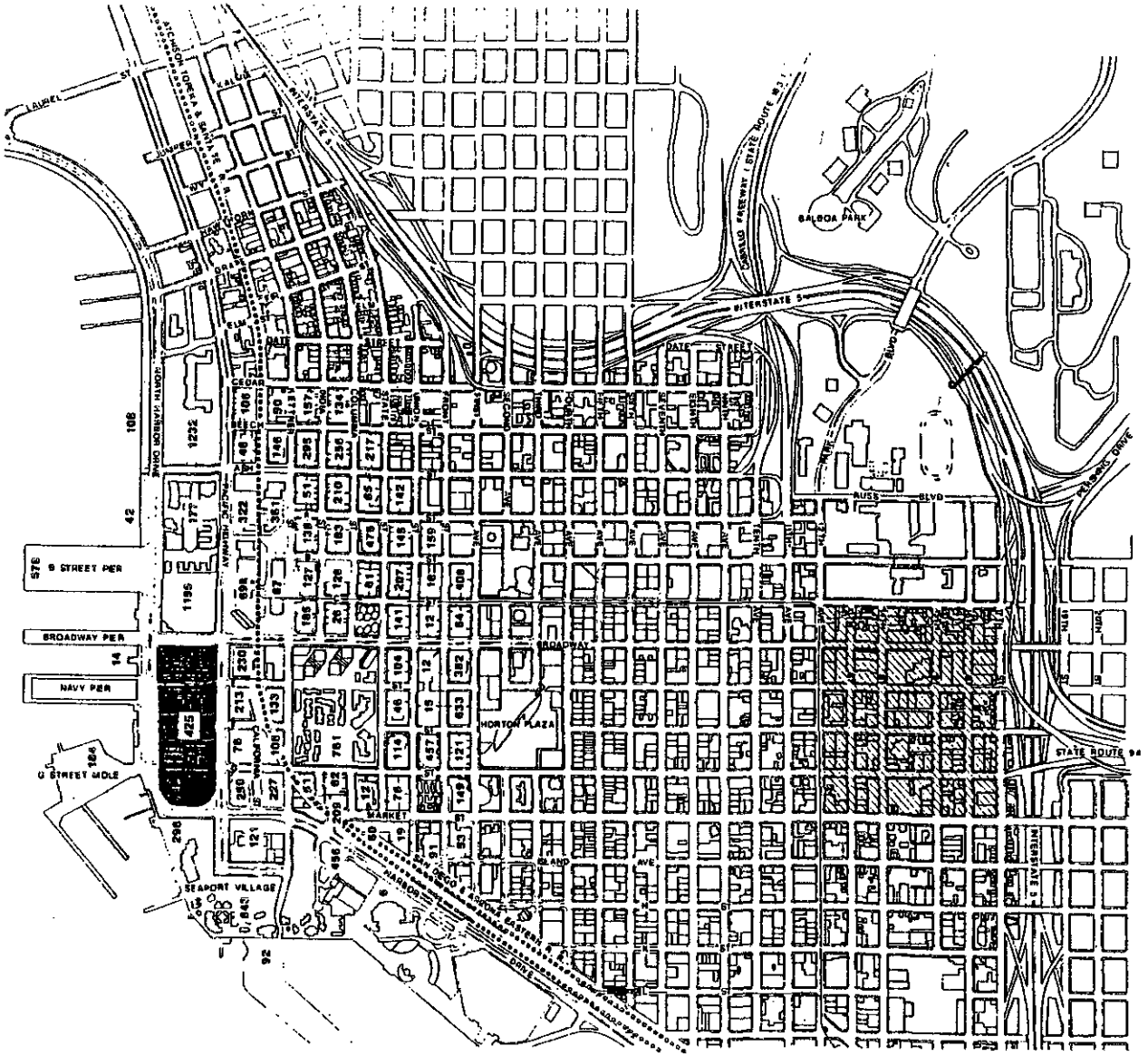
AMTRAK provides service into the Centre City at the Santa Fe Station via the Atcheson, Topeka and Santa Fe (AT&SF) Railroad line. AMTRAK provides intercity and commuter rail service between San Diego and the Los Angeles area. The Los Angeles-San Diego AMTRAK line currently serves well over 1 million passengers annually.

Parking

There are approximately 15,550 parking spaces within 15 minutes walking distance of the project site.[6] This includes 13,220 off-street spaces and 2,330 on-street spaces. The Navy Broadway Complex has 425 dedicated on- and off-street parking spaces (see Figure 4-12).

The largest off-street parking areas in the project vicinity are the lots at the County Administrative Center and the Lane Field site, both to the north, with 1,232 and 1,195 spaces, respectively. The county site is bounded by Hawthorn Street, Harbor Drive, Ash Street, and Pacific Highway. The Lane Field site is located just north of the project site. The parking lots adjacent to the Santa Fe Station, located on the east side of Pacific Highway between Broadway and Ash Street, contain 1,020 spaces. Parking facilities near Seaport Village provide 843 spaces.

The overall occupancy of the on-street and off-street parking facilities located within a 15-minute walking distance of the project site (depicted on Figure 4-13), is 75 percent. The peak use of on-street spaces averages 83 percent, with off-street lots and structures averaging 74 percent. This includes the two major parking facilities at Lane Field and the county site.



Legend

- Existing Parking Spaces
- Project Site
- Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

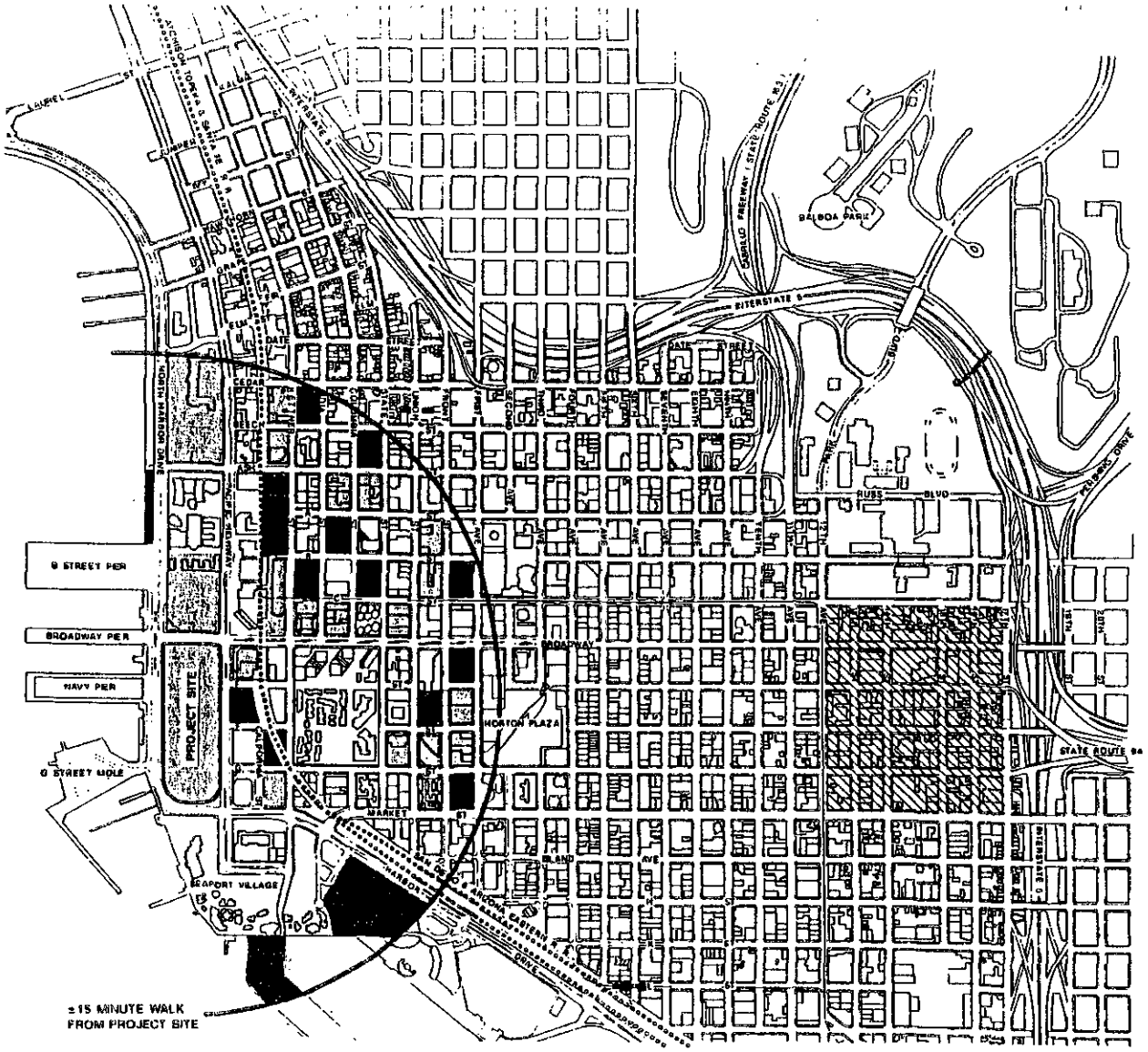
Figure 4-12

Parking Inventory

0 470 940 FEET NORTH

SOURCE: SANDAG, 1988

Navy Broadway Complex Project



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- 86 - 100% Occupied
- 76 - 85% Occupied
- 0 - 75% Occupied
- Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

Figure 4-13

Mid-Afternoon Parking Occupancy
March 1988

0 470 940 FEET NORTH

Source: SANDAG, 1988

Several blocks in the project vicinity exhibit high occupancy rates during peak-demand periods. In commercial areas such as the Centre City, parking occupancy rates of 100 percent are not obtained except in isolated areas (single lots or street sections) due to continuous inflow and outflow from large lots and garages. Motorists looking for parking spaces begin to experience difficulty at occupancy rates of 80 to 90 percent. At occupancy rates of more than 90 percent, a parking deficiency occurs. For purposes of this report, a parking area is considered to be fully utilized when it is 90 percent or greater occupied.

The public parking (1,020 spaces) that is currently available at the lots adjacent to the Santa Fe Station will eventually be removed when the area is developed (projected to begin in 1992). A substantial number of parking spaces would likely be constructed for the Santa Fe project in structured facilities and designated specifically for employees and guests during weekday working hours. As a result, a substantial quantity of the public parking spaces in the area will be lost.

The parking occupancy levels generally increase as motorists travel east from the project site to the core of the downtown area. Higher occupancy levels typically occur on the east side of the railroad line. The heaviest parking use occurs near the Civic Center (at Second and C Streets), where occupancy levels exceed 90 percent. This occupancy level represents the effective capacity of larger parking facilities.

Bikeways

The existing system of bicycle routes in the central bayfront area is depicted on Figure 4-14.[7] There are bicycle routes along Harbor Drive, Market Street, Ash Street, and the Kettner/India couplet. A bicycle fitted-bus is provided on Routes 9 and 910 in the Centre City. All bikeways in the Centre City area and near the project site are Class III facilities.

Planned Transportation Improvements

The following section describes roadway, transit, parking, and bikeway improvements that have been programmed for the City Centre area by the City of San Diego, the MTDB, or Caltrans.

Roadway Improvements

The City of San Diego has designated funds in their 1989 Capital Improvement Program (CIP) for the extension of Front Street/First Street one-way couplet and Eighth Avenue to Harbor Drive.[8] The Front Street project will involve the extension of the Front-First one-way couplet. The connection to Harbor Drive will be provided along Front Street and First Street, where two one-way streets will be constructed to cross the railroad tracks.

The Eighth Avenue project provides an upgraded connection to Harbor Drive south of the Navy Broadway Complex. Eighth Avenue will be widened at its connection with Harbor Drive to provide adequate intersection capacity. In conjunction with these projects, the City of San Diego will be eliminating railroad crossings on E Street and F Street between Pacific Highway and Kettner Boulevard.[9] Access to these short, one-block long roadway sections will be restricted to adjacent parking lots only.

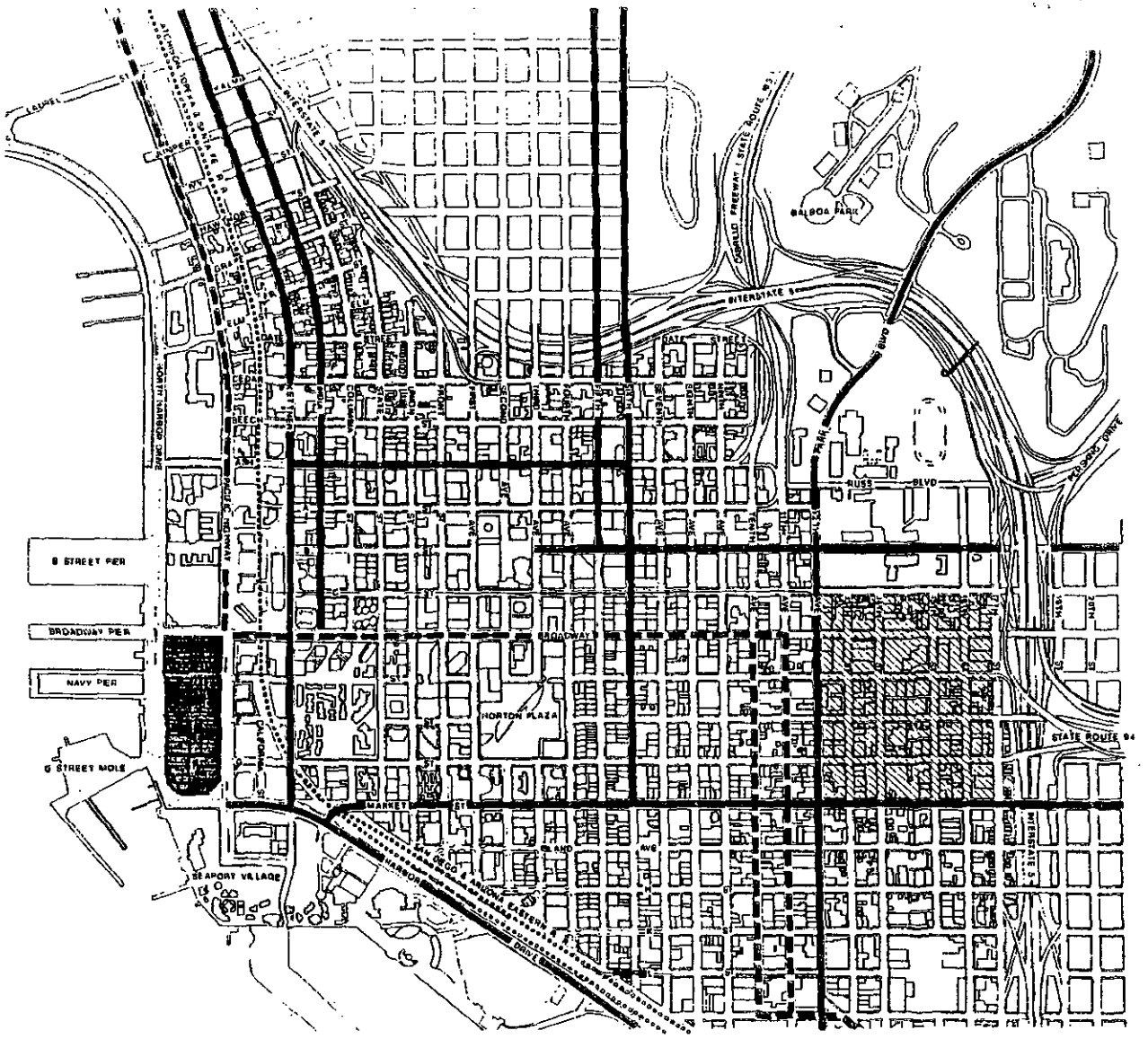


Figure 4-14

Bicycle Routes

SOURCE: CITY OF SAN DIEGO

The California Department of Transportation (Caltrans) has programmed a number of freeway improvements along I-5, SR 163, and I-8 that could provide additional capacity for commuter traffic to the Centre City area. [10] This includes a project to widen I-5 for auxiliary lanes and ramp improvements between Imperial Avenue and SR 163. This project is programmed for implementation in fiscal year 1991 at a cost of approximately $3.9 million.

Transit Improvements

The most significant transit improvement in the project vicinity is the planned construction of the Bayside Line of the San Diego Trolley. The MTDB has adopted a preferred alignment that will be constructed along a 1.6-mile route for an estimated $40 million. [11] Beginning at Grape Street, the Bayside line will travel south along the AT&SF railroad right-of-way to its junction with Commercial Street, where it will travel east to a transfer station that connects with the existing South and Euclid lines. The Bayside line is scheduled to begin operation in June 1990. [12] Future trolley lines are planned that would extend the Bayside line to communities north of Centre City.

Based on recommendations made by the Los Angeles-San Diego State Rail (LOSSAN) Corridor Study Group in 1987, the State of California is in the process of implementing a $246-million improvement program for AMTRAK commuter service along the corridor. This two-phase program includes an initial program of low cost time reduction projects, track upgrades, and implementation of commuter rail service. Subsequently, the program will involve station and track improvements, the addition of more AMTRAK trains and cars, and additional time-saving projects.

Parking Improvements

The City of San Diego does not currently have any plans for the construction of public surface lots or parking structures in the vicinity of the Navy Broadway Complex, although a 1,950-space parking garage is currently planned at Seaport Village to serve existing and planned retail uses at that location. In addition, a parking garage with 1,270 spaces is planned in conjunction with the proposed Hyatt Hotel adjacent to Seaport Village. The Parking Management Plan currently being prepared for the Centre City area calls for the establishment of parking interceptor sites at the periphery of the downtown area. These sites would be located in proximity to I-5 and other major freeways that access the Centre City. The objective of the program is to reduce the relative proportion of long-term parking within the downtown and the related traffic congestion created by employee traffic.

Bikeway Improvements

The development of bikeways along the full length of the Pacific Highway is planned by the City of San Diego. [13] A linear park, currently in the design stage, will link Seaport Village to the Gaslamp Quarter and will include a bicycle lane.

4.2.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The transportation impacts of each project alternative are assessed for both a short-term and long-term horizon period. The short-term scenario involves an analysis of projected conditions in 1995. The long-term assessment addresses the impacts of a build-out scenario for the Centre City area as identified by the City of San Diego and CCDC.

The impact of each project alternative is established by forecasting traffic volumes to indicate roadway and intersection conditions. For roadway volumes, a significant impact occurs when the projected daily volume exceeds the capacity identified in the City of San Diego's street design standards by more than 10 percent and the project alternative contributes substantially to this over capacity.

Short-Term Baseline Scenario (1995)

The baseline analysis for the short-term scenario assumes the construction and occupation of 19 new projects in the Centre City area as identified by the City of San Diego.[14] A list of the projects, and their trip generation characteristics, is shown in Table 4.2-3. It is assumed that approximately 75 percent of the 2.8 million square feet of new office space would be occupied by 1995.[15] The location of the short-term projects, as referenced in Table 4.2-3, is shown in Figure 4-15.

The baseline scenario assumes completion and partial occupation of the projects described in Table 4.2-3 and no change in existing land use for the Navy Broadway Complex. The short-term baseline, therefore, includes the implementation of cumulative development through 1995.

The assessment of the short-term project impacts is based on a determination of the level of traffic generated by each of the project alternatives. A comparison of the various project options to the baseline scenario provides the measure of the impact of each alternative in the short-term period.

Short-Term Project Traffic Generation (1995)

The short-term alternatives represent the level of development that would occur on the Navy Broadway Complex by 1995. The land use type and intensity for each alternative, based on expected phasing would be:

- Alternative A: 500 hotel rooms
- Alternative B: 500 hotel rooms
- Alternative C: 500 hotel rooms
- Alternative D: 500 hotel rooms
- Alternative E: No change
- Alternative F: 1,000 hotel rooms
- Alternative G: No change

The trip generation levels for the seven project alternatives are shown in Table 4.2-4. Alternatives A, B, C, D, and F would involve demolition of the existing buildings on Block 4, which would result in a reduction of 785 daily trips and 100 evening peak hour trips. As a result, the net increase in trips generated by Alternatives A through D would be approximately 2,720 daily trips and 180 evening peak hour trips. Alternative F would generate a net increase of approximately 6,220 daily and 460 p.m. peak hour trips. Alternatives E and G would result in no additional trips on the roadway network through the year 1995. The completion of construction for Alternative E would occur after 1995. The no-action alternative, Alternative G, would also generate no additional trips by 1995.

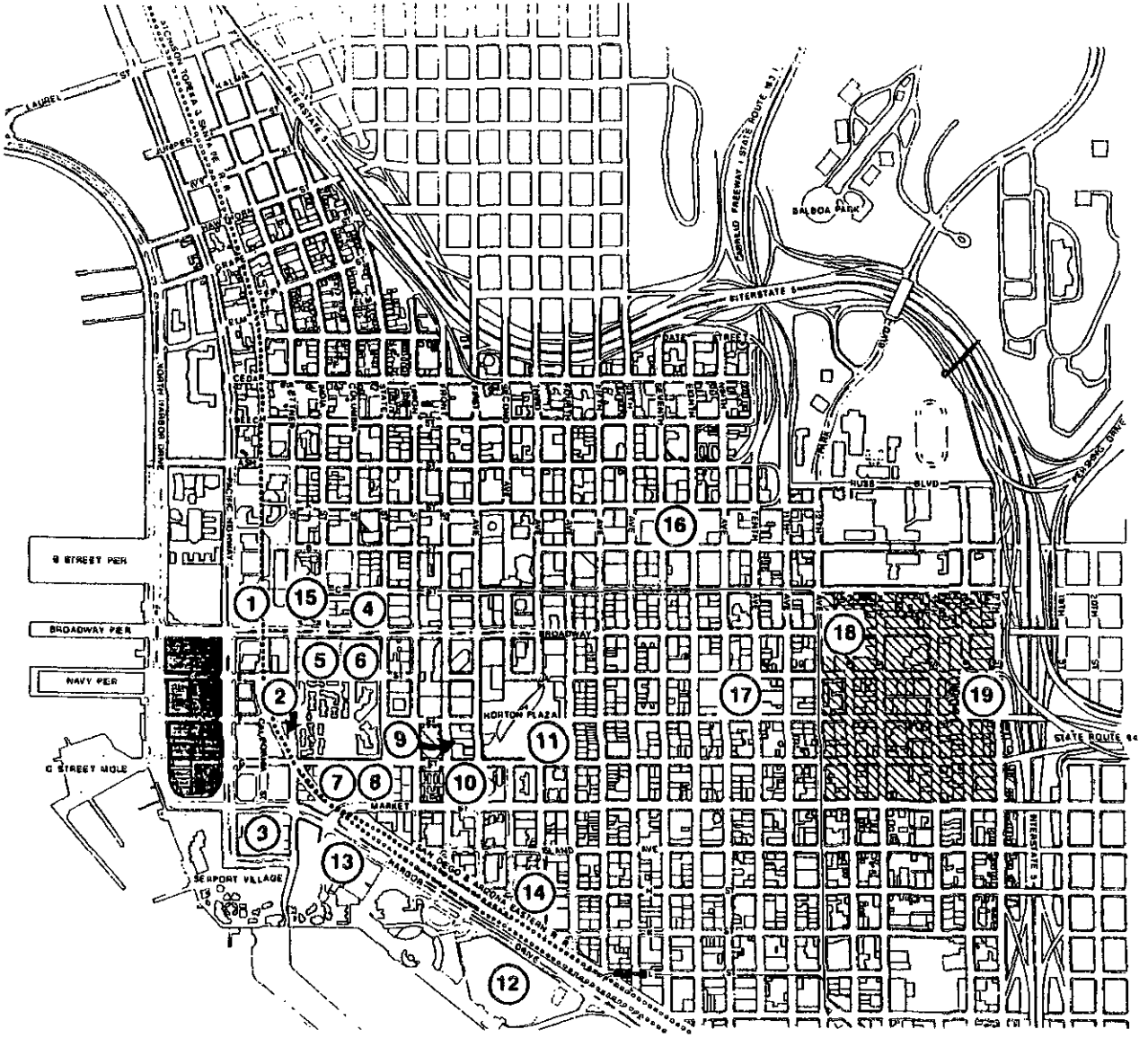
TABLE 4.2-3

SHORT-TERM CUMULATIVE PROJECTS
Net Trip Generation Levels (By 1995)

Project Description		Land Use	Intensity	Daily Trips	P.M. Peak Trips In	P.M. Peak Trips Out
1.	Santa Fe	Office	500,000 sf	4,880	140	550
		Hotel	435 rooms	3,050	120	120
2.	7 on Kettner	Townhouses	7 units	50	4	2
3.	Seaport Village	Retail	180,000 sf	3,780	190	190
4.	Emerald Shapery	Office	375,000 sf	3,660	100	410
		Hotel	435 rooms	3,050	120	120
5.	Koll Center II	Office	325,000 sf	3,170	90	360
		Apartments	8 units	60	4	2
6.	Koll Center I	Office	185,000 sf	1,800	50	200
		Retail	180,000 sf	3,780	190	190
		Townhouse	24 units	170	15	5
7.	500 G Street	Condominium	96 units	670	50	20
8.	Columbia Place	Condominium	103 units	720	55	25
9.	Bristol Square	Office	60,000 sf	720	20	75
10.	Courtyard	Apartments	400 units	2,800	215	90
		Retail	80,000 sf	2,160	120	120
11.	800 Fourth	Apartments	34 units	240	20	10
		Office	18,500 sf	220	5	25
		Retail	13,500 sf	370	20	20
12.	Convention Center	Public	655,000 sf	7,300	370	370
13.	Hyatt Regency	Hotel	875 rooms	6,125	245	245
14.	One Harbor Drive	Retail	50,000 sf	1,350	75	75
		Condominium	198 units	1,390	105	45
15.	Great American	Office	530,000 sf	5,170	145	580
		Hotel	276 rooms	1,930	75	75
16.	Symphony Towers	Office	620,000 sf	6,050	170	680
		Hotel	262 units	1,800	75	75
17.	Peach Tree Inn	Hotel[a]	301 units	1,200	50	50
18.	Civic Center	Office	750,000 sf	7,300	205	820
		Library	275,000 sf	6,600	330	330
19.	CCE Maisons	Apartments	40 units	280	20	10

a The proposed Peach Tree Inn is a low income hotel facility, so the trip generation rates were decreased as shown.

Source: City of San Diego Transportation Division 1989.



Legend

1 Santa Fe
2 7 on Kettner
3 Seaport Village Expansion
4 Emerald Shopery
5 Koll Center II
6 Koll Center I
7 500 G Street
8 Columbia Place
9 Bristol Square
10 Courtyard
11 800 Fourth
12 Convention Center
13 Hyatt Regency
14 One Harbor Drive
15 Great American Plaza
16 Symphony Towers
17 Peach Tree Inn
18 Civic Center
19 CCE Maisons

(5) Cumulative Project Location

Project Site

Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

Figure 4-15

Short-Term Cumulative Project Location

0 470 940 FEET NORTH

Source: City of San Diego, CCDC, 1989.

TABLE 4.2-4

SHORT-TERM ALTERNATIVES (1995)
Net Trip Generation Characteristics

Alternative	Land Use	Intensity	Daily Trips	P.M.[a] Peak Trips In	Out
A	Hotel	500 rooms	2,715	120	60
B	Hotel	500 rooms	2,715	120	60
C	Hotel	500 rooms	2,715	120	60
D	Hotel	500 rooms	2,715	120	60
E	NA	-	-	-	-
F	Hotel	1,000 rooms	6,215	260	200
G	NA	-	-	-	-

a The demolition of office and industrial uses on Block 4 (Alternatives A, B, C, D, and F) would result in a net reduction of 785 daily trips, 20 inbound p.m. peak trips, and 80 outbound p.m. peak trips.

Source: Korve Engineering, Inc. 1989.

Short-Term Project Distribution

The distribution of project traffic on the roadway network is based on data provided by the City of San Diego.[16] The distribution is based on projected short-term patterns that reflect existing travel characteristics in the Centre City area. The same distribution is used for all project alternatives. This distribution assumes that 91 percent of the evening peak trips are made to destinations that are outside of the Centre City area. A substantial proportion of these trips are assigned to adjacent freeways such as I-5, SR-94, and SR-163.

Approximately nine percent of the trips are assigned to internal destinations such as the Civic Center, Convention Center, Horton Plaza, etc. The project distribution is described in Table 4.2-5.

Short-Term Intersection Conditions (1995)

The short-term traffic conditions are described for both the baseline scenarios and the project alternatives on the basis of the levels of service for the thirteen study intersections. The service levels, and ICU ratios, are shown in Table 4.2-6 for the seven project alternatives. The analysis indicates that all of the intersections would operate at service level D or better in the short-term scenario.

TABLE 4.2-5

SHORT-TERM ALTERNATIVES
Trip Distribution Characteristics

Route	Direction	Percent
Freeways		
I-5	To/From North	17%
I-5	To/From South	8%
SR-163	To/From North	28%
SR-94	To/From East	20%
Major Streets		
Harbor Drive	To/From North	2.5%
Pacific Highway	To/From North	3.5%
Fifth/Sixth Couplet	To/From North	3%
Park Boulevard	To/From North	2%
Pershing Drive	To/From North	1%
Broadway	To/From East	2.5%
Market Street	To/From East	2.5%
Harbor Drive	To/From South	1%
External to Centre City		91%
Internal to Centre City		9%
	Total Distribution	100%

The intersections of Harbor/Kettner, Broadway/Kettner, and Broadway/Front would operate at service level D under all of the alternatives, including the No Action Alternative (Alt. G). In addition, the intersections of Grape/Pacific and Market/Pacific would operate at service level C with all the alternatives. The remaining intersections would operate at service level A or B with these alternatives. None of the alternatives would cause any intersections to significantly degrade in the short term.

Long-Term Baseline Scenario (Buildout)

The baseline assessment for the long-term scenario is derived from the adopted land use plan for the Centre City area. The most recent changes to cumulative development assumptions in the City Centre land use plan were made in the Sixth Amendment to the Columbia Redevelopment Plan, which identifies long-term growth in the project area. For regional planning purposes, land use assumptions for the Navy Broadway Complex are assumed to be consistent with the Central Bayfront Design Principles (SANDAG 1989) (see Section 4.1.4, page 4-23), which identifies densities for the downtown waterfront area. An average FAR of 6.13 is identified for the Navy Broadway Complex. Based on a buildable area of 13.67 acres, this FAR would result in approximately 3.59 million square feet of development on the site.

TABLE 4.2-6

SHORT-TERM INTERSECTION SERVICE LEVELS (1995)

Intersection	Baseline Scenario LOS/ICU[a]	LOS/ICU by Alternative						
		Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Alt. G
Hawthorn/Harbor	A/.50	A/.50	A/.50	A/.50	A/.50	A/.50	A/.50	A./50
Grape/Harbor	B/.65	B/.65	B/.65	B/.65	B/.65	B/.65	B/.65	B/.65
Grape/Pacific	C/.72	C/.72	C/.72	C/.72	C/.72	C/.72	C/.73	C/.72
Broadway/Harbor	A/.54	A/.54	A/.54	A/.54	A/.54	A/.53	A/.54	A/.53
Ash/Pacific	B/.62	B/.62	B/.62	B/.62	B/.62	B/.60	B/.66	B/.60
N. Harbor/Pacific	C/.74	C/.74	C/.74	C/.74	C/.74	C/.74	C/.75	C/.74
Ash/Harbor	A/.46	A/.46	A/.46	A/.46	A/.46	A/.47	A/.46	A/.47
N. Harbor/Kettner	D/.80	D/.80	D/.80	D/.80	D/.80	D/.80	D/.80	D/.80
Broadway/Kettner	D/.85	D/.85	D/.85	D/.85	D/.85	D/.84	D/.85	D/.84
Broadway/Pacific	A/.57	A/.57	A/.57	A/.57	A/.57	A/.55	A/.57	A/.55
Hawthorn/Pacific	A/.44	A/.44	A/.44	A/.44	A/.44	A/.44	A/.44	A/.44
Broadway/Front	D/.81	D/.81	D/.81	D/.81	D/.81	D/.80	D/.84	D/.80
Ash/Front	A/.53	A/.53	A/.53	A/.53	A/.53	A/.51	A/.55	A/.51

a Level of Service (LOS)/intersection capacity utilization (ICU).

Source: Korve Engineering, Inc. 1989.

A total of 3.59 million square feet is more than any of the seven project alternatives. The greatest level of development on the Navy Broadway Complex assumed for any project alternative is a total of 3.55 million square feet--Alternative B.

Long-Term Roadway Conditions (Buildout)

Traffic projections for the long-term baseline scenario and the project alternatives were prepared by the City of San Diego using the Centre City Transportation Action Plan (CCTAP) model for the study area. These forecasts provided daily traffic volumes along the major roadways accessing the Centre City area. The circulation element incorporated in the Sixth Amendment to the Columbia Redevelopment Area, adopted February 28, 1989, includes the designation of Harbor Drive as a six-lane major street. The Central Bayfront Design Principles identifies the conversion of Harbor Drive, between Pacific Highway and Broadway, to a pedestrian-oriented two-lane street. The project alternatives designate this section of Harbor Drive as a two-lane facility (two through lanes and a center left-turn lane). As such, the project is consistent with the Design Principles.

Traffic volume projections along 14 of the individual roadway segments would exceed the designated capacity of the route under the long-term scenario with development of all the alternatives, unless otherwise noted. These routes are listed as follows:

- Ash Street east of Columbia
- Ash Street east of Front
- Ash Street east of Second
- Broadway east of Ketter
- Broadway east of Fifth
- Eleventh Avenue south of I-5
- First Street south of Ash Street (except Alternatives D and G)
- Grape Street east of Kettner
- Harbor Drive south of Laurel
- Harbor Drive south of Hawthorn
- Pacific Highway south of Broadway (except Alternatives D and G)
- Pacific Highway south of Grape
- Pacific Highway south of Laurel
- Tenth Avenue south of I-5

The baseline condition under which long-term traffic improvements are planned by the City of San Diego shows all of the 14 segments would exceed their capacity. Of the 14 roadway segments that would exceed their capacity, 12 segments would exceed the capacity without new development (i.e., Alternatives A through F) on the Navy Broadway Complex.

The proposed Alternatives A through F (except where noted) would contribute substantially to the exceedance of the capacity at 2 of the 14 roadway segments, so these alternatives would significantly affect the operation of the subject segments. These segments are:

- Pacific Highway south of Broadway (Alternatives A, B, C, E, and F)
- First Avenue south of Ash (Alternatives A, B, C, E, and F)

The Pacific Highway segment, which is immediately east of the Navy Broadway Complex, would be improved as a result of the project to accommodate additional capacity through the installation of a median with left turn pockets and traffic signals. The First Avenue segment would be mitigated through improvements that are planned by the City of San Diego through the Centre City Transportation Action Program (CCTAP) and Centre City Development Corporation (CCDC). These improvements are described in Section 4.2.3, page 4-65.

Traffic projections at the four freeway interchanges serving the Centre City area indicate that there is adequate capacity to serve anticipated demand under the long-term scenario. This includes the ramp junctions of I-5 with Front/Second and Hawthorn, I-5 with J Street, State Route 163, and State Route 94. The most heavily congested interchange would be the ramps connecting the City Centre to State Route 94. The on- and off-ramps to SR-94 would operate at approximately 90 percent of capacity under the long-term projections.

The southbound off-ramp from State Route 163 would also be heavily utilized under the long-term scenario, with the projected peak hour demands approximately equalling the capacity. The off-ramp from southbound I-5 to Front/Second would operate at approximately 80 percent of capacity under the long-term scenario. The remaining interchange ramps would operate at less than 80 percent of capacity.

Long-Term Intersection Conditions (Buildout)

The assessment of long-term conditions at the intersections in the project vicinity is a two-step process. The first step involves the conversion of daily roadway volumes to peak hour turning movement counts. This was accomplished by applying adjustment factors (e.g., the percent of daily traffic that occurs in evening peak hour) to develop peak roadway volumes. These roadway volumes were then adjusted, based on the short-term intersection analysis, to establish projected turning movement volumes. The long-term service levels are calculated for each intersection on the basis of these forecast volumes. The service levels are shown in Table 4.2-7, along with an identification of which intersections would be significantly affected.

All of the intersections in the project vicinity would operate within the baseline condition for all alternatives. The intersection of Broadway/Pacific would operate at service level F under Alternatives A, B, and D and at service level E under alternatives C and G. Under Alternative F, Broadway would be closed and would form a T-intersection at Pacific Highway which would operate at service level F. The intersection of Pacific/Broadway would be significantly affected by Alternatives A, B, D, and F.

The Grape/Pacific intersection would operate at service level E for Alternatives A, B, C, D, E, and F, and would, therefore, be significantly affected by the project.

The intersection of Broadway/Front would operate at service level E for Alternatives A, B, C, D, E, and F. The intersection of Broadway/Harbor would operate at service level F for Alternative B and service level E for Alternatives C and E. These two intersections would be significantly affected by these alternatives.

The remaining intersections of Hawthorn/Harbor, Grape/Harbor, Ash/Pacific, N. Harbor/Pacific, Ash/Harbor, N. Harbor/Kettner, Hawthorn/Pacific, and Front/Ash would operate at service level D or better under all alternatives, so there would be no significant impact.

The development of the open space at the foot of Broadway, as identified in Alternatives A and F, would result in a closure of Broadway between Pacific Highway and Harbor Drive. Alternative A provides an internal route through the open space that would connect the intersection of Broadway/Pacific Highway to Harbor Drive via a new connection to Harbor Drive north of Broadway (e.g., B Street or C Street) and E Street, and would require a partial vacation of Broadway. This would maintain a somewhat direct connection from Broadway to Harbor Drive and thereby result in a moderate change in travel patterns. The segment of Broadway located west of Pacific Highway would be shortened to provide open space. If the length of this segment is less than the estimated queue length, the roadway segment would be significantly affected. Based on an analysis of the queues generated by projected traffic volumes, this segment should be a minimum of 200 feet in length. The intersection of Harbor Drive and the new connection to Harbor Drive north of Broadway would be adversely affected, as it would serve the function of controlling traffic currently provided at the intersection of Harbor Drive/Broadway and require the installation of a traffic signal. With the installation of a signal, the intersection would operate at service level B conditions under Alternative A. The intersection of Broadway/Pacific Highway would operate at service level F.

TABLE 4.2-7

LONG-TERM INTERSECTION SERVICE LEVELS (BUILDOUT)
VOLUME/CAPACITY RATIOS

Intersection	Baseline Scenario		Alt. A			Alt. B			Alt. C			Alt. D			Alt. E			Alt. F			Alt. G		
	LOS[a]	ICU[b]	LOS	ICU	Significant	LOS	ICU	Significant	LOS	ICU	Significant	LOS	ICU	Significant	LOS	ICU	Significant	LOS	ICU	Significant	LOS	ICU	Significant
Hawthorn/Harbor	A	0.58	A	0.57	N	A	0.58	N	A	0.58	N	A	0.57	N	A	0.58	N	A	0.57	N	A	0.49	N
Grape/Harbor	D	0.85	D	0.87	N	D	0.85	N	D	0.83	N	C	0.78	N	D	0.83	N	D	0.87	N	C	0.79	N
Grape/Pacific	E	0.95	E	0.98	Y	E	0.95	Y	E	0.94	Y	E	0.98	Y	E	0.94	Y	E	0.98	Y	C	0.78	N
Broadway/Harbor[c]	F	1.07	B	0.66	N	F	1.07	Y	E	0.98	Y	D	0.89	N	E	0.98	Y	B	0.68	N	C	0.74	N
Ash/Pacific	E	0.92	C	0.79	N	E	0.92	N	D	0.80	N	D	0.81	N	D	0.80	N	C	0.79	N	D	0.89	N
N. Harbor/Pacific	D	0.85	D	0.83	N	D	0.85	N	D	0.82	N	D	0.83	N	D	0.82	N	D	0.83	N	A	0.56	N
Ash/Harbor	D	0.89	C	0.79	N	D	0.89	N	D	0.80	N	C	0.79	N	D	0.80	N	C	0.79	N	B	0.66	N
N. Harbor/Kettner	D	0.85	D	0.84	N	D	0.85	N	D	0.83	N	D	0.84	N	D	0.83	N	D	0.84	N	B	0.68	N
Broadway/Kettner	E	0.91	D	0.88	N	E	0.91	N	D	0.87	N	D	0.87	N	D	0.87	N	D	0.88	N	C	0.71	N
Broadway/Pacific[d]	F	1.19	F	1.21	Y	F	1.19	Y	E	0.96	N	F	1.18	Y	E	0.96	N	E	0.99	Y	E	0.96	N
Hawthorn/Pacific	D	0.85	C	0.79	N	D	0.85	N	C	0.74	N	C	0.79	N	C	0.76	N	C	0.79	N	C	0.73	N
Broadway/Front	E	0.92	E	0.93	Y	E	0.92	Y	E	0.94	Y	E	0.93	Y	E	0.94	Y	E	0.93	Y	D	0.82	N
Ash/Front	B	0.66	B	0.66	N	B	0.66	N	B	0.69	N	B	0.66	N	B	0.69	N	B	0.66	N	B	0.62	N

a LOS--level of service.
b ICU--intersection capacity utilization.
c Under Alternatives A and F, the service level is shown for the intersection of Harbor Drive/C Street due to the establishment of the park and the realignment of Broadway.
d Under Alternative F, the service level reflects changes in travel patterns due to the closure of Broadway between Pacific Highway and Harbor Drive.

Source: Korve Engineering, Inc. 1989.

The open space shown in Alternative F is bounded by Pacific Highway, E Street, Harbor Drive, and the new connection to Harbor Drive north of Broadway (e.g., B Street or C Street). Alternative F would require the full vacation of Broadway, between Pacific Highway and Harbor Drive, and would not provide any internal streets. Existing and future traffic on Broadway destined for Harbor Drive would be diverted onto Pacific Highway and use either the new connection to Harbor Drive north of Broadway or E Street for access. The intersection of Harbor Drive and the new connection to Harbor Drive north of Broadway would operate at service level B with the installation of a traffic signal. The intersection is projected to operate at service level C under Alternative F; these operating conditions would be better than for the remaining alternatives due to its conversion to a T-intersection.

Vehicular Access to the Project

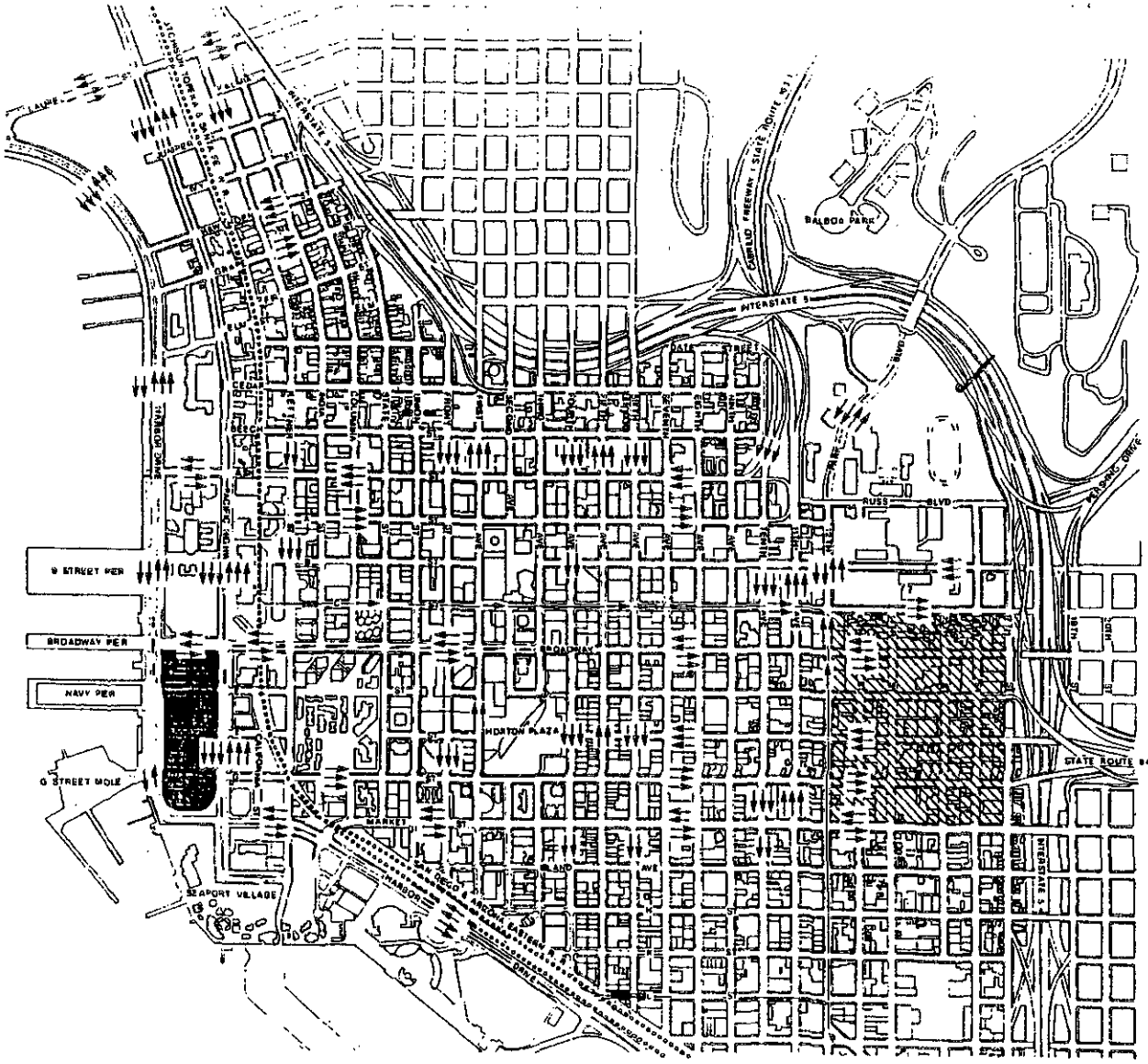
The primary access to the site for all seven alternatives is provided via Pacific Highway. The intersections of Pacific Highway with E Street, F Street, and G Street would be signalized to provide for the primary movements into and out of the designated parking facilities. Each of the alternatives would also have a secondary access via connections to Harbor Drive. If the distance between the parking facility access driveway and the adjacent major street is less than the estimated queue length, the roadway segment would be significantly affected. Access to individual parking facilities would, therefore, be located between Pacific Highway and Harbor Drive to provide sufficient queueing space. The lane configurations along E Street, F Street, and G Street are shown in Figure 4-16.

The segments of E Street, F Street, and G Street located between Harbor Drive and Pacific Highway would have a three lane section. This would allow for two outbound lanes at Pacific Highway which would include one exclusive left turn lane and a shared left/right lane. In order to maintain an adequate queueing area for outbound vehicles in these lanes, the parking garage access points should be located a minimum distance from the traffic signals at Pacific Highway. This distance is established on the basis of a queueing analysis for outbound traffic from the parking facilities during the p.m. peak hour. The following queueing analysis is conducted for each of the project alternatives.

The estimated queue lengths are summarized for each alternative in Table 4.2-8. This table indicates the peak outbound traffic demand, the adjusted volume per cycle, and the resulting queue lengths.

The signing plan for the parking facilities would be designed to direct site traffic to the signalized intersections along Pacific Highway. The access points along Harbor Drive, which would be a two-lane facility along the western boundary of the project site, would be controlled by stop signs on the minor street approach.

Alternative E would provide driveways on Pacific Highway at E Street, F Street, and G Street. These driveways would access surface parking lots that would serve the Navy office uses on the site. The lots would be open for public pedestrian circulation from Pacific Highway to the waterfront area.



Legend

- Number of Lanes in each Direction
- Project Site
- General Location of Navy Office for Dual Site Alternatives (Will Encompass 2 Blocks)

Figure 4-16

Future Long-Term Lane Configuration

0540001 1/90

0 470 940 FEET NORTH

Source: CCDC

TABLE 4.2-8

PROJECT ACCESS QUEUE LENGTHS
P.M. Peak Hour

		At Pacific Highway			At Harbor Drive		
Alternative	Access Street	Outbound Volume	Adjusted[a] Volume per Cycle	Queue[b] Length	Outbound Volume	Adjusted[a] Volume per Cycle	Queue[b] Length
A	E Street	400	12	120 ft	300	10	100 ft
	F Street	320	10	100 ft	130	4	40 ft
	G Street	300	10	100 ft	160	6	60 ft
B	E Street	490	14	140 ft	190	6	60 ft
	F Street	320	10	100 ft	130	4	40 ft
	G Street	300	10	100 ft	160	6	60 ft
C	E Street	230	8	80 ft	100	4	40 ft
	F Street	270	8	80 ft	120	4	40 ft
	G Street	300	10	100 ft	160	6	60 ft
D	E Street	400	12	120 ft	180	6	60 ft
	F Street	230	8	80 ft	110	4	40 ft
	G Street	300	10	100 ft	160	6	60 ft
E	E Street	145	4	40 ft	55	2	20 ft
	F Street	90	4	40 ft	40	2	20 ft
	G Street	160	6	60 ft	60	2	20 ft
F	E Street	305	10	100 ft	270	8	80 ft
	F Street	370	12	120 ft	160	6	60 ft
	G Street	400	12	120 ft	200	6	60 ft
G	E Street	75	4	40 ft	-	-	-
	F Street	-	-	-	-	-	-
	G Street	120	4	40 ft	-	-	-

a The adjusted volume per cycle is based on a 100 second cycle length and a peaking factor of 0.8.

b The queue length dimensions are based on two outbound lanes on all of the access streets at both Pacific Highway and Harbor Drive. It is also based on a car length of 20 feet per vehicle.

Alternative G would maintain the existing building structures on the site and the gated security area around the project boundary. It would allow vehicular access to the site by Navy personnel only and would prohibit pedestrian movements to the waterfront. Alternative G results in no change to the existing circulation system around the site.

The railroad spur located on E Street would be maintained with each of the designated alternatives. It presently receives infrequent use (e.g., three to four trains per year) and is designated for Navy operational purposes. The rail spur would be located in the left-turn lane for joint use by vehicles and rail.

Long-Term Parking Conditions

The following assessment of future parking conditions related to the project is based on the identification of the proposed parking supply, the parking demand, and a Transportation Demand Management (TDM) plan. The purpose of a TDM plan is to provide programs to encourage the use of alternative modes of transportation, thereby reducing the demand for onsite parking for use by single occupant vehicles. This parking assessment utilizes recent data developed in the ongoing Parking Management Study developed by the City of San Diego for the Centre City and Balboa Park areas.[17]

The proposed onsite parking supply for the project alternatives was established through the application of parking ratios for the different land use types. The base parking ratio for Navy office uses is 1.0 per 1,000 square feet; an additional allotment of 0.23 spaces per 1,000 square feet is made to accommodate the storage of fleet vehicles for official business use.

Office (private):	1.00 spaces per 1,000 SF
Office (Navy):	1.00 spaces per 1,000 SF
Hotel:	0.75 spaces per room
Retail:	4.00 spaces per 1,000 SF

The use of these parking rates results in an onsite parking supply for each alternative as shown in Table 4.2-9, page 4-62. The onsite supply ranges from 425 spaces for Alternative G (no action) to 3,355 spaces for Alternative B. Alternative D would have 2,905 onsite spaces and 1,205 spaces at the alternative Navy office site. Alternatives A and F would each have 3,105 spaces and Alternative C would have 2,455 spaces.

The City of San Diego has no minimum or maximum parking requirements for development in the Centre City area. The parking supply ratios applied to the various land uses in the project are based on surveys of typical supply levels provided in recent Centre City projects. The development of a parking management plan for the Centre City area is the primary objective of the ongoing Parking Management Study for the Centre City and Balboa Park areas.

The parking demand for the various project alternatives determines the level of parking that must be accommodated by the project. The initial parking demand calculations are based on demand rates for typical suburban projects that do not consider the increased use of alternative transportation modes (transit, carpooling, shared parking, etc.) that occurs in downtown areas. As such, the demand rates are not meant to indicate a minimum level of onsite parking that would be required for the project alternatives. Rather, the initial parking demand levels are used primarily to establish how much of the parking demand is met by the onsite supply and what proportion of the demand would

be met by other transportation modes. The parking demand rates used in this assessment, based on an ongoing survey being conducted in Centre City, are as follows:

- Office uses: 2.5 per 1,000 S.F.
- Retail uses: 1.0 per 1,000 S.F.
- Hotel uses: 1.0 per room

The parking demand projections shown in Table 4.2-9 indicate that the onsite supply provided for the various project alternatives would serve between 20 and 55 percent of the total demand. Alternatives A, B, C, D, and F would provide a parking supply that would satisfy between 50 and 55 percent of the projected demand onsite. Alternative E would serve 40 percent of its total demand onsite. Finally, Alternative G, the no build option, would provide an onsite supply that serves 21 percent of the estimated demand.

The future parking needs of each alternative will be met through a combination of onsite parking, transit, other modes, and onsite Travel Demand Management measures. This would include the application of such Travel Demand Management (TDM) programs as improved transit use through better service and accessibility, increased ridesharing through provision of reserved carpool spaces, and development of shared parking through a mix of land uses. It would be provided through the application of three primary programs.

- Transit: based on the proximity of the project to two LRT stations on the Bayside LRT line, as well as the provision of transit information to future office and hotel employees.

- Ridesharing: provision of reserved carpooling spaces at desirable locations within the parking facilities.

- Mixed Use: development of shared used of the parking facilities through the close proximity of the office and hotel uses, which have substantially different peaking characteristics.

Table 4.2-10 indicates the level of parking that would be accommodated by the project alternatives both without and with TDM. Alternatives A, B, D, E, and F would accommodate 80 percent of the parking demand, without TDM, and would require that 20 percent of the demand be met by off-site parking. Alternative C would meet 85 percent of its parking demand without TDM, thus requiring that 15 percent of the demand be met by offsite parking. Alternative G, the no build scenario, would meet only 50 percent of its parking demand without TDM. This would require that 50 percent of its demand be met by offsite parking.

The addition of TDM to the seven project alternatives incorporates a mix of measures designed to meet the full parking needs of the project. The successful application of TDM measures to reduce the level of vehicular traffic by increasing transit and ridesharing use has been documented in San Diego through surveys of major downtown employers. There would be no reliance on offsite facilities to meet the parking demand for Alternatives A, B, C, D, and F. Alternative E would experience a parking short-fall of 14 percent that would have to be met by the use of offsite parking facilities. Approximately 50 percent of the total demand for Alternative G (no action) would be met by offsite facilities.

TABLE 4.2-9

PROJECT PARKING DATA

Alternative	Land Use	Intensity	Supply	Demand
A	Office (private)	650,000 SF	650	1,625
	Office (Navy)	1,000,000 SF	1,000[a]	2,500
	Hotel	1,500 rooms	1,125	1,500
	Retail	25,000 SF	100	25
		Total	**2,875[a]**	**5,650**
B	Office (private)	900,000 SF	900	2,250
	Office (Navy)	1,000,000 SF	1,000[a]	2,500
	Hotel	1,500 rooms	1,125	1,500
	Retail	25,000 SF	100	25
		Total	**3,125[a]**	**6,275**
C	Office (Navy)	1,000,000 SF	1,000[a]	2,500
	Hotel	1,500 rooms	1,125	1,500
	Retail	25,000 SF	100	25
		Total	**2,225[a]**	**4,025**
D	Office (private)	1,430,000 SF	1,430	3,575
	Office (Navy)	20,000 SF	20[a]	50
	Hotel	1,700 rooms	1,350	1,700
	Retail	25,000 SF	100	25
		Onsite Subtotal	**2,900[a]**	**5,350**
	Offsite Navy	980,000 SF	980[a]	2,450
		Total	**3,880[a]**	**7,800**
E	Office (Navy)	1,000,000 SF	1,000[a]	2,500
		Total	**1,000[a]**	**2,500**
F	Office (private)	650,000 SF	650	1,625
	Office (Navy)	1,000,000 SF	1,000[a]	2,500
	Hotel	1,500 rooms	1,125	1,500
	Retail	25,000 SF	100	25
		Total	**2,879[a]**	**5,650**
G	No new buildings	-	425	2,020

a This does not include spaces used for storage of Navy fleet vehicles (230 spaces with each alternative).

TABLE 4.2-10

PARKING NEEDS ASSESSMENT
Modal Distribution by Land Use Type
(Percentage)

Alternatives	Without TDM					With TDM					
	On-site	Shared Parking	Transit	Other[a]	Total	TDM	On-site	Shared Parking	Transit	Other[a]	Total
Alt. A											
Office	40	16	15	5	76	24	40	16	15	5	100
Hotel	75	16	15	-	100+	15	75	16	15	-	100+
Retail	85	-	15	-	100	15	85	-	15	-	100+
Alt. B											
Office	40	16	15	5	76	24	40	16	15	5	100
Hotel	75	16	15	-	100+	15	75	16	15	-	100+
Retail	85	-	15	-	100	15	85	-	15	-	100+
Alt. C											
Office	40	24	15	5	84	16	40	24	15	5	100
Hotel	75	24	15	-	100+	15	75	24	15	-	100+
Retail	85	-	15	-	100	15	85	-	15	-	100+
Alt. D											
Office	40	20	15	5	80	20	40	20	15	5	100
Hotel	75	20	15	-	100+	19	75	20	15	-	100+
Retail	85	-	15	-	100	15	85	-	15	-	100+
Alt. E											
Office	40	-	15	5	60	25	40	-	15	5	85
Alt. F											
Office	40	16	15	5	76	24	40	16	15	5	100
Hotel	75	16	15	-	100+	15	75	16	15	-	100+
Retail	85	-	15	-	100	15	85	-	15	-	100+
Alt. G											
No build	20	-	15	15	50	-	20	-	15	15	50

a The "other" category includes a 5 percent allowance for office uses located within the core area of the Centre City.

A substantial portion of the parking facilities designated for the commercial office and the Navy office uses would be available during the weekday evening and weekend periods for public use. The provision of these parking spaces would assist in alleviating projected parking shortages for tourists in the Central Bayfront area.

Long-Term Transit Conditions

The project alternatives would generate a substantial number of transit trips due to the proximity of the project site to the Bayside Light Rail Transit (LRT) line and the level of bus service provided to the study area. The project site is within two blocks of the Santa Fe and Seaport Village stations on the proposed Bayside LRT Line, scheduled to begin operation in late 1990.

The project provides pedestrian corridors that can be linked through other planned pedestrian corridors to the LRT stations. In addition, a total of 10 bus routes provide service within walking distance of the project site.

The level of daily transit riders that are estimated for the project alternatives are based on a 25 percent utilization by office employees and 20 percent by hotel employees. These patronage levels are based on the future travel demand profiles established in the parking management program for the Centre City area.

The future transit demand is allocated between LRT and bus patrons on the basis of existing ridership levels. The Bayside LRT line is estimated to attract approximately 10 percent of the employees from the future project site. Other transit facilities, such as bus, express bus, and AMTRAK commuter trains, are estimated to carry between 10 percent (hotel) and 15 percent (office) of the employees. The projected number of daily person trips on transit facilities is shown in Table 4.2-11.

TABLE 4.2-11

LONG-TERM TRANSIT USE
Daily Person Trips

Alternative	Bayside LRT Line	Bus/Other Transit
A	1,700	2,400
B	1,900	2,800
C	1,100	1,600
D (Navy Broadway Complex site)	1,600	2,200
(Centre City east site)	900	1,300
E	900	1,300
F	1,700	2,400
G	500	700

4.2.3 MITIGATION MEASURES

The following improvement programs are suggested to mitigate the impacts on the transportation infrastructure created by both project-related and cumulative development.

Short-Term Improvements

The assessment of short-term traffic conditions on the roadway network indicates that there are no significant impacts under any of the seven project alternatives. The 13 study intersections would operate at service level B or better under all options. As no significant impacts were identified in the short-term analysis, this section will focus on mitigations for the long-term scenario.

Long-Term Improvements

Alternatives A, B, C, D, E, and F

Intersections

The long-term intersection assessment indicates that with development of either of these six alternatives, up to four intersections would be significantly affected as listed below:

- Grape/Pacific Highway (All six alternatives)
- Broadway/Harbor (Alternatives B, C, and E)
- Broadway/Pacific Highway (All six alternatives)
- Broadway/Front (All six alternatives)

Planned Improvements – The long-term network for the Centre City area is based on a series of recommendations in the CCTAP (1985) and, more recently, by CCDC in the Sixth Amendment of the Columbia Redevelopment Plan (1989). These recommendations indicate suggested lane configurations for the major roadways in the Centre City. The following intersection improvements are planned by CCTAP and CCDC and would reduce the project's contribution to intersection impacts to a level that is less than significant. These improvements, and others to be implemented as a result of the project alternatives, are depicted in Figure 4-17.

In addition, the proposed alignments of Harbor Drive, Pacific Highway, and the new connection to Harbor Drive north of Broadway are shown in Figures 4-18 and 4-19. The improvements shown on these figures would be required to provide adequate operating conditions with the closure of Broadway under Alternatives A and F.

- Pacific/Grape: Pacific Highway currently provides three through lanes in each direction and a southbound left-turn pocket. Grape Street has three eastbound lanes and an eastbound right-turn pocket. The suggested improvement is the restriping and reconfiguration of Grape Street to provide for a 4-lane section, as recommended in CCTAP. These improvements would result in service level D conditions under the long-term scenario. This improvement, to be installed by the City of San Diego, should be implemented when the service levels at this intersection exceed acceptable levels based on current traffic counts.

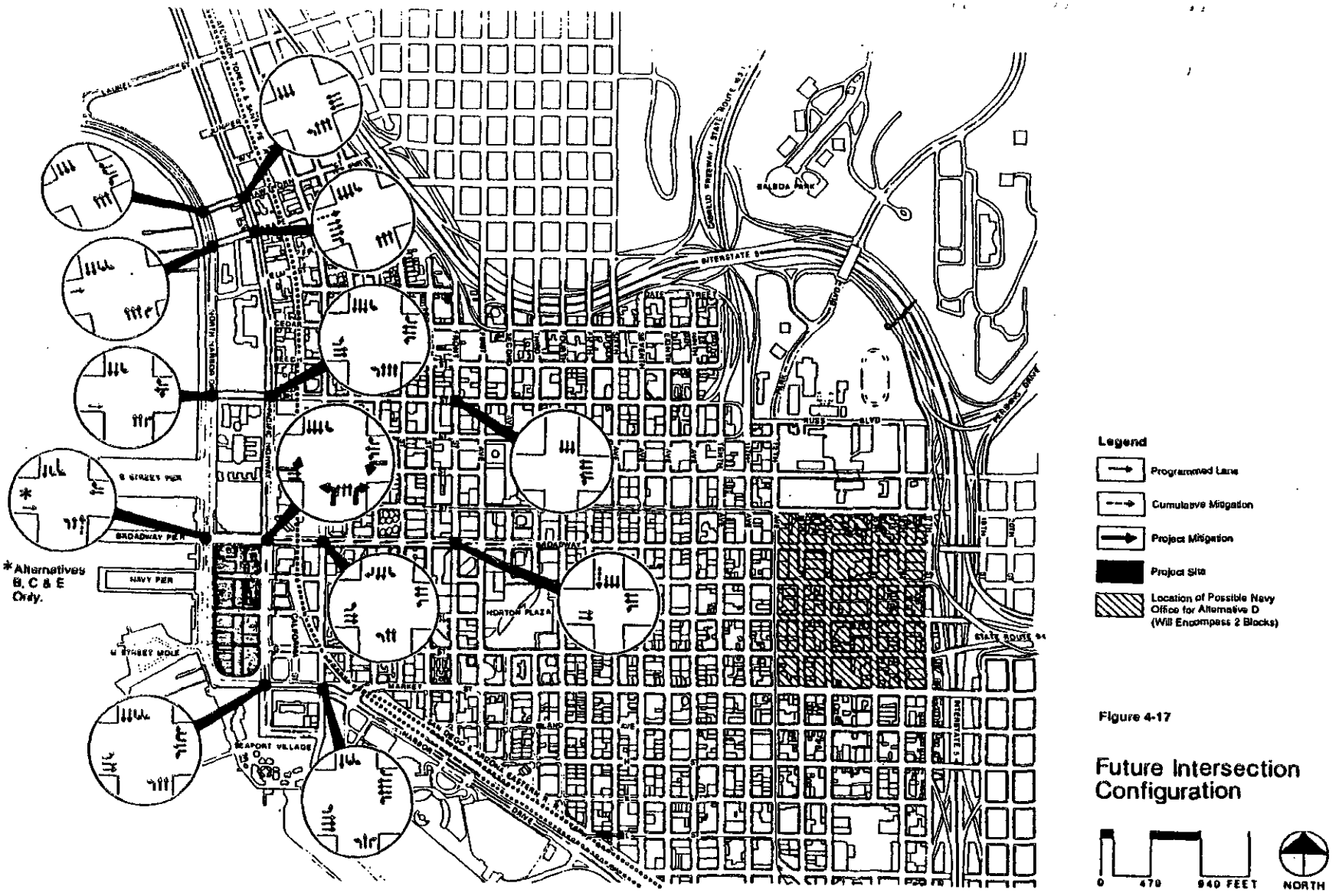
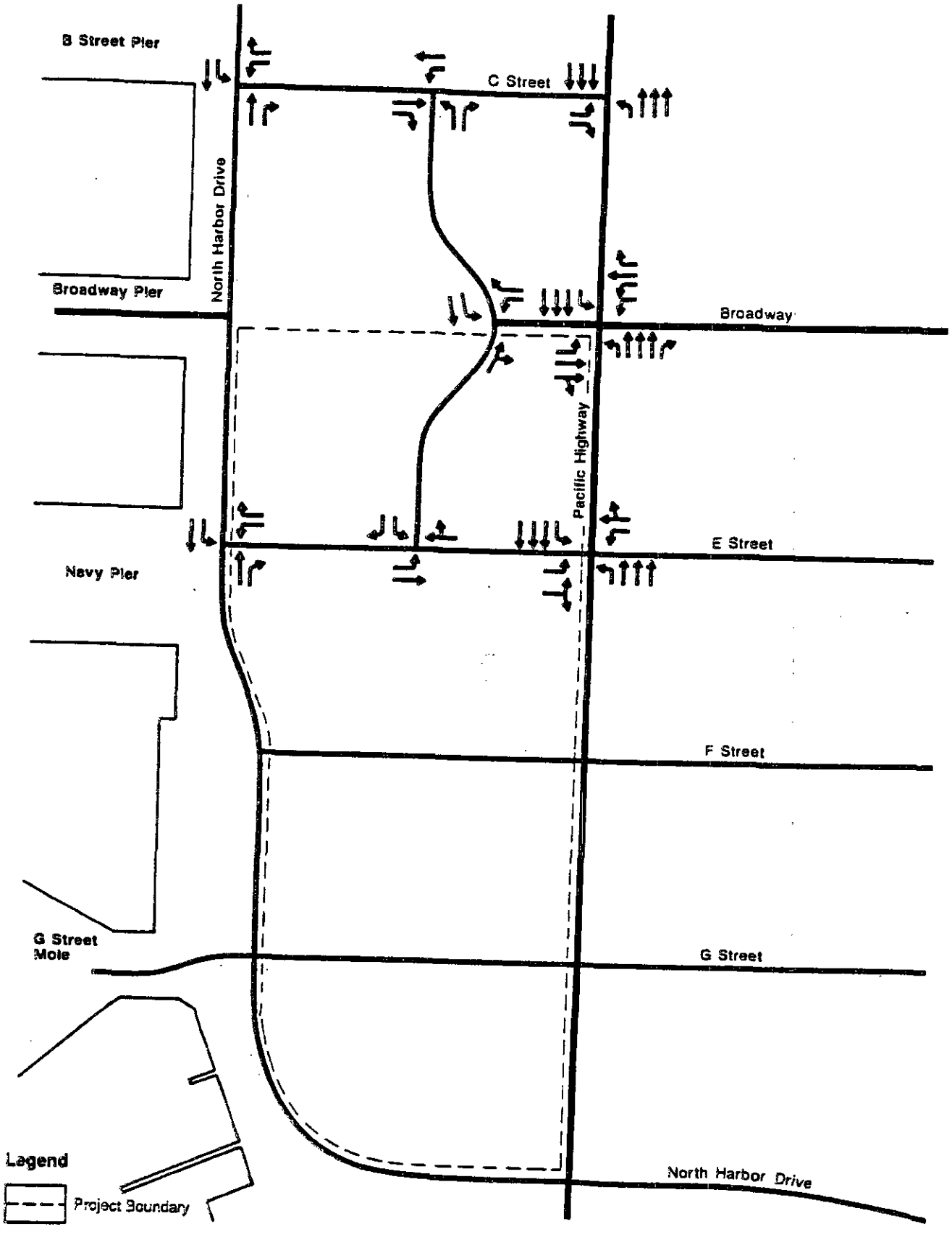


Figure 4-17

Future Intersection Configuration



Future Intersection Configurations
Alternative A

Navy Broadway Complex Project

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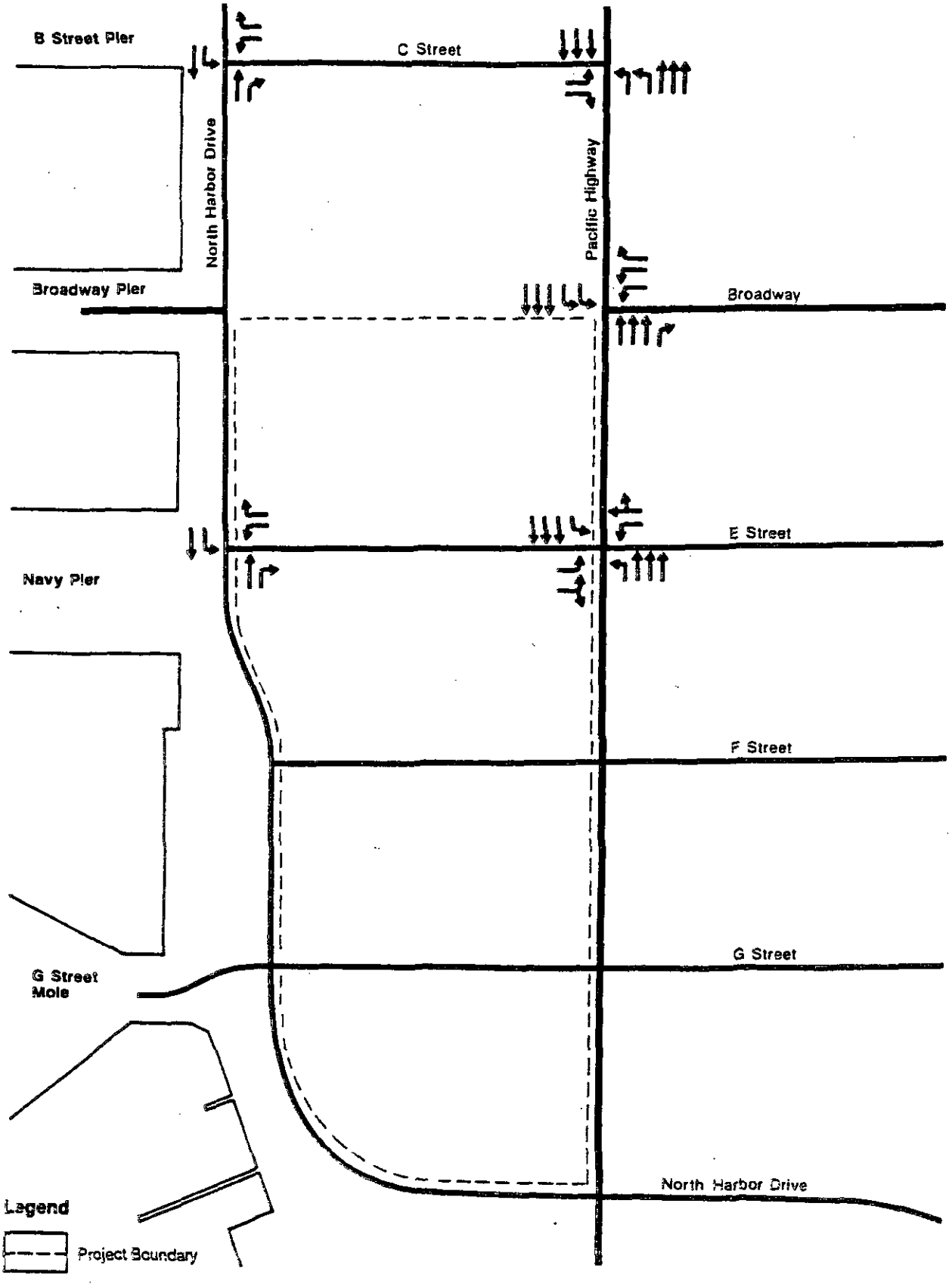
Not to Scale

NORTH

Figure 4-18



Future Intersection Configurations
Alternative F

Navy Broadway Complex Project

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Not to Scale

NORTH

Figure 4-19

- Broadway/Front: Broadway provides two through lanes in each direction and a westbound left-turn lane. Front Street has three through lanes in the southbound direction. The suggested improvement is the restriping and reconfiguration of Front Street to provide for a 4-lane section, as recommended in CCTAP. These improvements would result in service level D conditions under the long-term scenario. This improvement, to be installed by the City of San Diego, should be implemented when the service levels at this intersection exceed acceptable levels based on current traffic counts.

Improvements Associated With the Project -- The following mitigation measures are not included in the CCTAP or by CCDC, and would be required to mitigate the impacts of Alternatives A through F, as noted. These improvements would result in service level D conditions for Alternatives A, B, D, and F, and service level C conditions for Alternatives C and E.

- Broadway/Pacific: Pacific Highway currently provides three through lanes in each direction and a southbound left-turn lane. Broadway has two through lanes in each direction and a westbound left-turn lane. The improvements include the provision of additional turn lanes in the northbound, eastbound, and westbound directions. They would be constructed by the City of San Diego upon initiation of development of any block on the Navy Broadway Complex. These are summarized as follows:

  - Exclusive northbound left-turn lane
  - Exclusive northbound right-turn lane
  - Exclusive eastbound right-turn lane
  - Second westbound left-turn lane

- Broadway/Harbor: Harbor Drive currently provides one through lane and left-turn pockets in each direction. Broadway has two westbound through lanes and one eastbound through lane. The Sixth Amendment to the Columbia Redevelopment Plan includes a recommendation that Harbor Drive be widened to a six-lane section along this section of the waterfront. This recommendation would severely limit the amount of open space that could be provided along the waterfront. In addition, the widening of Harbor Drive is not consistent with recently adopted design principals by BCCG and CCPC, and as such, this improvement is not recommended. The suggested improvement for Alternatives B, C, D, and E is the widening of the immediate intersection of Broadway/Harbor to provide a second northbound through lane and a second southbound left-turn pocket. No mitigation measures are required at this intersection for Alternatives A, F, and G. Improvements to Broadway and Harbor Drive would be installed by the City of San Diego upon completion of the open space area at the foot of Broadway.

- A traffic signal at the intersection of Harbor Drive and the new connection to Harbor Drive north of Broadway would alleviate traffic impacts that result from the redirection of traffic around the proposed open space area (Alternatives A and F). Improvements to this intersection would be installed by the City of San Diego upon completion of the open space area at the foot of Broadway.

- A traffic signal at the intersection of Pacific Highway and the new connection to Harbor Drive north of Broadway would alleviate traffic impacts that would result from redirection of traffic around the proposed open space that entirely covers Block 1 (Alternative F). Improvements to this intersection would be installed by the City of San Diego upon completion of the open space area at the foot of Broadway.

The above mitigation measures would be implemented in a phased manner in conjunction with the development of individual blocks on the project site. The phasing plan for each stage of development is identified in a Development Agreement between the Navy and the City of San Diego. The phasing plan requires that associated mitigation measures be implemented in conjunction with the development of any individual block on the project site. This would include the installation of access-related improvements to Pacific Highway as well as the extension of E Street, F Street, or G Street from Harbor Drive to Pacific Highway. Table 4.2-12 provides a description of the improvement phasing plan as currently outlined in the development agreement.

The service levels at the four intersections are shown with the addition of the above mitigations in Table 4.2-13.

In addition, the following measure will reduce trip generation from the Navy Broadway Complex, and would be implemented by the project upon completion of each phase.

- Long-Term Travel Demand Management (TDM) Program: The alternative projects will incorporate a TDM program designed to reduce the number of vehicular trips, thereby reducing associated traffic impacts and parking needs. The TDM program will be put in place prior to the occupancy of any uses and will be incorporated into all commercial uses. As described earlier in the impacts section, this program could include a number of measures such as:

  - Onsite transit amenities
  - Transit pass sale and information area
  - Coordination of a rideshare matching system
  - Preferential carpool and/or vanpool parking
  - Onsite bike lockers
  - Development of pedestrian corridors to transit stops/stations
  - Shared parking arrangement through mix of land uses

Unavoidable Intersection Impacts -- There are no intersections where unavoidable adverse impacts would occur after implementation of the mitigation measures listed above.

Roadway Segments

As discussed in Section 4.2.2, page 4-47, 14 roadway segments would exceed their capacity in the long-term scenario. The segments are located along Ash Street, Broadway, Eleventh Avenue, Grape Street, Harbor Drive, Tenth Avenue and Pacific Highway. Although the development of Alternatives A through F would result in additional traffic at each of these segments, only substantial (and, therefore, significant) project contributions would occur along the following segments:

- Pacific Highway south of Broadway (all six alternatives)
- First Avenue south of Ash (Alternatives A, B, C, E, and F)

TABLE 4.2-12

TRANSPORTATION IMPROVEMENT PHASING PLAN[a]
Navy Broadway Complex Project Alternatives

Development Increment	Facilities to Be Constructed
A. Development of any block	1. Widen Pacific Highway to create exclusive left-turn lanes in northbound and southbound directions at E, F, and G Streets. 2. Widen Pacific Highway to create exclusive northbound left- and right-turn lanes at Broadway and Pacific Highway. 3. Restripe Broadway to create second left-turn pocket in westbound direction and new eastbound left-turn lane at Pacific Highway (except Alternative F). For Alternative F, restripe westbound Broadway to two right-turn and two left-turn lanes. Modify traffic signal, as needed.
B. Development of Block 3 and/or 4	1. Construct new G Street between North Harbor Drive and Pacific Highway (40 feet curb-to-curb width). 2. Install traffic signal at G Street and Pacific Highway.
C. Development of Block 2 and/or 3	1. Construct new F Street between North Harbor Drive and Pacific Highway (40 feet curb-to-curb width). 2. Install traffic signal at F Street and Pacific Highway.
D. Development of Block 1 and/or 2	1. Construct new E Street between North Harbor Drive and Pacific Highway (52 feet curb-to-curb width). Install rubber railroad crossing on new E Street and across Pacific Highway and North Harbor Drive at E Street. 2. Install traffic signal at E Street and Pacific Highway. 3. Install traffic signal at E Street on North Harbor Drive (Alternatives A & F).
E. Development of Open Space	1. Construct new C Street (or B Street, as needed) between North Harbor Drive and Pacific Highway (52 feet curb-to-curb width).

a For all alternatives, except as otherwise noted.

TABLE 4.2-13

LONG-TERM INTERSECTION SERVICE LEVELS WITH MITIGATIONS
P.M. Peak-Hour Conditions

Intersection	Alt. A LOS	Alt. A ICU	Alt. B LOS	Alt. B ICU	Alt. C LOS	Alt. C ICU	Alt. D LOS	Alt. D ICU	Alt. E LOS	Alt. E ICU	Alt. F LOS	Alt. F ICU
Pacific/Grape	D	0.88	D	0.86	D	0.85	D	0.88	D	0.85	D	0.88
Harbor/Broadway	NA		D	0.81	C	0.73	NA		C	0.73	NA	
Pacific/Broadway	D	0.89	D	0.87	C	0.77	D	0.89	C	0.77	D	0.87
Front/Broadway	D	0.86	D	0.85	D	0.89	D	0.86	D	0.89	D	0.86

Source: Korve Engineering, Inc.

Planned Improvements – CCTAP and CCDC have programmed improvements that would mitigate roadway capacity exceedances at several of the 14 segments in the project vicinity. Programmed improvements are proposed for both of the segments for which the proposed alternatives would contribute to significant increases in traffic levels.

- First Avenue: The restriping and reconfiguration of First Avenue to provide for a 4-lane section, as recommended in CCTAP and CCDC plans. This improvement, to be installed by the City of San Diego, should be implemented when roadway volumes on this segment exceed acceptable levels based on current traffic counts.

- Pacific Highway: The proposed widening of Pacific Highway would mitigate future roadway conditions along this corridor. The improvement would be constructed by the City of San Diego in a phased manner upon development of individual blocks in the Navy Broadway Complex.

Unavoidable Roadway Segment Impacts -- There are no roadway segments where unavoidable adverse impacts would occur after implementation of the mitigation measures listed above.

ENDNOTES:

1 San Diego Association of Governments, 1987b.
2 City of San Diego, 1987c.
3 PRC Engineering, 1985.
4 Metropolitan Transit Development Board, 1987.
5 Wilbur Smith and Associates, 1987.
6 San Diego Association of Governments, 1988.
7 Commuter Computer.
8 Stave, City of San Diego, personal communication, 1988.
9 Berg, City of San Diego, personal communication, 1988.
10 San Diego Association of Governments, 1986.
11 Metropolitan Transit Development Board, op. cit.
12 Robenheimer, Metropolitan Transit Development Board, personal communication, 1988.
13 Stave, op. cit.
14 Pazargadi, City of San Diego, April 25, 1989.
15 Pazargadi, op. cit.
16 Pazargadi, op. cit.
17 Wilbur Smith Associates, 1988.

4.3 AESTHETICS AND VIEWSHED

4.3.1 AFFECTED ENVIRONMENT

Project Site Appearance

The Navy Broadway Complex is a fully developed site with 16 buildings that range in height from approximately 20 feet to 100 feet. Figure 4-20 is an aerial photograph of the site. Buildings 1 and 12, at 100-feet high, are the two most visually prominent buildings on the site. Both buildings are located on the northwestern two blocks of the site (see Figure 4-1, page 4-2), with Building 1 located adjacent to and south of Broadway and Building 12 located south of Building 1. No other buildings on the site are higher than 40 feet. Because of this size variation, Buildings 1 and 12 are visible from some of the more distant range viewsheds, whereas the remaining buildings on the site are generally visible only from nearby streets.

Structures on the project site, particularly Buildings 1 and 12, are well-maintained. The buildings are rectangular with minimal architectural variation. Buildings 1 and 12 are built to the property line along Harbor Drive, and Building 1 is built to the property line along Broadway. Fences and buildings on the project site block certain views from streets leading from the downtown core to the waterfront.

Public Views of the Site

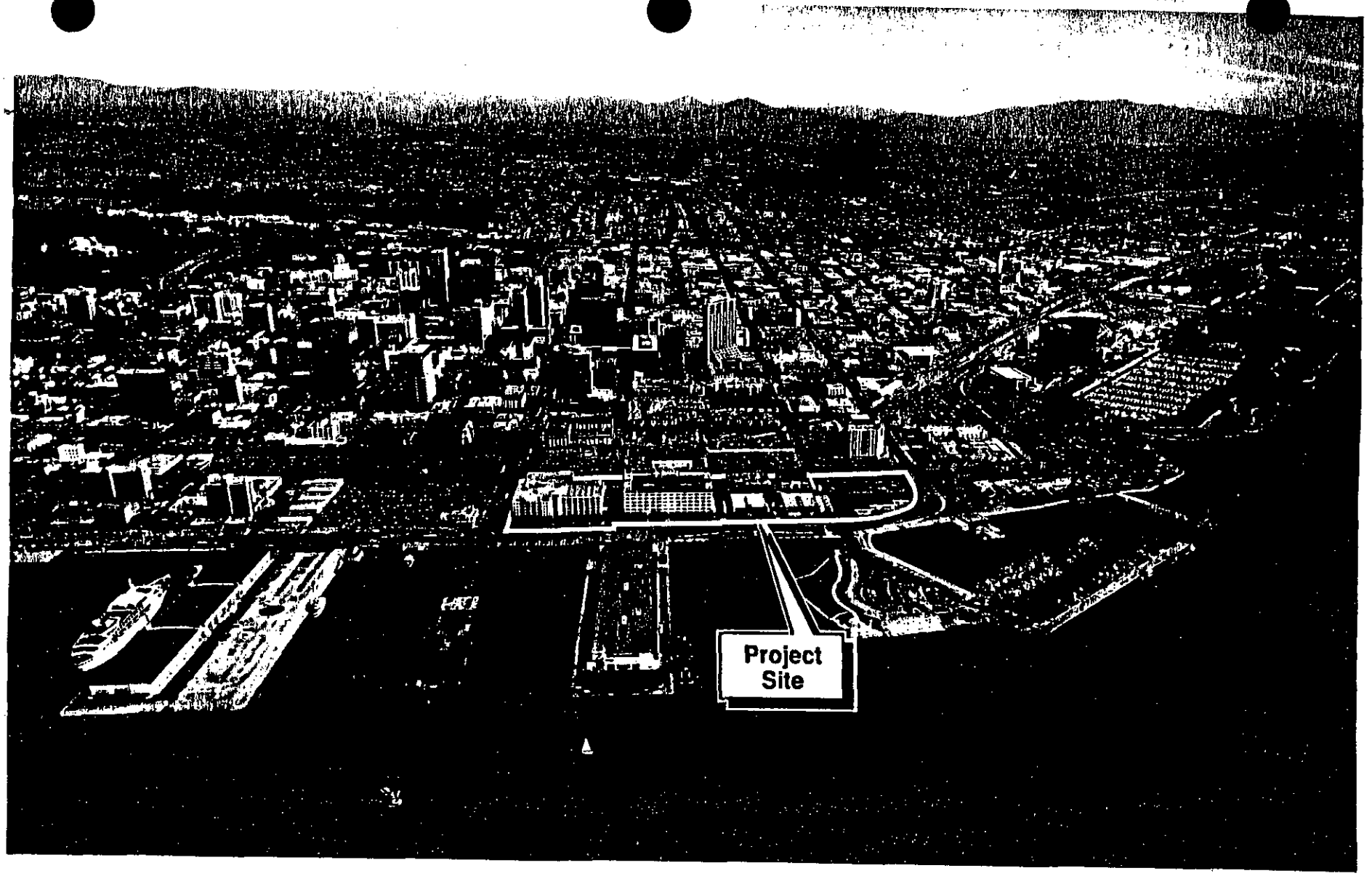
The project site is in a visually important area because of its proximity to the waterfront and its visibility from several key viewpoints. The project site is visible from three types of views:

- Panoramic views from Coronado and Harbor Islands across the bay.
- Gateway views from Harbor Drive at Laurel Street and I-5 at Olive Street looking south, and from Harbor Drive near the Convention Center looking north.
- Street-end views from the downtown along Broadway, E, F (Pantoja Park), G, and Market streets.

Photographs were taken of the project site and surrounding area from each of these viewpoints. The photograph viewpoint locations are depicted on Figure 4-21. Each photograph is followed by a visual simulation of Alternative A and Alternative F. Alternatives A and F were selected for visual simulations because they include the tallest proposed buildings of all the alternatives. The project site is discussed below in the context of these public views.

Panoramic Views

Figures 4-22 and 4-25 depict panoramic views of the site and surrounding area from Harbor Island and Coronado, respectively. The existing buildings on the project site are visually subordinate to several high-rise buildings in the nearby downtown core that are also visible from these viewpoints. Buildings 1 and 12 are the two most visible buildings on the site, with the remaining 14 buildings barely visible.



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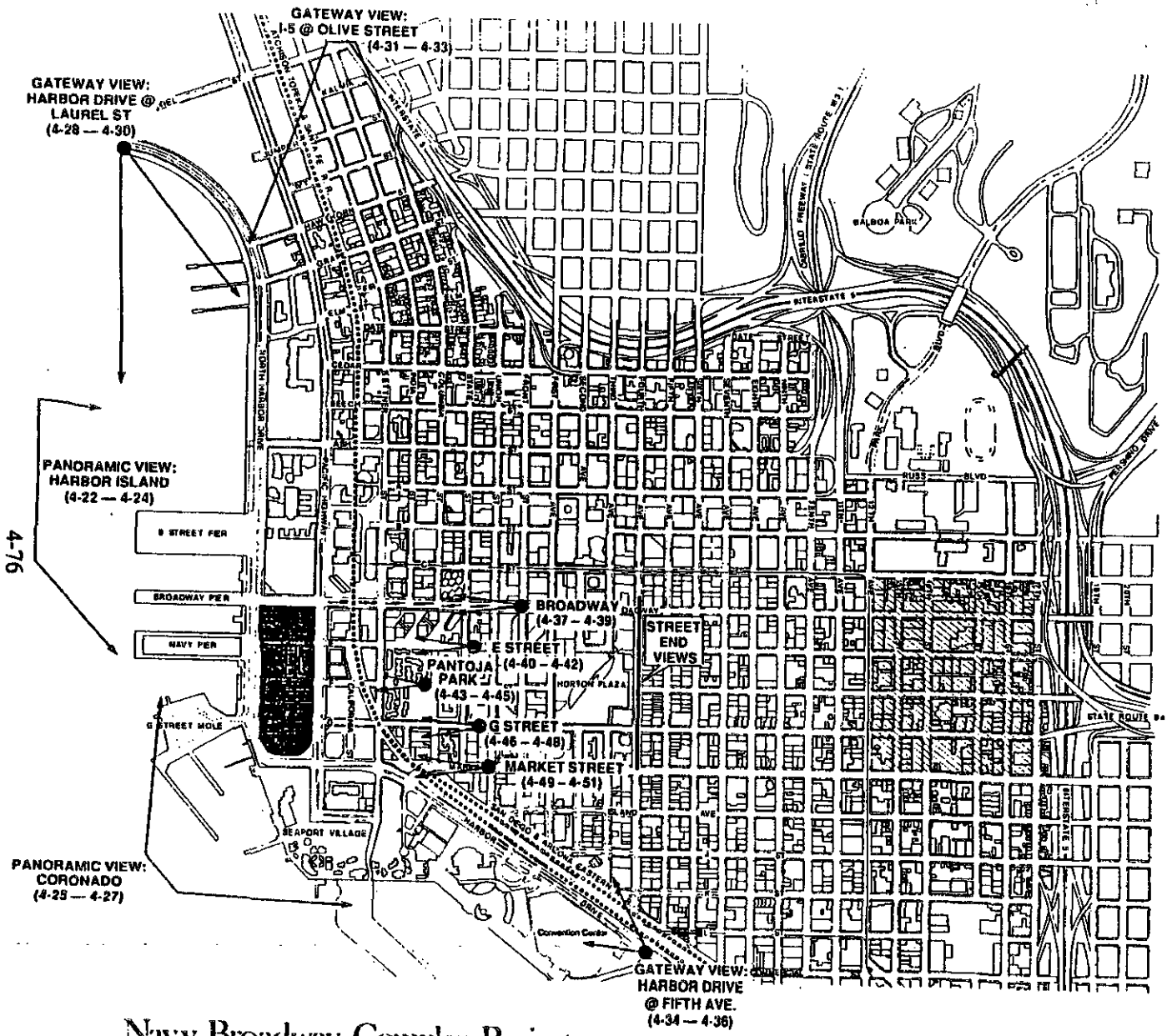
Aerial View Project Site
Navy Broadway Complex Project

Figure 4-20



4-76

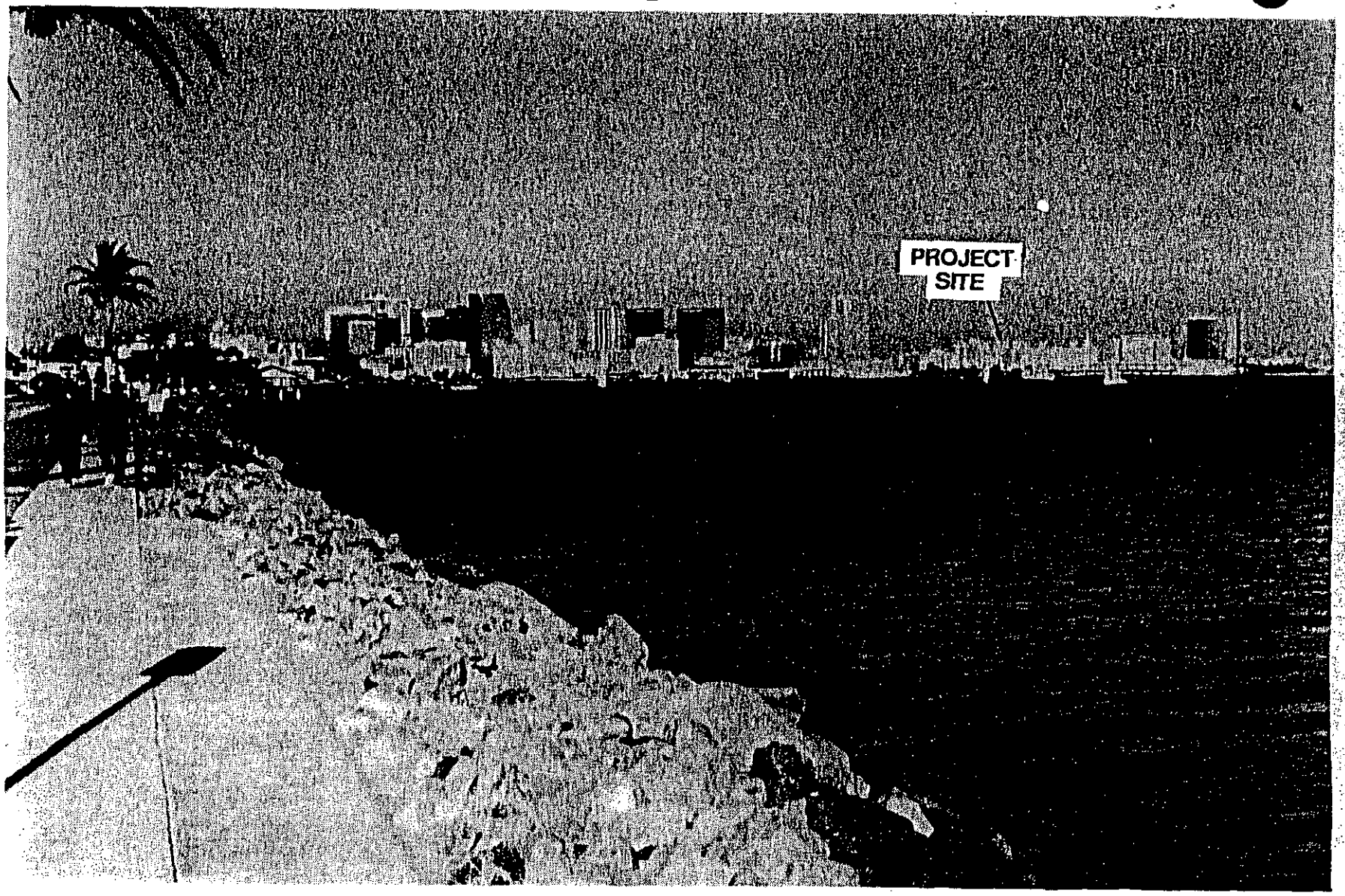
Legend

- Direction of Photograph
- (4-22) Figure on Which Viewshed is Shown
- Project Site
- Location of possible Navy Office for Alternative D (Will Encompass 2 Blocks)

Figure 4-21

Viewshed Index Map

0 470 940 FEET NORTH



Panoramic View from Harbor Island

Navy Broadway Complex Project

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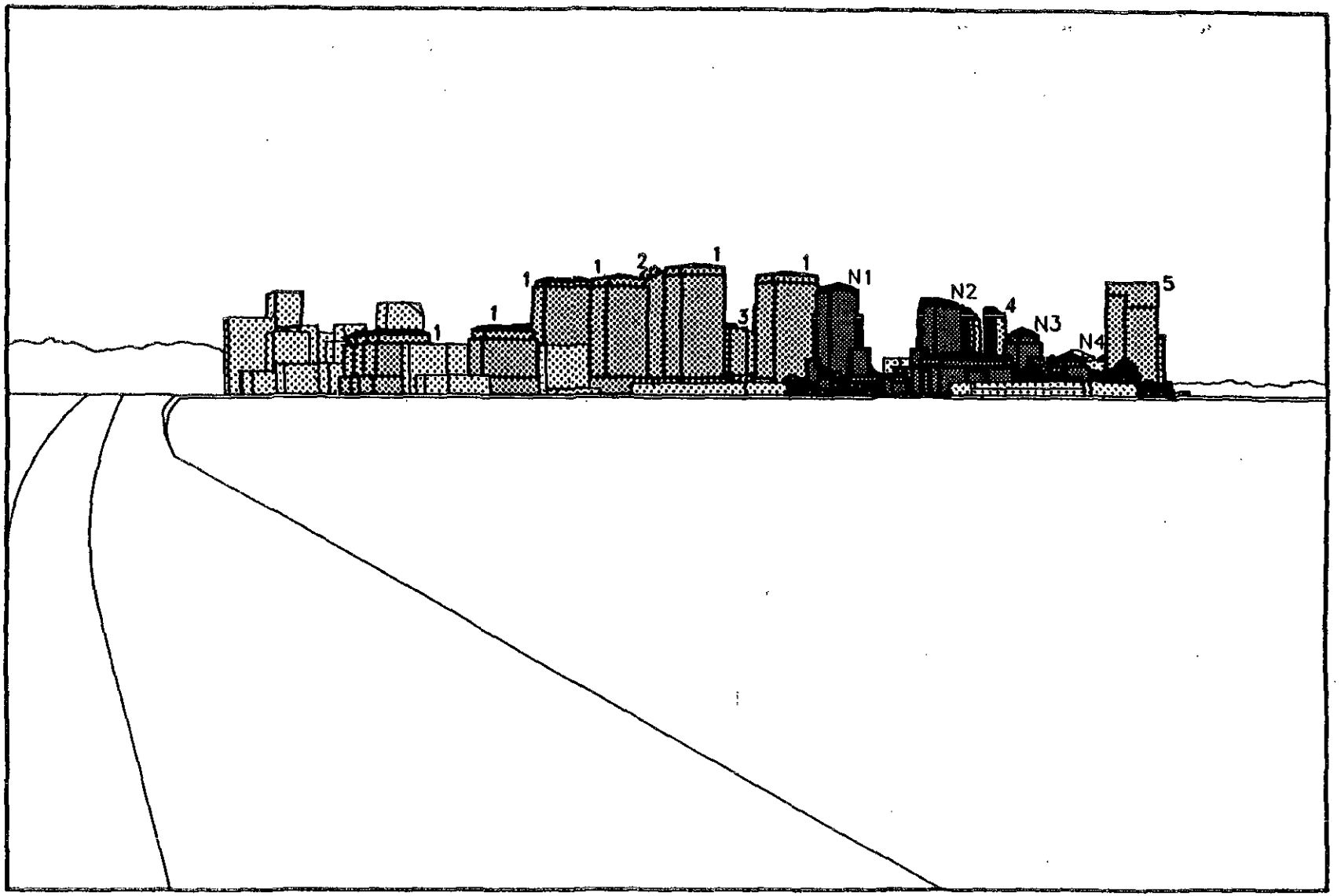
Figure 4-22



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

1. Santa Fe Development
2. Great American Plaza
3. Koll Center
4. One Harbor Drive
5. Hyatt Regency

Panoramic View of Alternative A
from Harbor Island

Navy Broadway Complex Project

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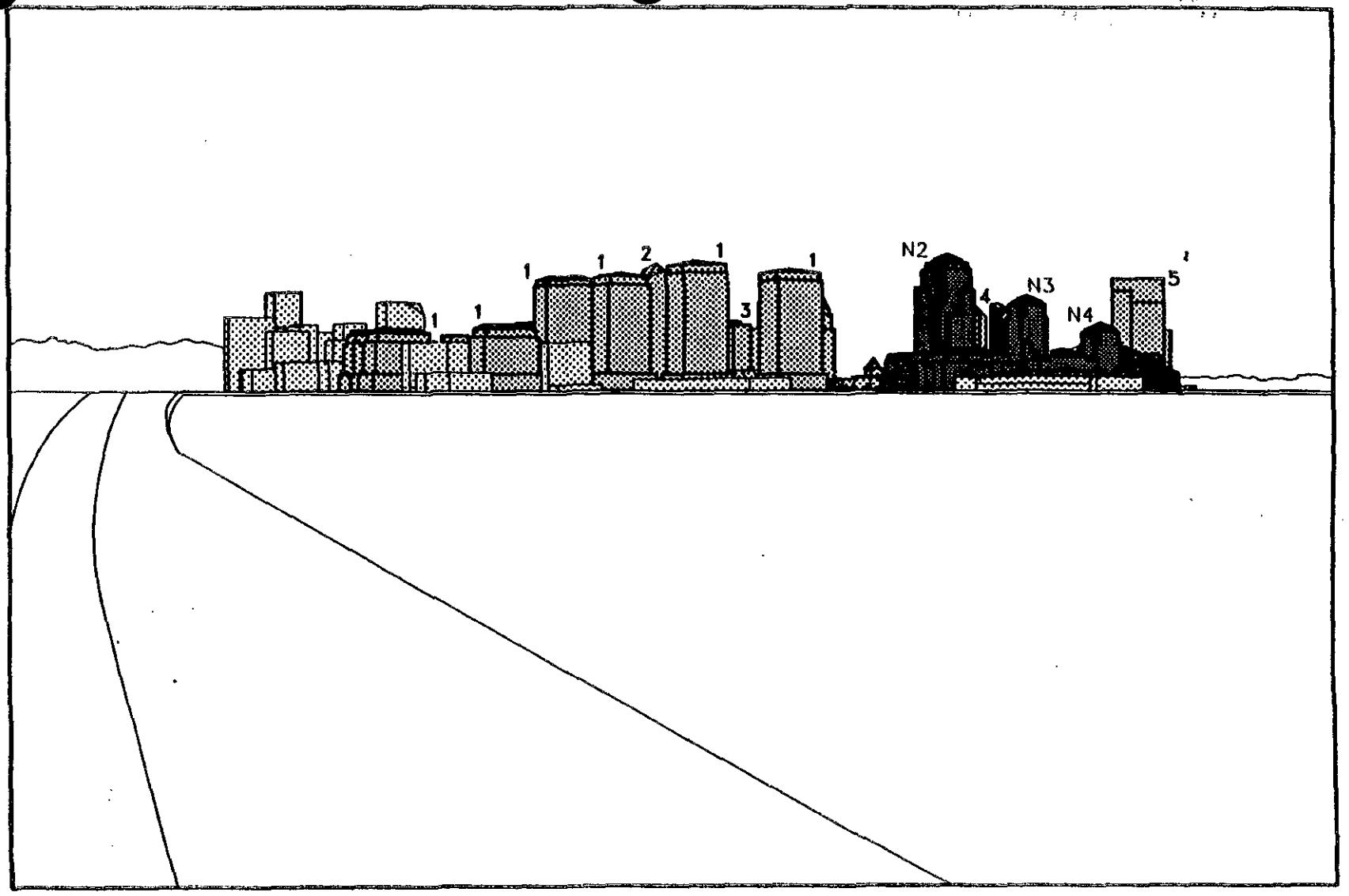
Figure 4-23



Panoramic View of Alternative F
from Harbor Island

Navy Broadway Complex Project

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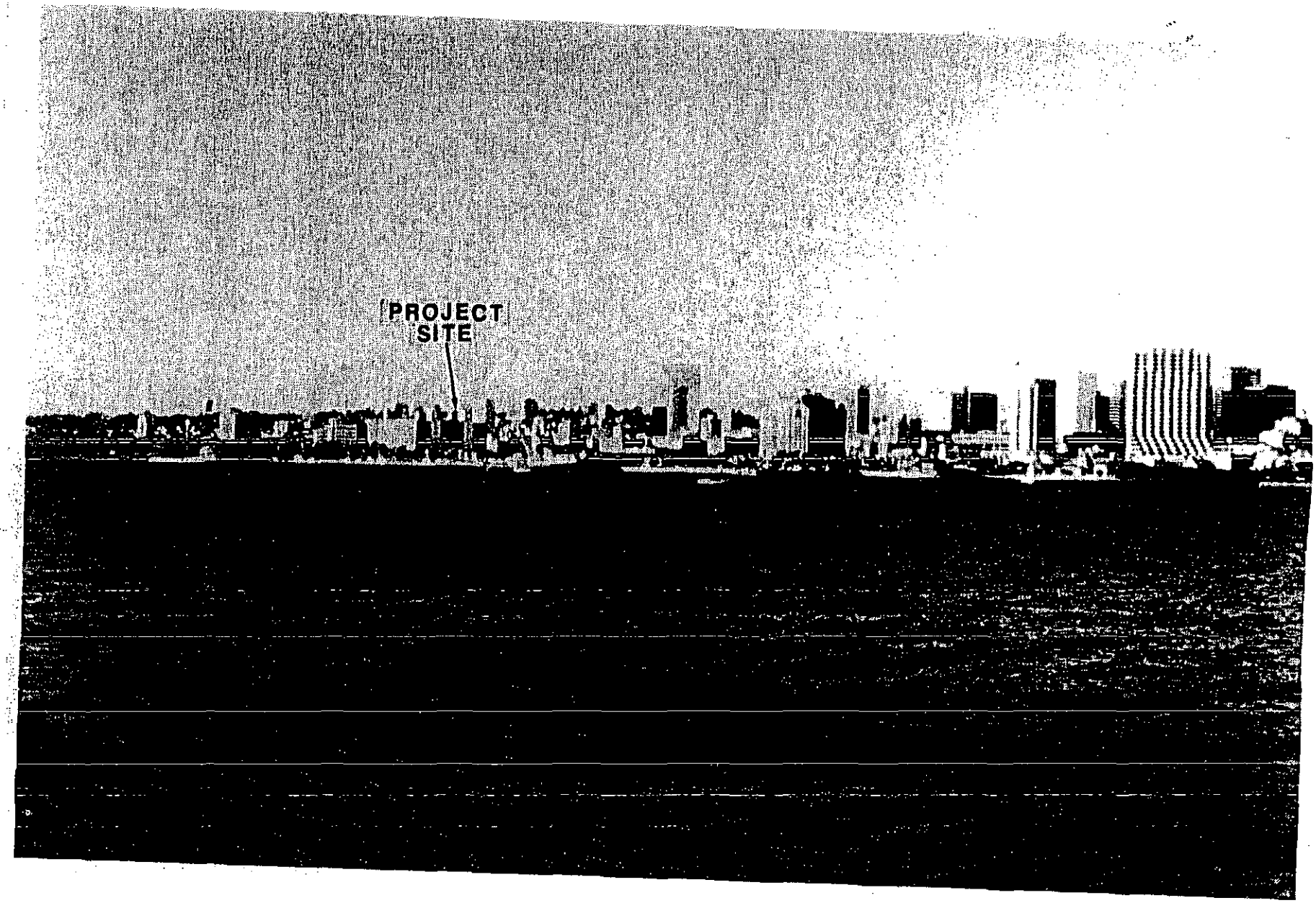
Figure 4-24



Panoramic View from Coronado

Navy Broadway Complex Project

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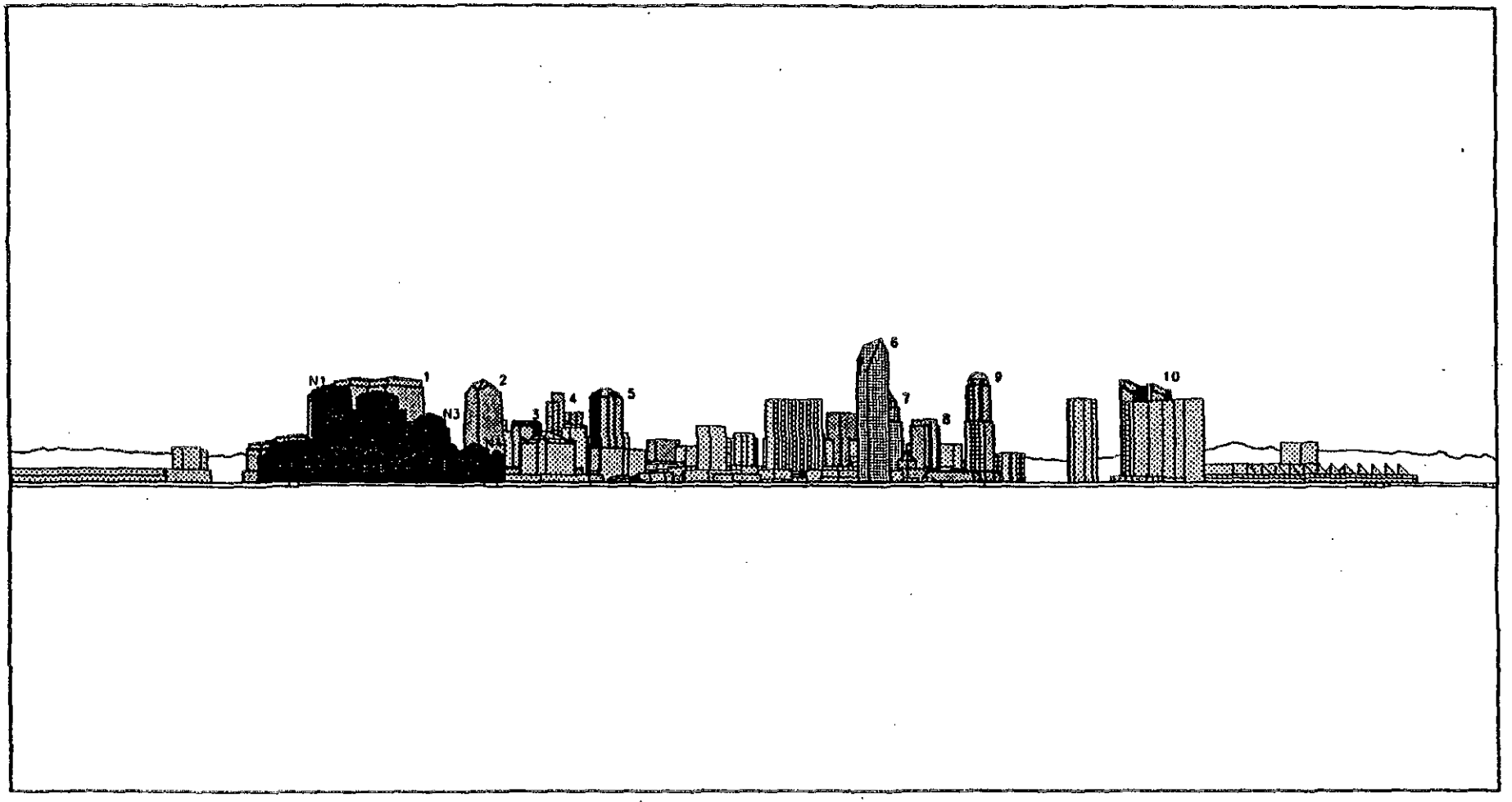
Figure 4.5



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

1. Santa Fe Development
2. Great American Plaza
3. Koll Center
4. Emerald-Shapery Center
5. The Huntington
6. Hyatt Regency
7. The Courtyard
8. Tyson Plaza
9. Roger Morris Plaza
10. One Harbor Drive

Panoramic View of Alternative A from Coronado

Navy Broadway Complex Project

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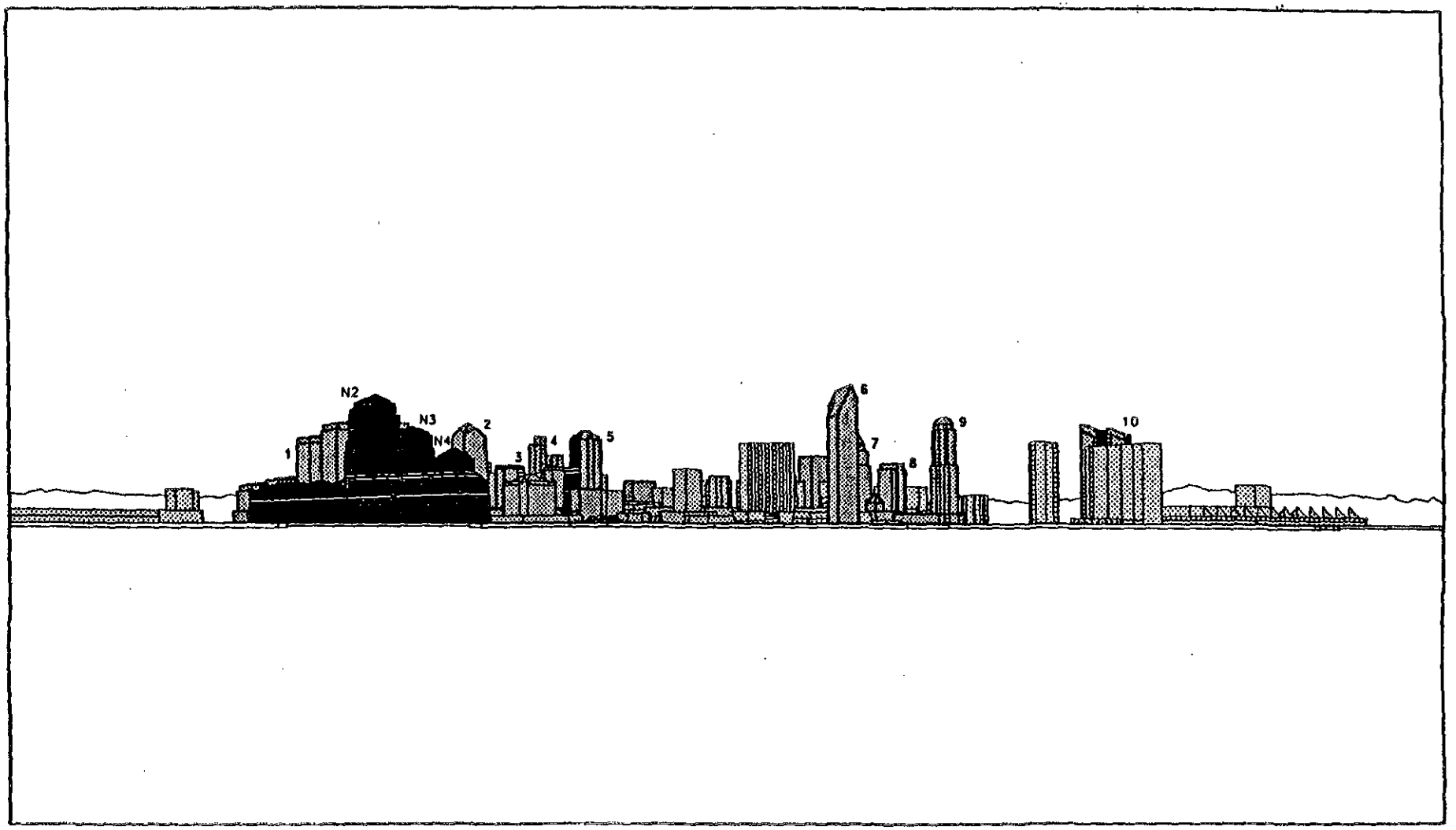
Figure 4-26



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

1. Santa Fe Development
2. Great American Plaza
3. Koll Center
4. Emerald-Shapery Center
5. The Huntington
6. Hyatt Regency
7. The Courtyard
8. Tyson Plaza
9. Roger Morris Plaza
10. One Harbor Drive

Panoramic View of Alternative F from Coronado

Navy Broadway Complex Project

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Figure 4-27

Major proposed buildings in the vicinity include the Santa Fe, Emerald Shapery, Koll Center, Great American, and the Hyatt Hotel projects. All include high-rise structures, with some up to 500 feet. Once developed, the skyline would fill in and appear more densely developed than it does currently.

Gateway Views

Figure 4-28 depicts the view of the site and surrounding area from Harbor Drive at Laurel Street, a "gateway" into the project area from the north. The high-rise buildings in the downtown core are visually less dominant in this view than in the views from Harbor Island and Coronado due to the view angle. The most dominant features are the bay and the boats docked in the marina. Buildings on the project site, though visible from this viewpoint (particularly Buildings 1 and 12), are in the background of the viewshed and are not prominent.

The gateway view along I-5 at Olive Street (see Figure 4-31) is dominated by structures in the foreground and by the high-rise buildings in the downtown core. The project site is in the distant background from this viewpoint, and is not visually prominent.

Figure 4-34 depicts the view toward the site from the southern gateway at Harbor Drive and Fifth Avenue near the Convention Center. Buildings 1 and 12 are the only buildings visually evident on the site from this point. The Embassy Suites Hotel and other structures in the foreground dominate the viewshed from this viewpoint, with Buildings 1 and 12 in the background of the viewshed.

Street-End Views

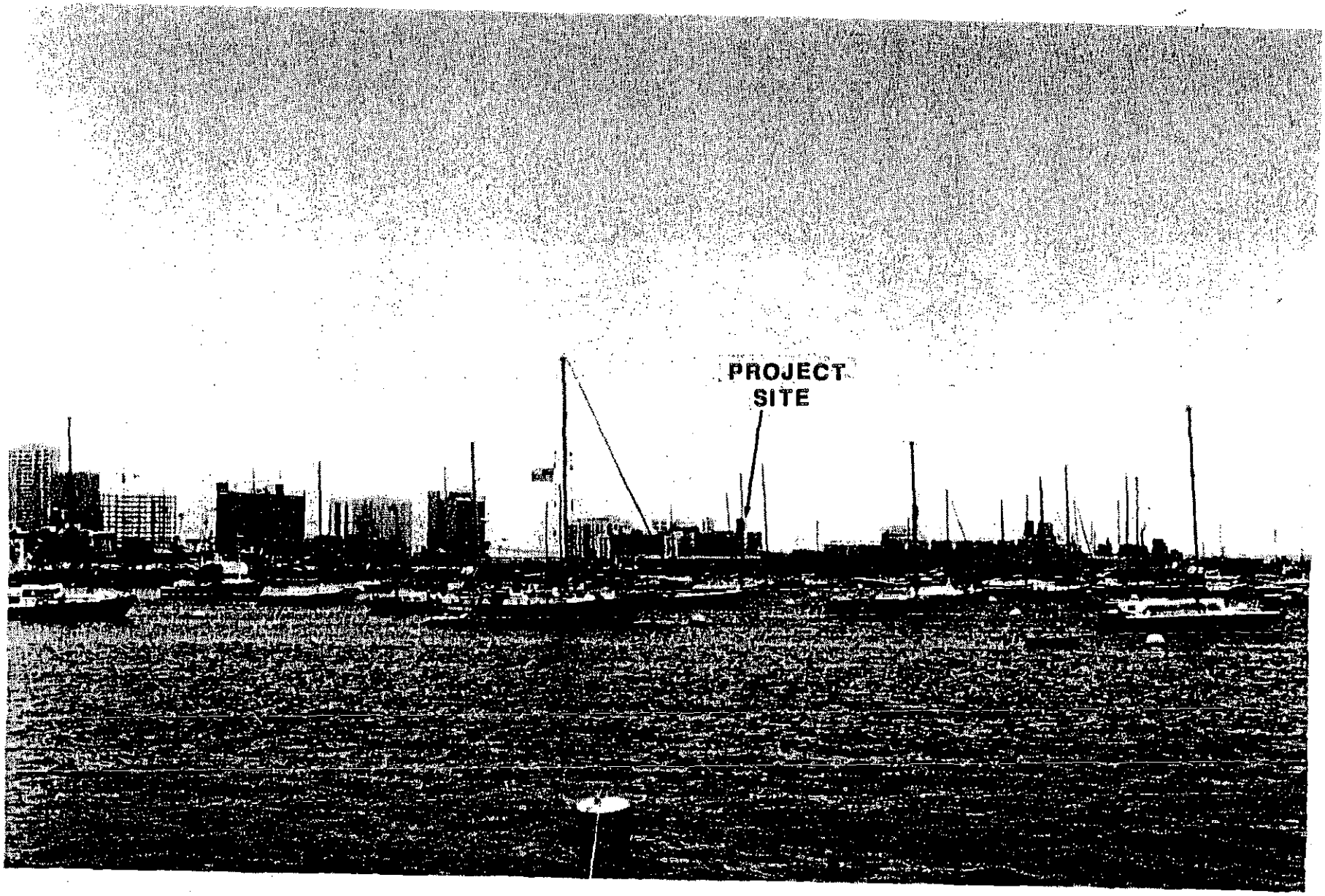
Street-end views toward the site are depicted from Broadway (Figure 4-37), E Street (Figure 4-40), F Street (at Pantoja Park, Figure 4-43), G Street (Figure 4-46), and Market Street (Figure 4-49). Views of the site from these locations are described below:

- Broadway: Project site buildings are almost entirely obstructed by other buildings in the viewshed (Figure 4-37). Within two blocks of the site, the project structures, particularly Building 1, become more prominent in the viewshed, although other facilities, such as the Broadway Pier and B Street Pier, also become visually prominent.

- E Street: As shown in Figure 4-40, existing buildings on the project site are visible in the background of the viewshed. The view from E Street toward the bayfront is obstructed by a chain link fence on the site and by the Navy Pier. The bay is not visible from E Street.

- F Street: The view from F Street (Figure 4-43) is shown from Pantoja Park. The view of the site from this point is largely obstructed by vegetation and residential development, although Building 12 is visible. At F Street adjacent to the site, the view through the site of the bayfront is obstructed by chain link fences.

- G Street: The view along G Street toward the bayfront is largely unobstructed. Buildings on the project site in this viewshed are one to two floors high and are not visually prominent in the viewshed (see Figure 4-46). Adjacent to the site, the view through the site toward the bayfront is largely obstructed by Building 9.



Gateway View from Harbor Drive at Laurel Street

Navy Broadway Complex Project

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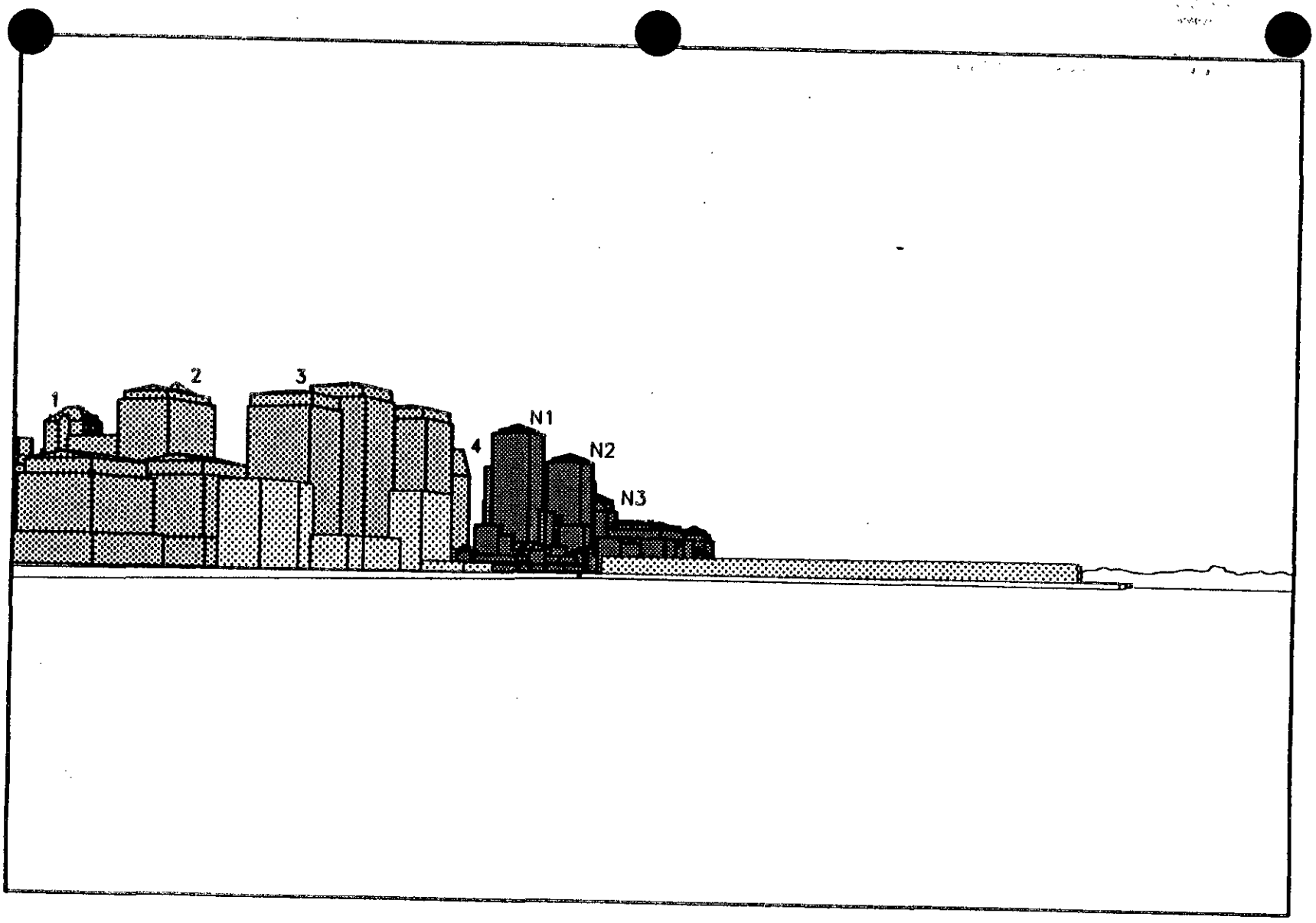
Figure 4.28



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

1. The Huntington
2. Great American Plaza
3. Santa Fe Development
4. Hyatt Regency

Gateway View of Alternative A
from Harbor Drive at Laurel Street

Navy Broadway Complex Project

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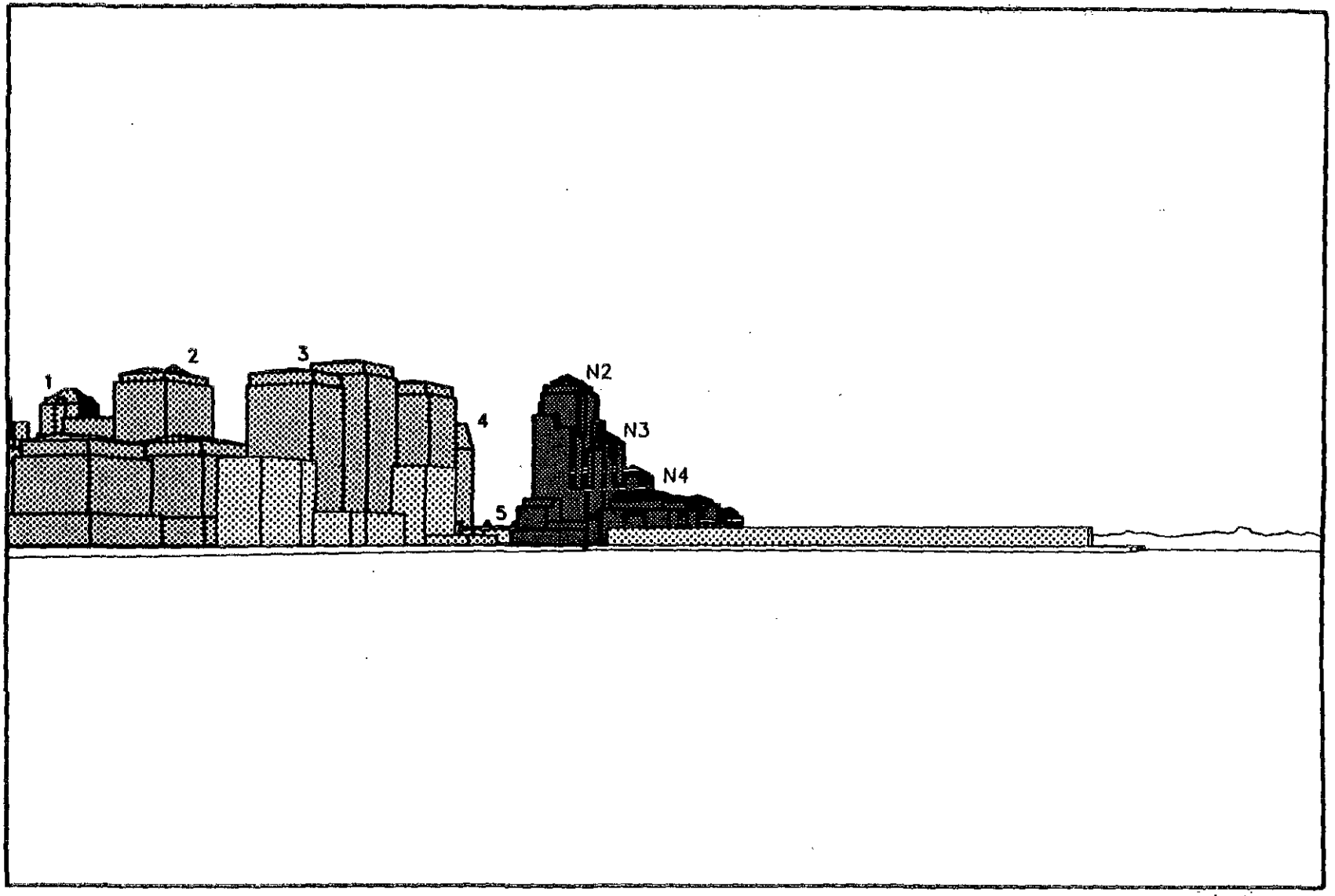
Figure 4-29



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

1. The Huntington
2. Great American Plaza
3. Santa Fe Development
4. Hyatt Regency
5. Santa Fe Condominiums

Gateway View of Alternative F
from Harbor Drive at Laurel Street

Navy Broadway Complex Project

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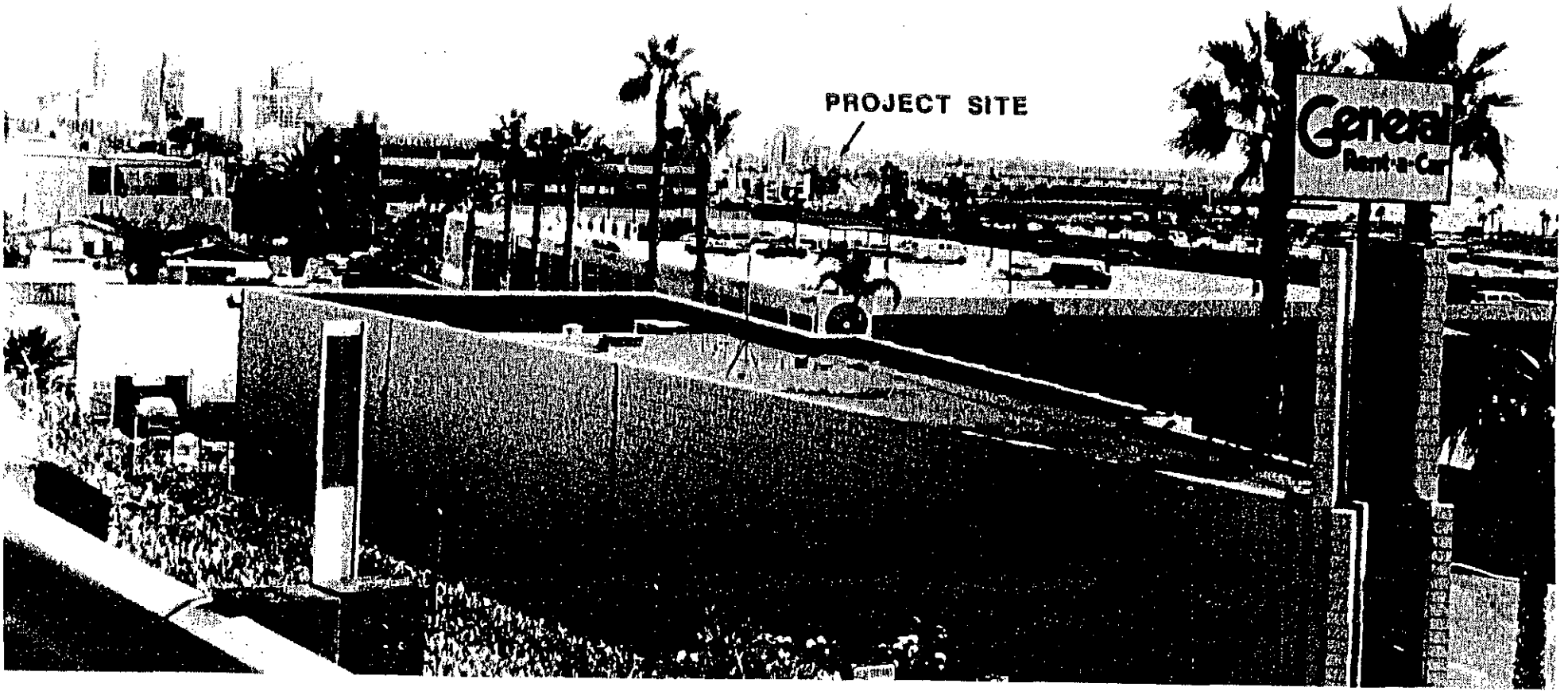
Figure 4-30



Gateway View from I-5 at Olive Street

Navy Broadway Complex Project

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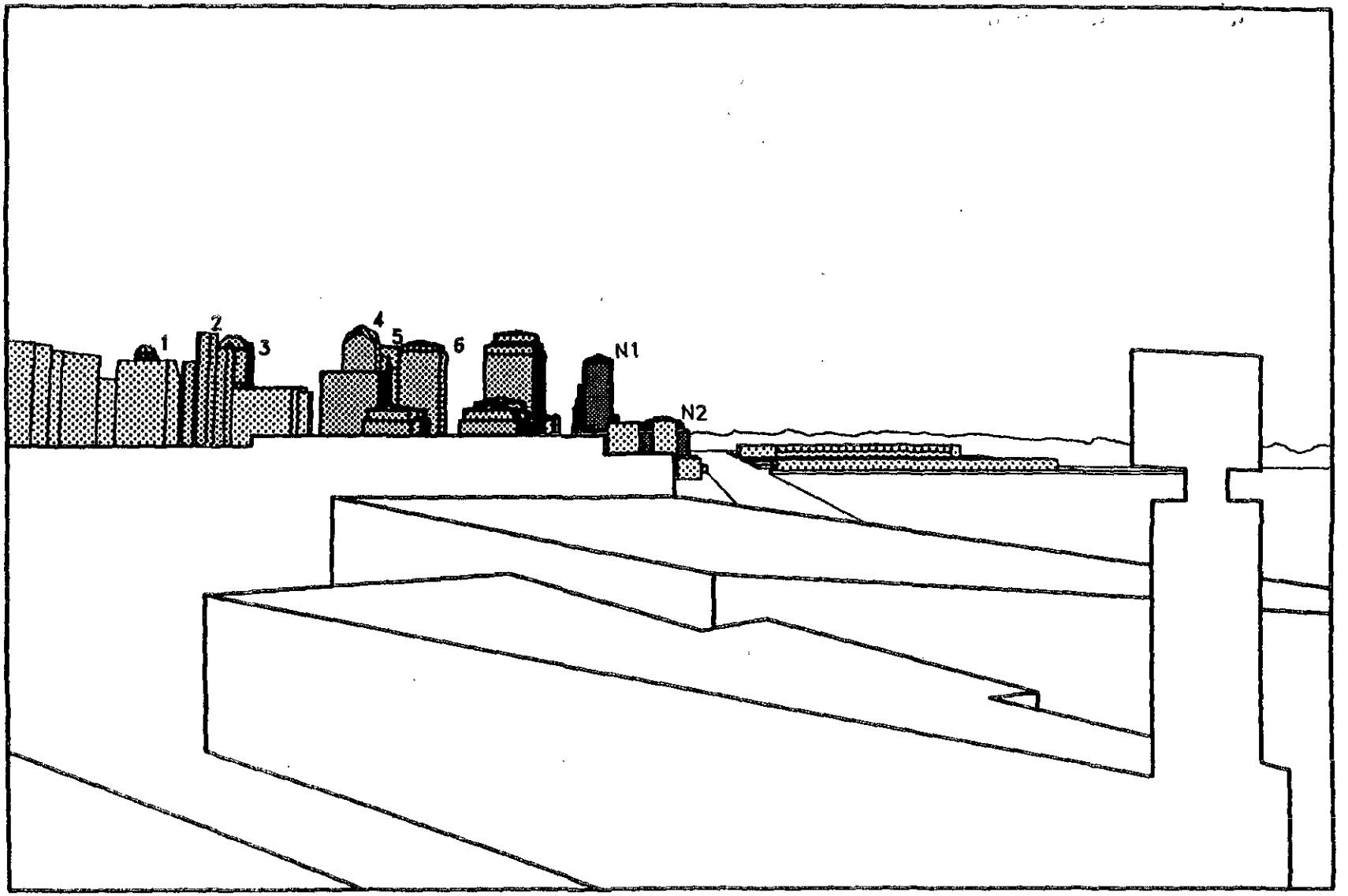
re 4-31

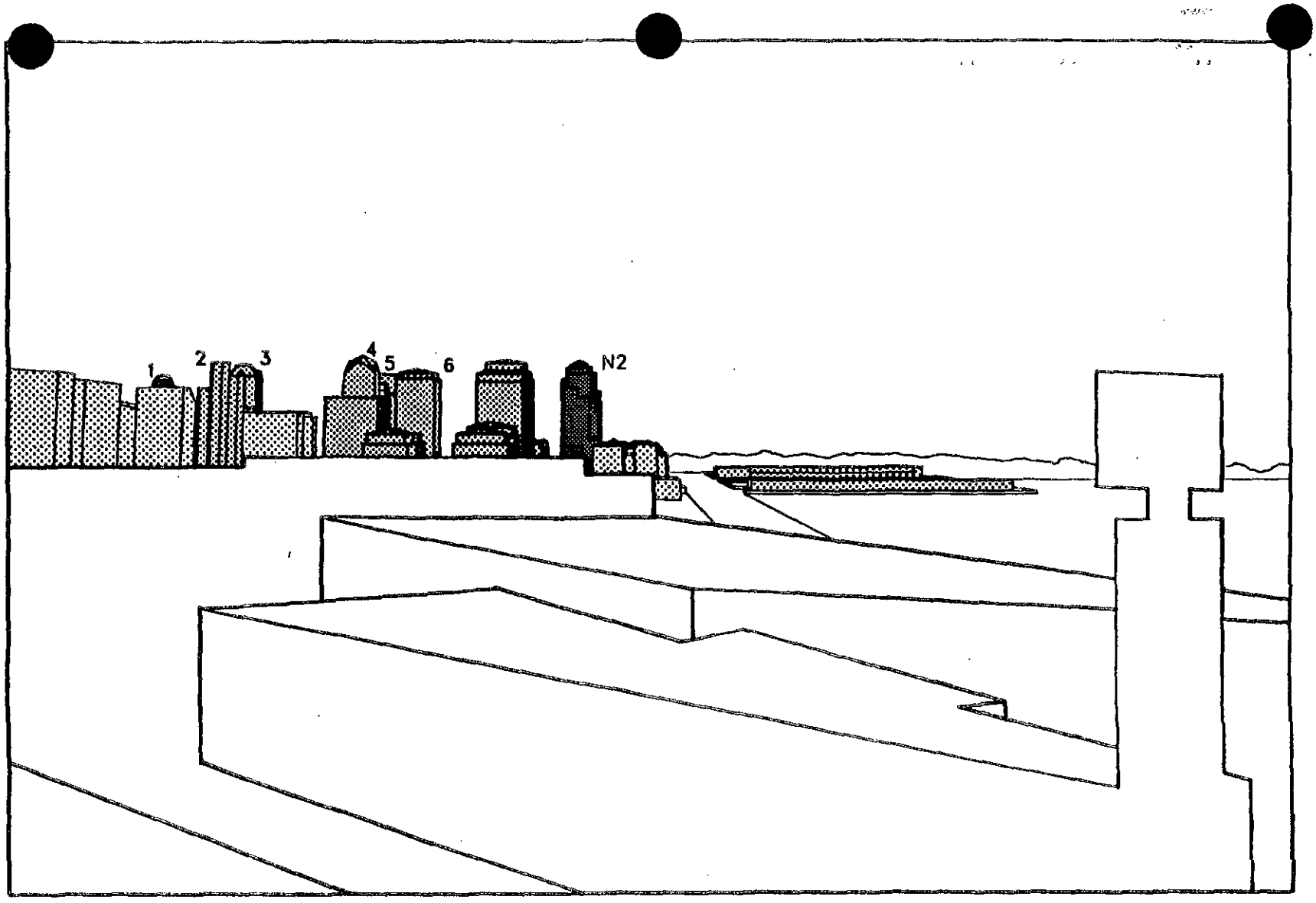


Gateway View of Alternative A
from I-5 at Olive Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-32



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

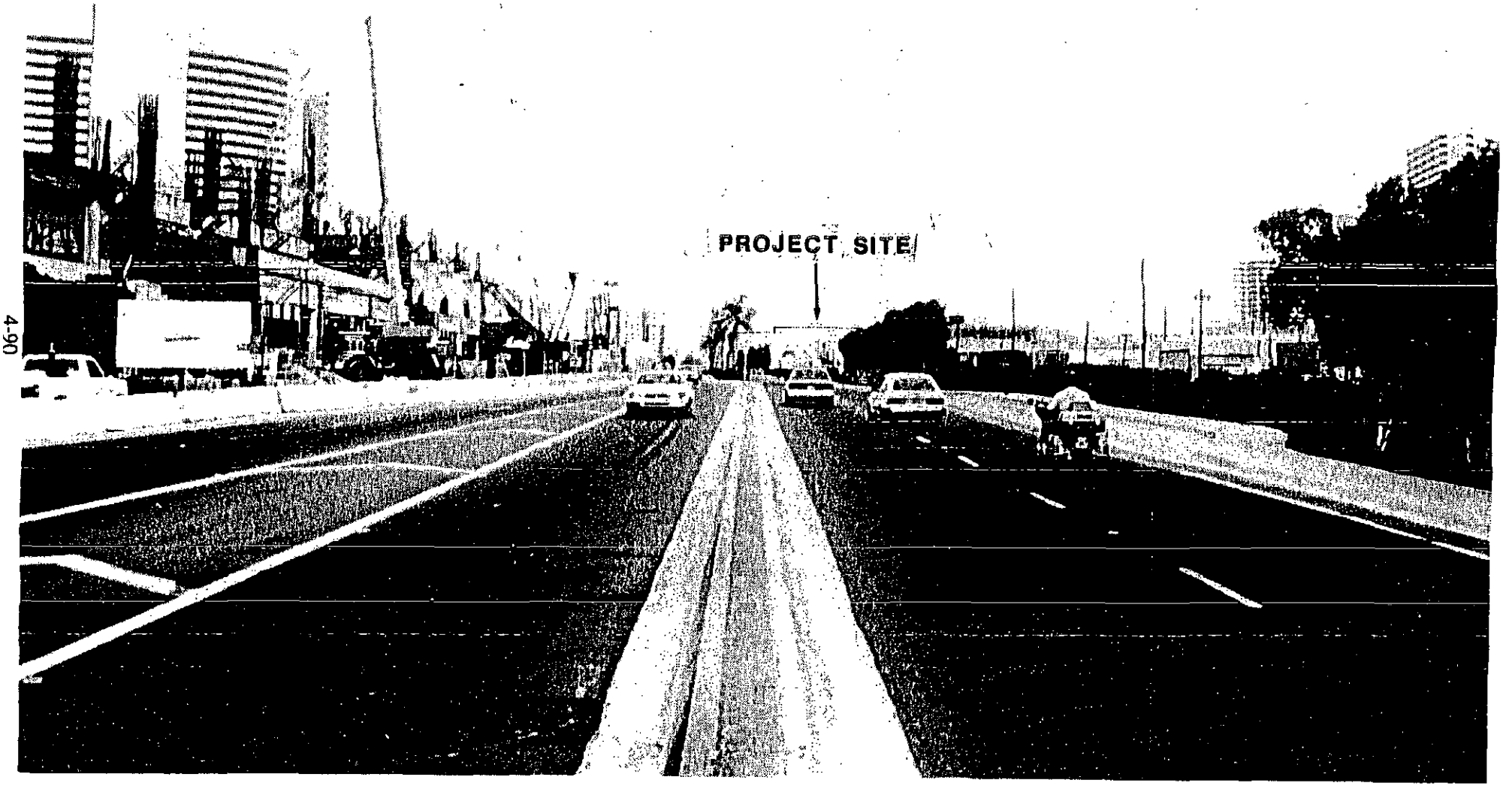
1. Roger Morris Plaza
2. Emerald-Shapery Center
3. The Huntington
4. Great American Plaza
5. Hyatt Regency
6. Santa Fe Development

Gateway View of Alternative F
from I-5 at Olive Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-33

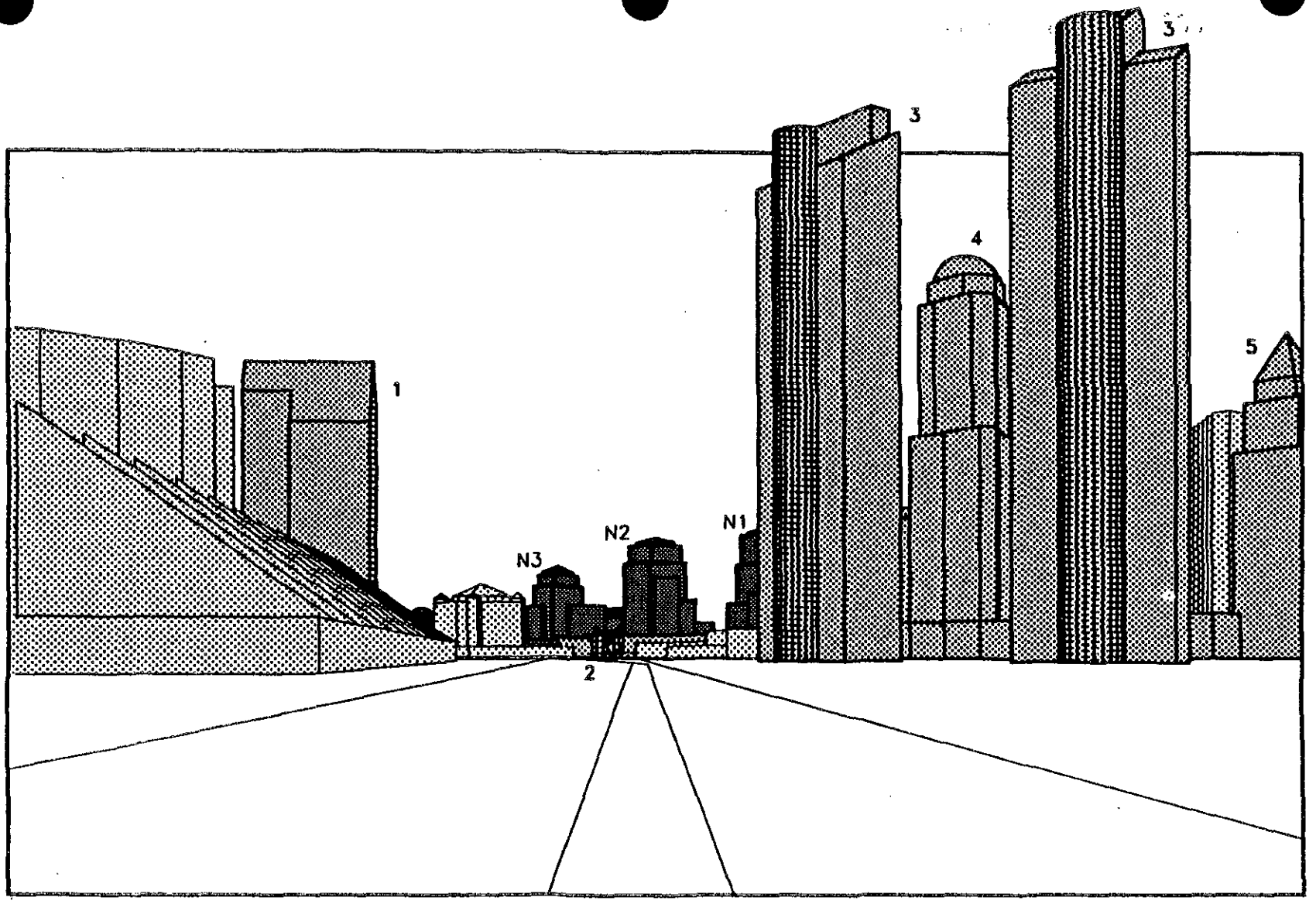


4-90

Gateway View from Harbor Drive at Fifth Avenue

Navy Broadway Complex Project

6640001 1/90



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

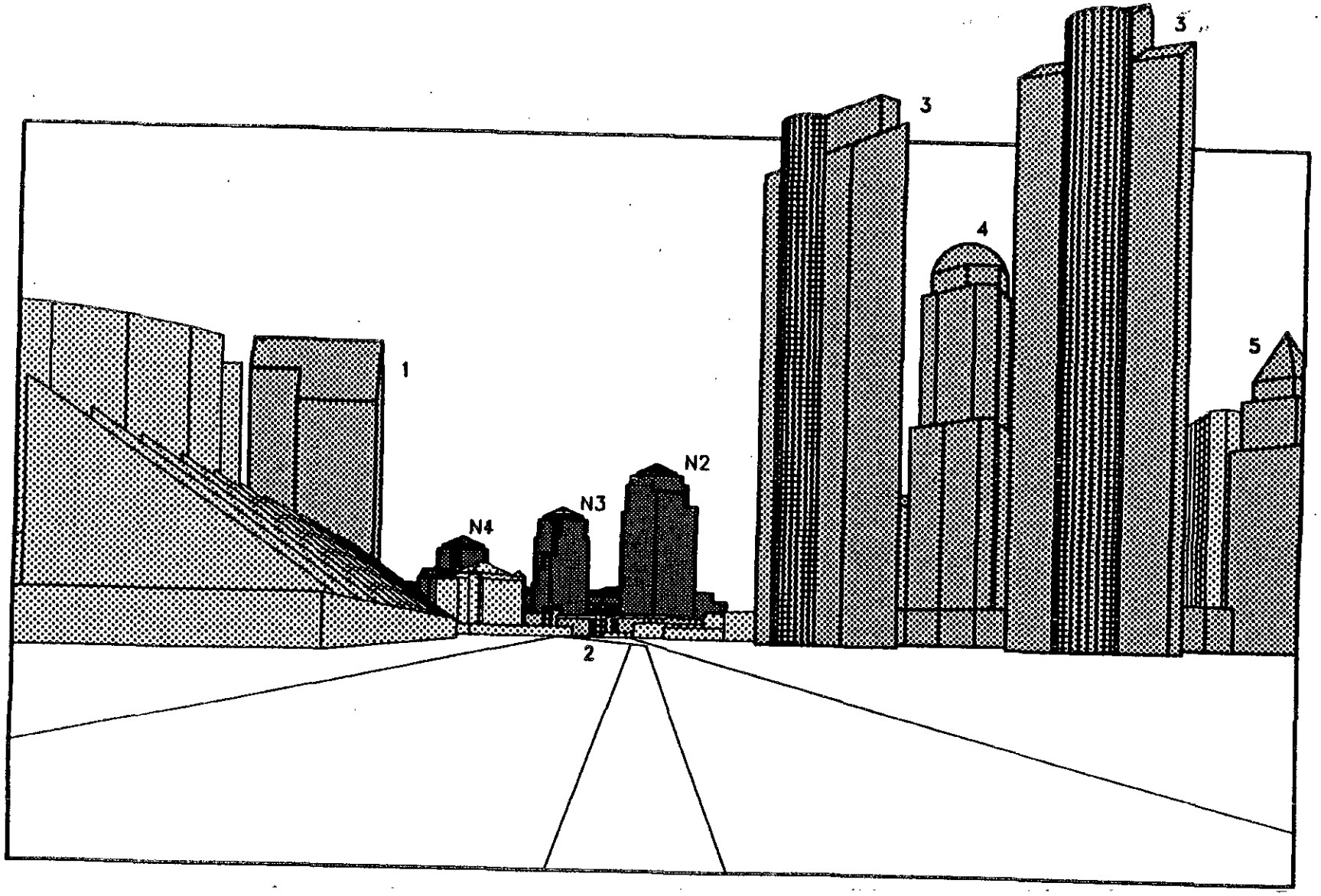
1. Hyatt Regency
2. Santa Fe Condominium
3. One Harbor Drive
4. Roger Morris Plaza
5. The Courtyard

6640001 1/90

Figure 4-35

Gateway View of Alternative A from Harbor Drive at 5th Avenue

Navy Broadway Complex Project



Gateway View of Alternative F
from Harbor Drive at 5th Avenue

Navy Broadway Complex Project

Existing

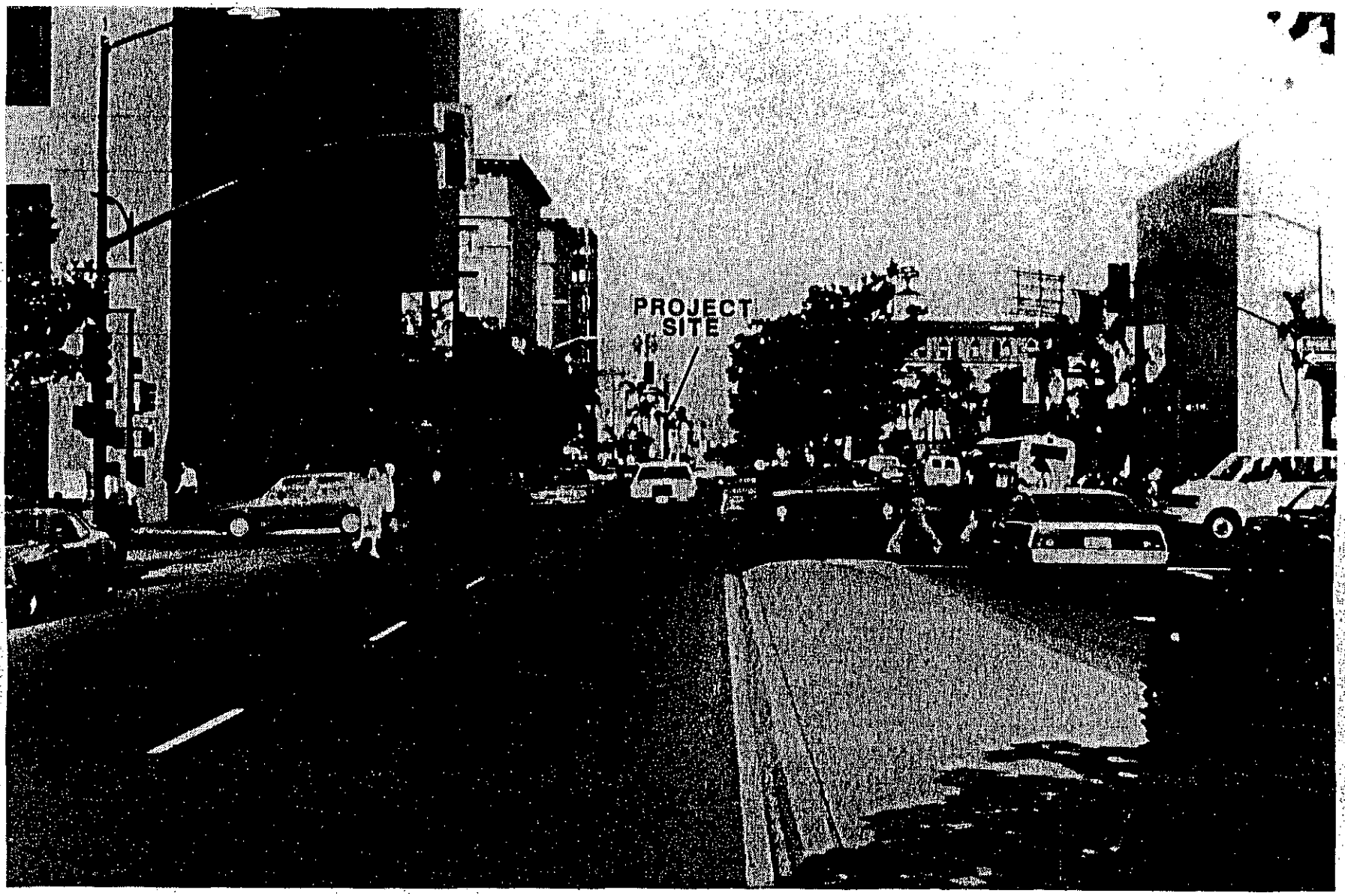
Downtown Proposed

Navy Broadway Complex (Block #)

1. Hyatt Regency
2. Santa Fe Condominiums
3. One Harbor Place
4. Roger Morris Plaza
5. The Courtyard

6640001 1/90

Figure 4-36

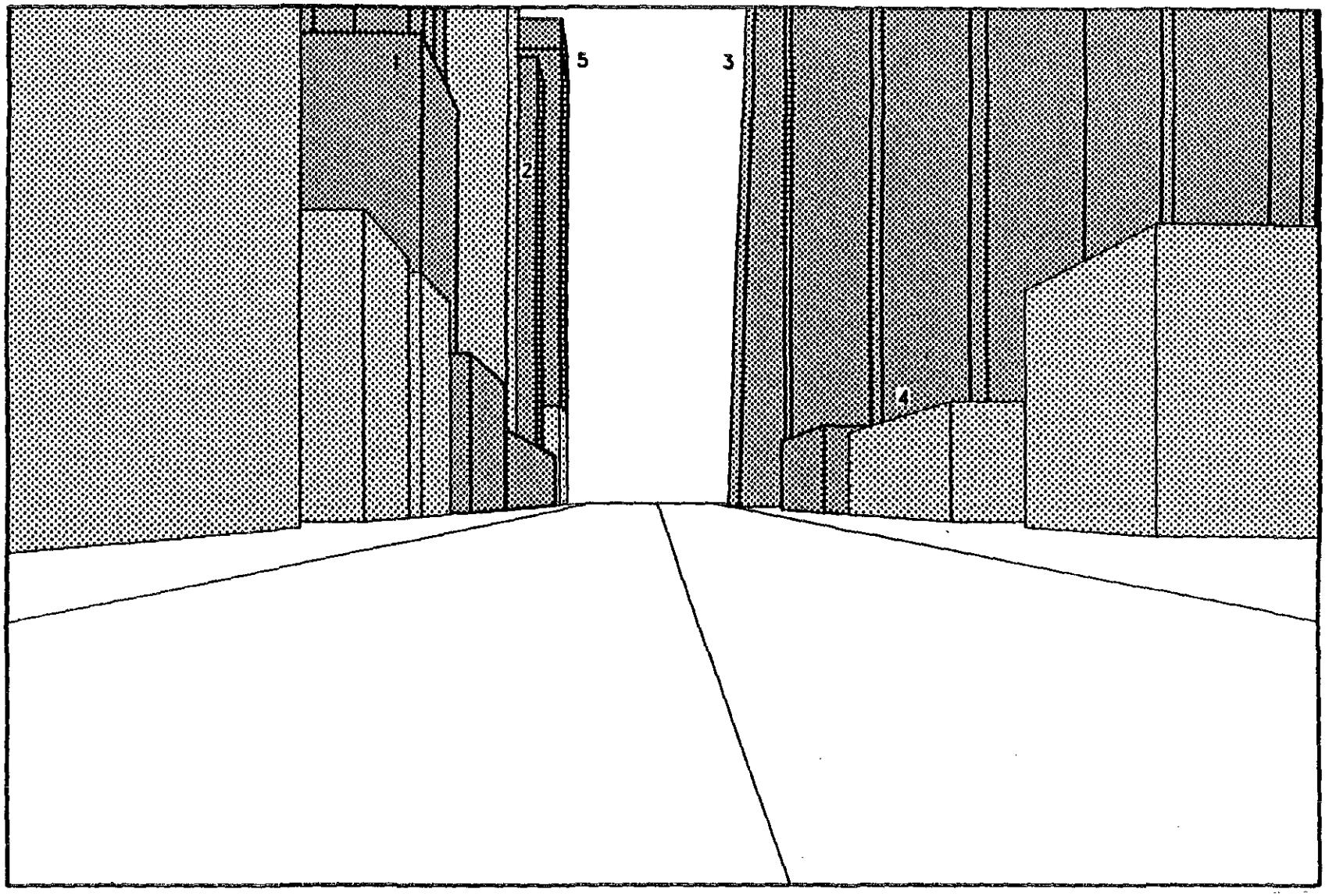


Street - End View from Broadway at Front Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-37



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

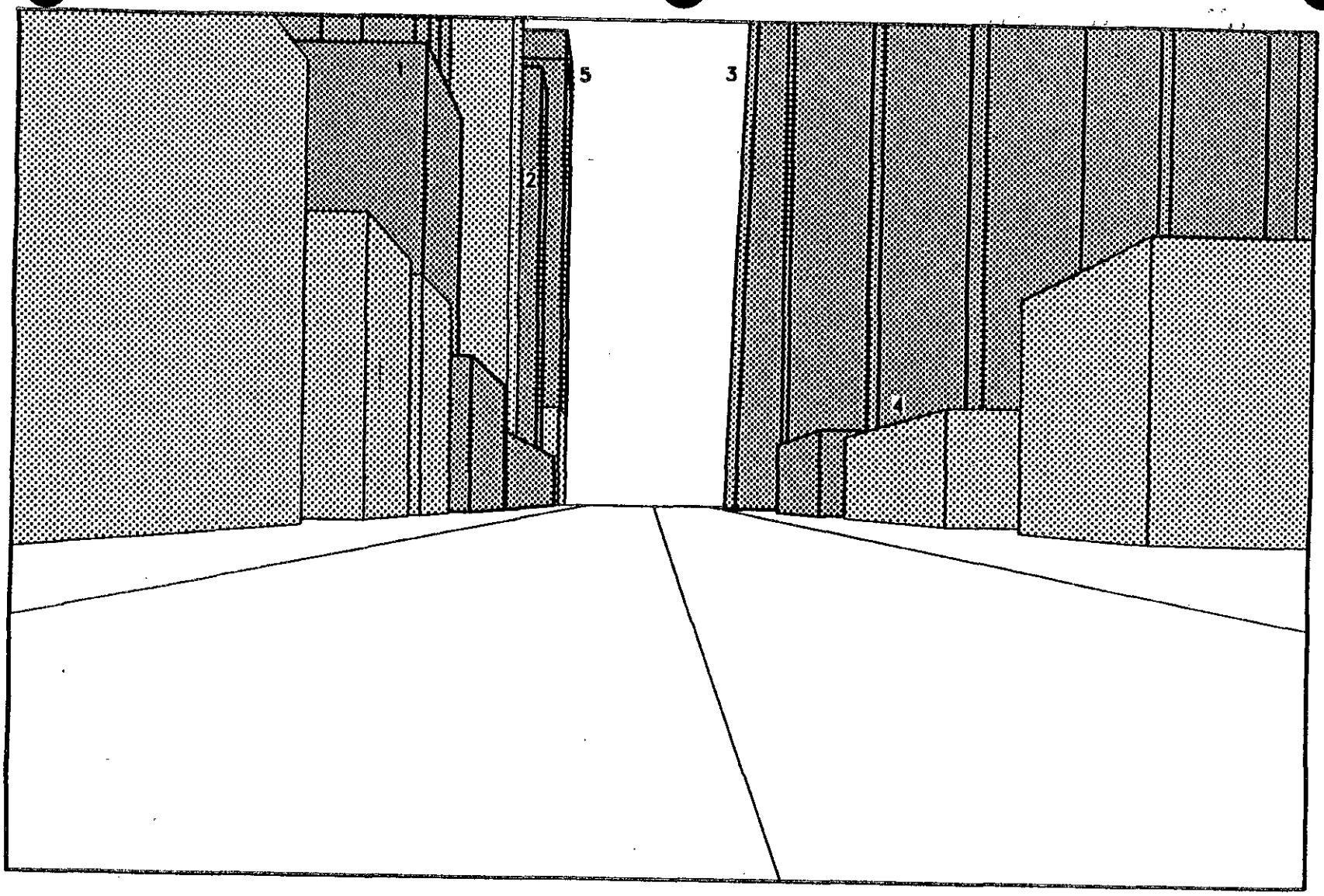
1. The Huntington
2. Koll Center
3. Great American Plaza
4. Emerald-Shapery Center
5. Santa Fe Development

6640001 1/90

Figure 4-38

Street - End View of Alternative A from Broadway at Front Street

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

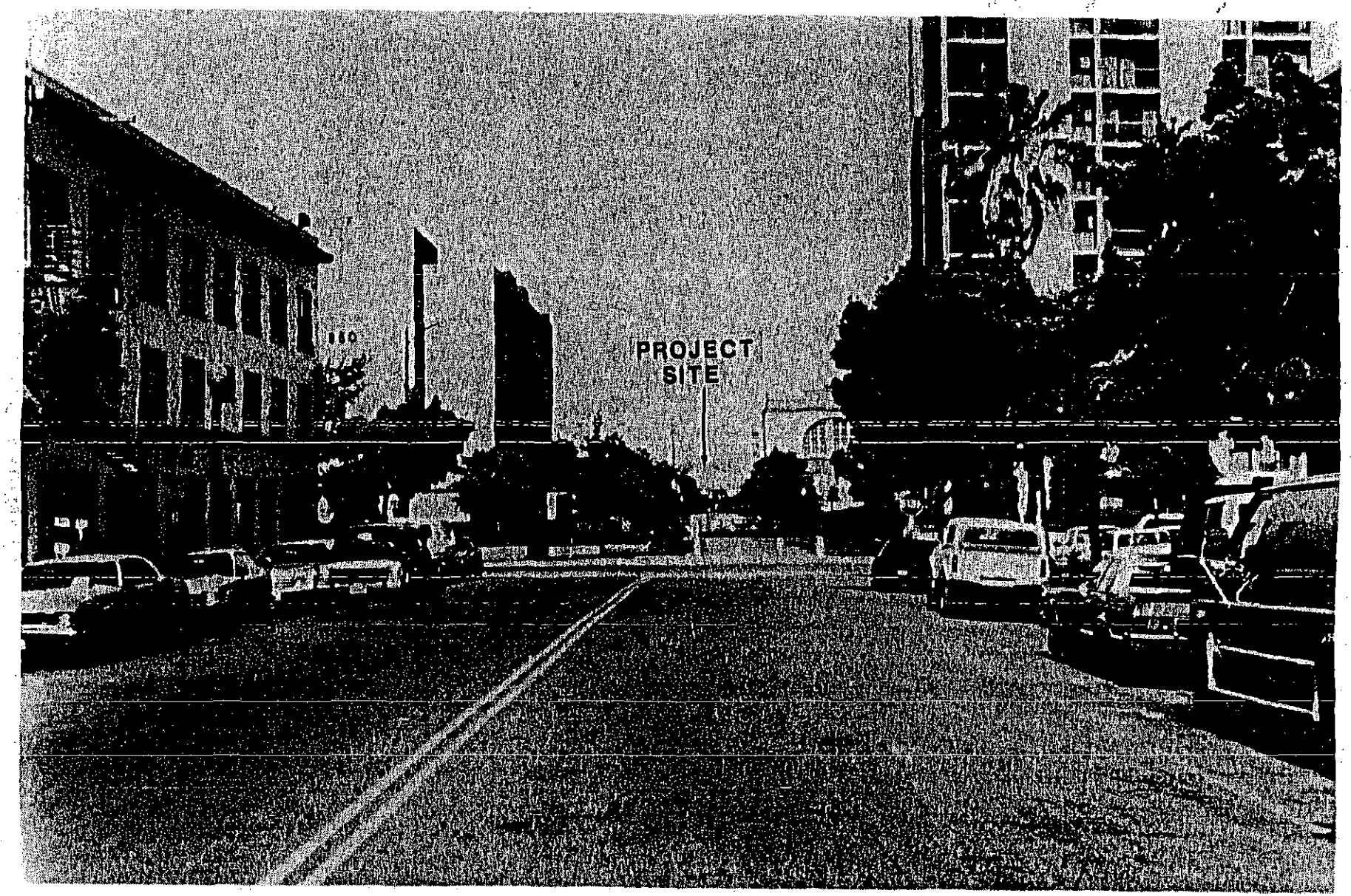
1. The Huntington
2. Koll Center
3. Great American Plaza
4 Emerald-Shapery Center
5 Santa Fe Development

Street–End View of Alternative F from Broadway at Front Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-

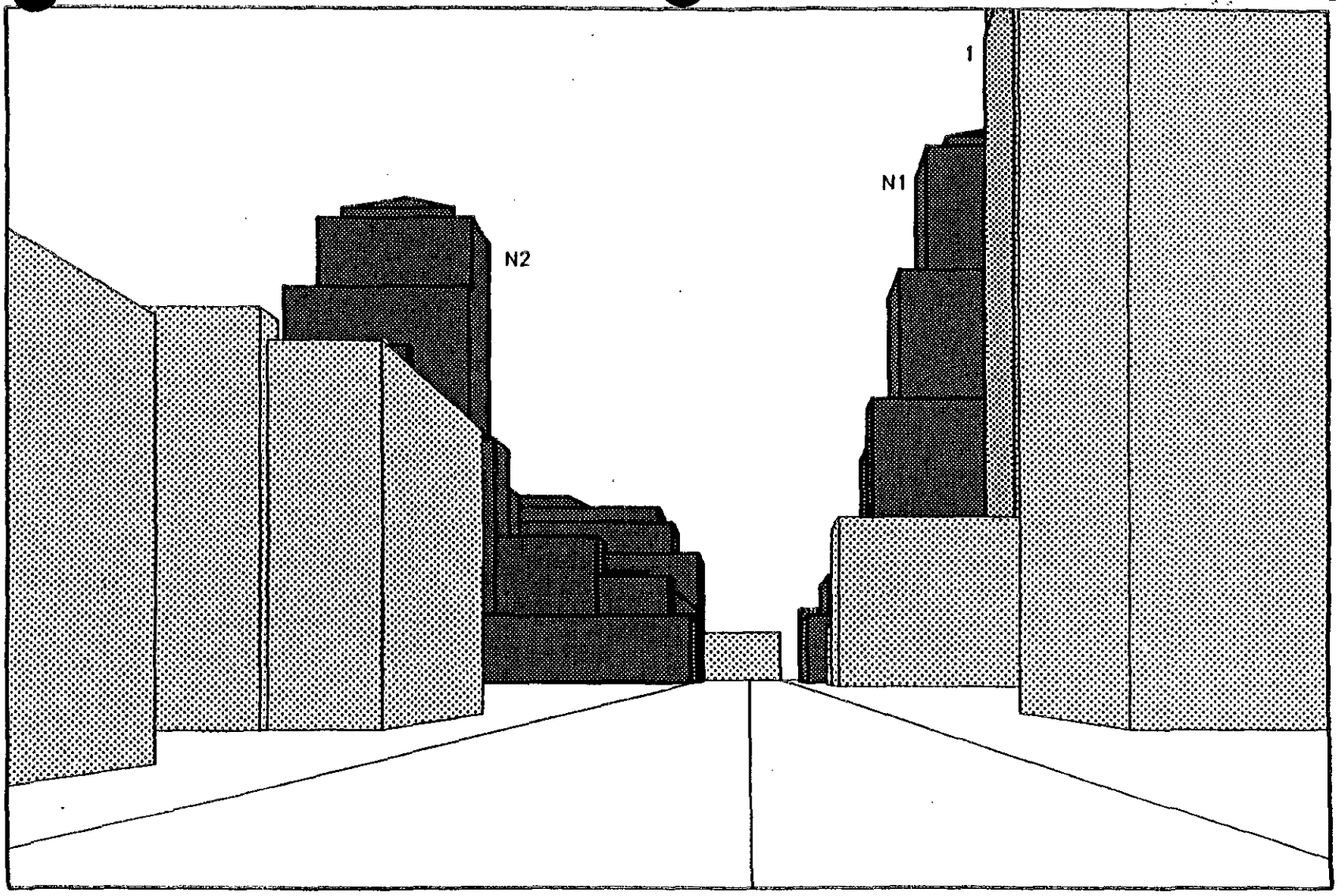


Street - End View from E Street at Union Street

Navy Broadway Complex Project

6640001 1/90

4-96



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

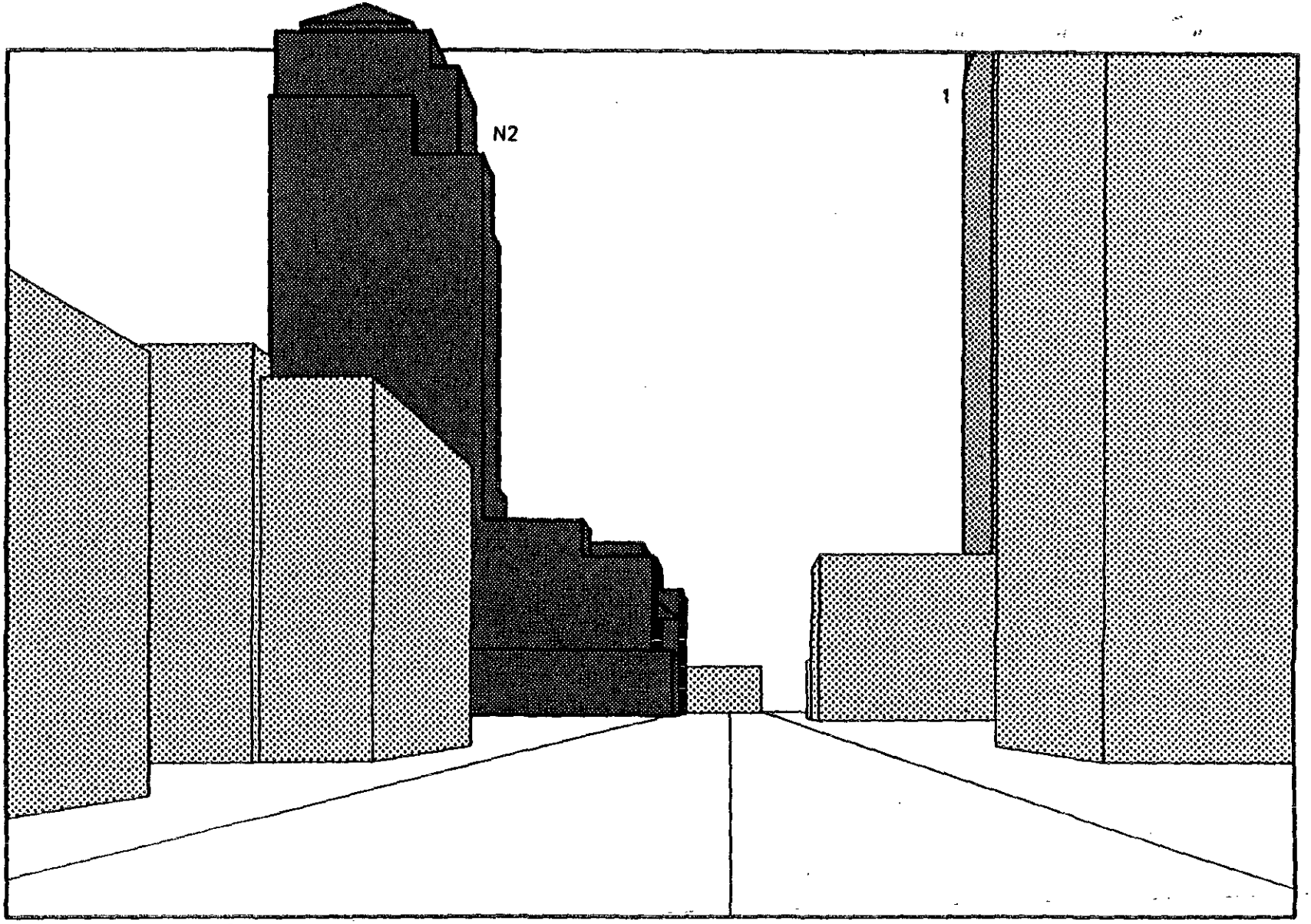
1. Santa Fe Development

Street - End View of Alternative A from E Street at Union Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-41



1. SANTA FE DEVELOPMENT

EXISTING

DOWNTOWN PROPOSED

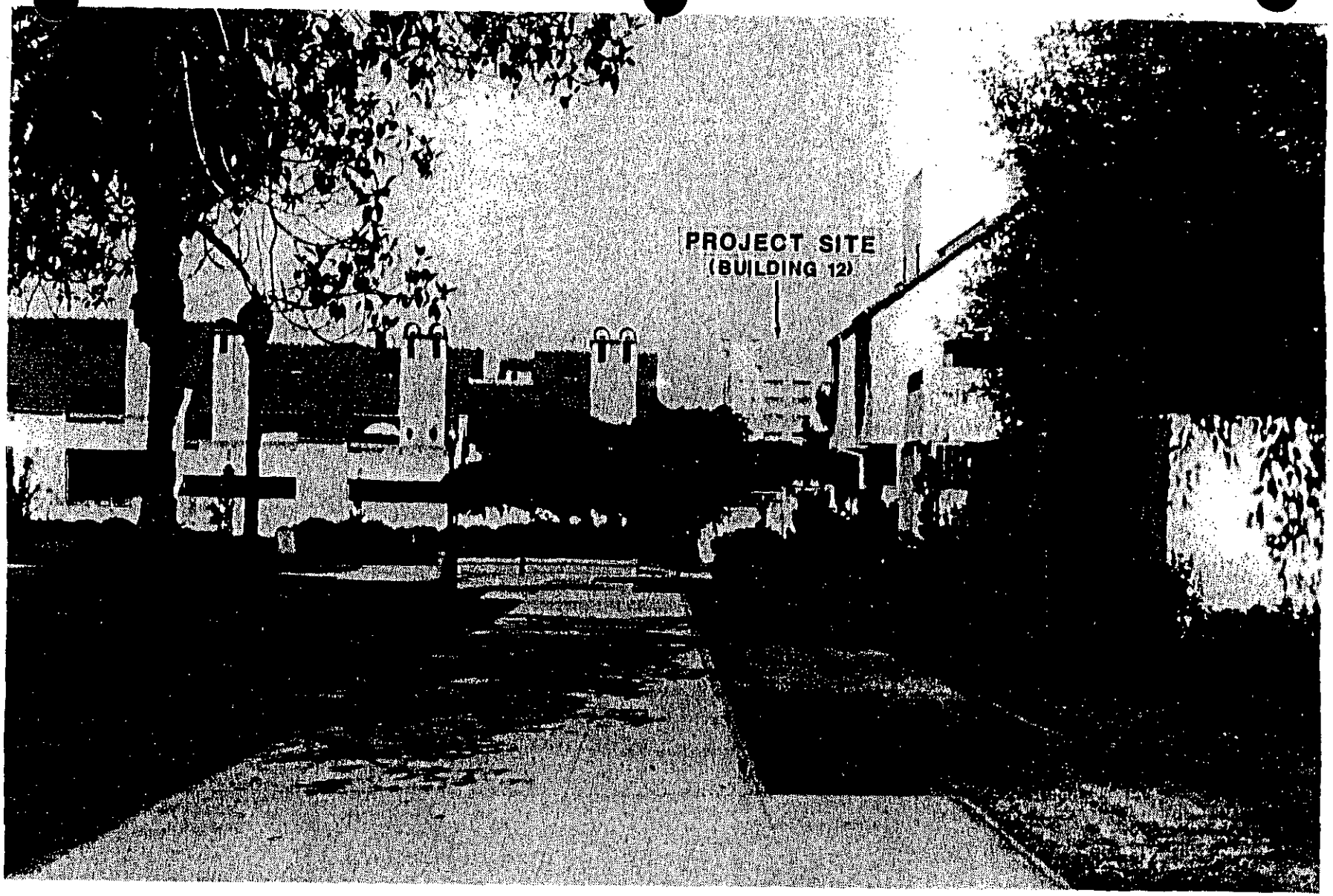
NAVY BROADWAY COMPLEX (BLOCK #)

6640001 1/90

Figure 4.42

Street-End View of Alternative F
from E Street at Union Street

Navy Broadway Complex Project

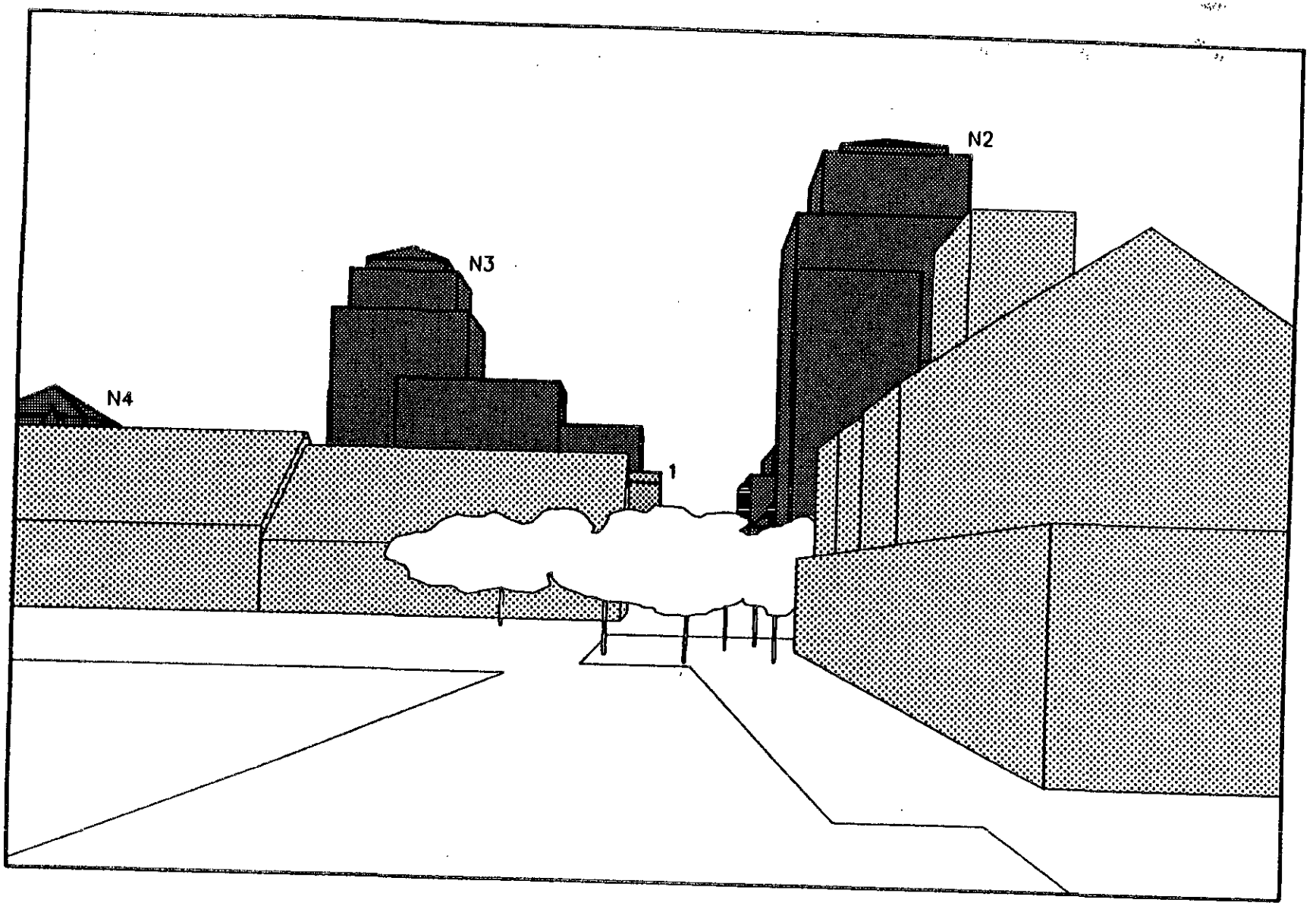


Street-End View from F Street at Pantoja Park

Navy Broadway Complex Project

6640001 1/90

Figure 4-43



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

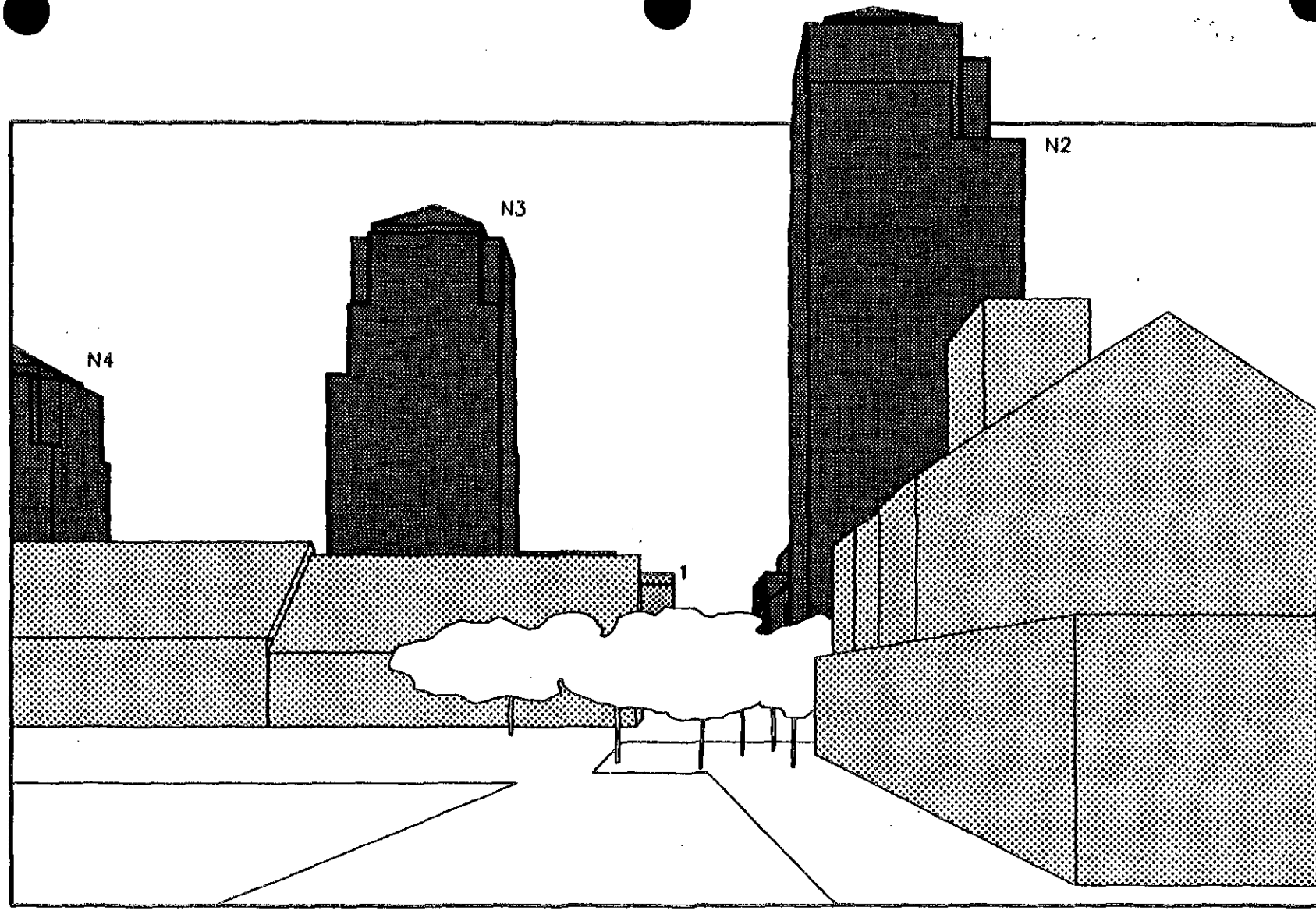
1. Santa Fe Condominiums

Street - End View of Alternative A
from F Street at Pantoja Park

Navy Broadway Complex Project

6640001 1/90

Figure 4-44



Street-End View of Alternative F
from F Street at Pantoja Park

Navy Broadway Complex Project

Existing

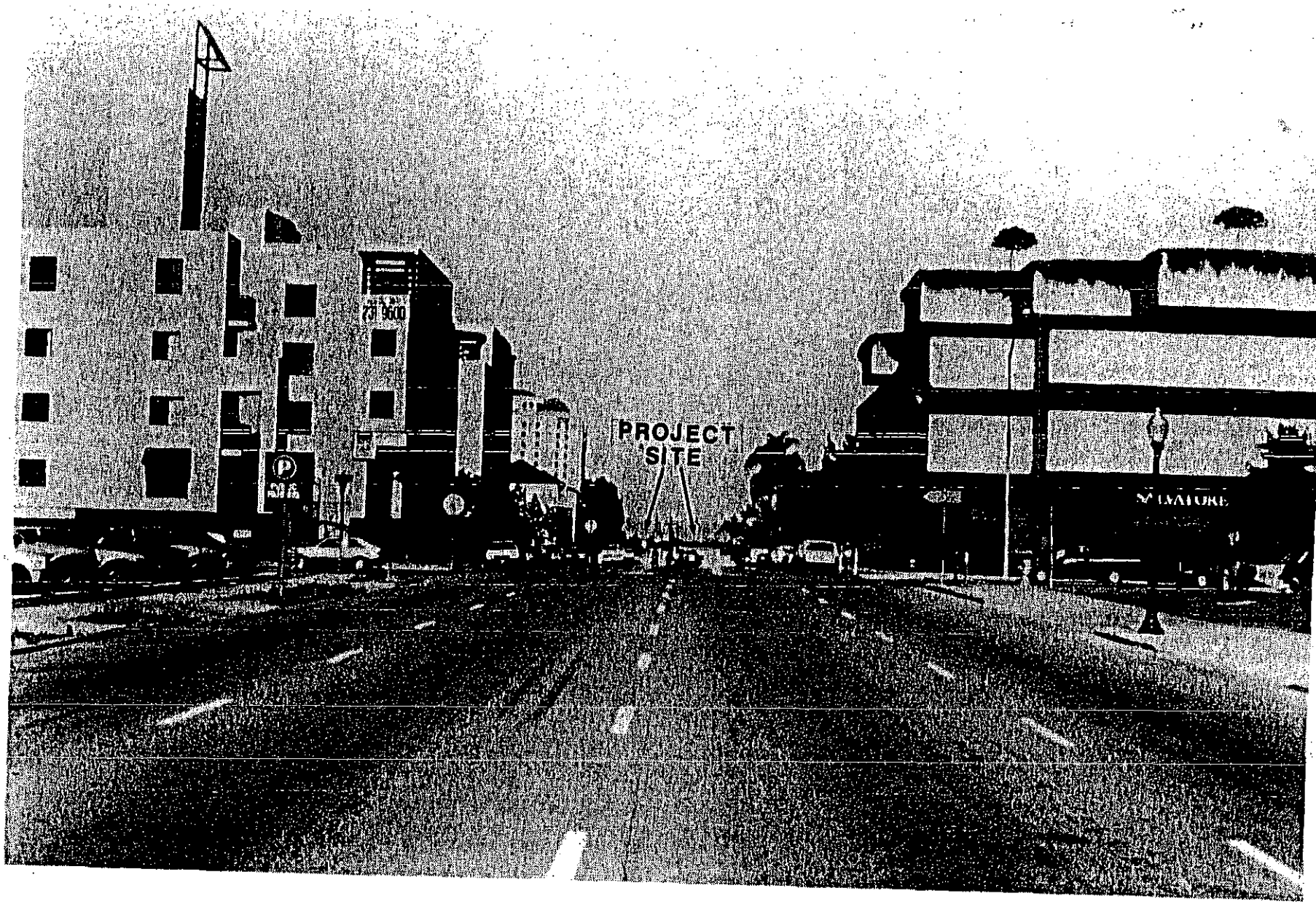
Downtown Proposed

Navy Broadway Complex (Block #)

1. Santa Fe Condominiums

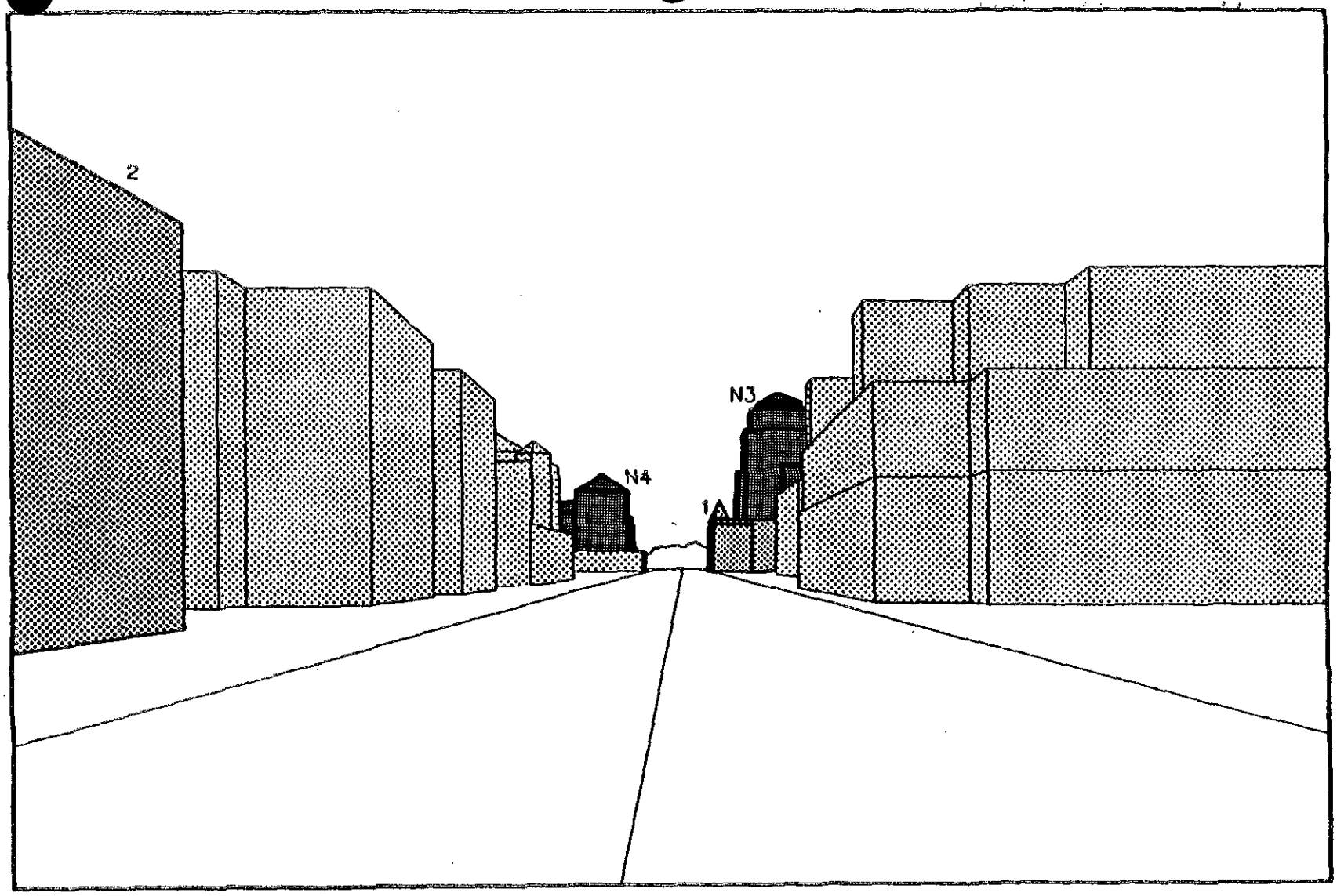
6640001 1/90

Figure 4-



Street - End View from G Street at Front Street

Navy Broadway Complex Project



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

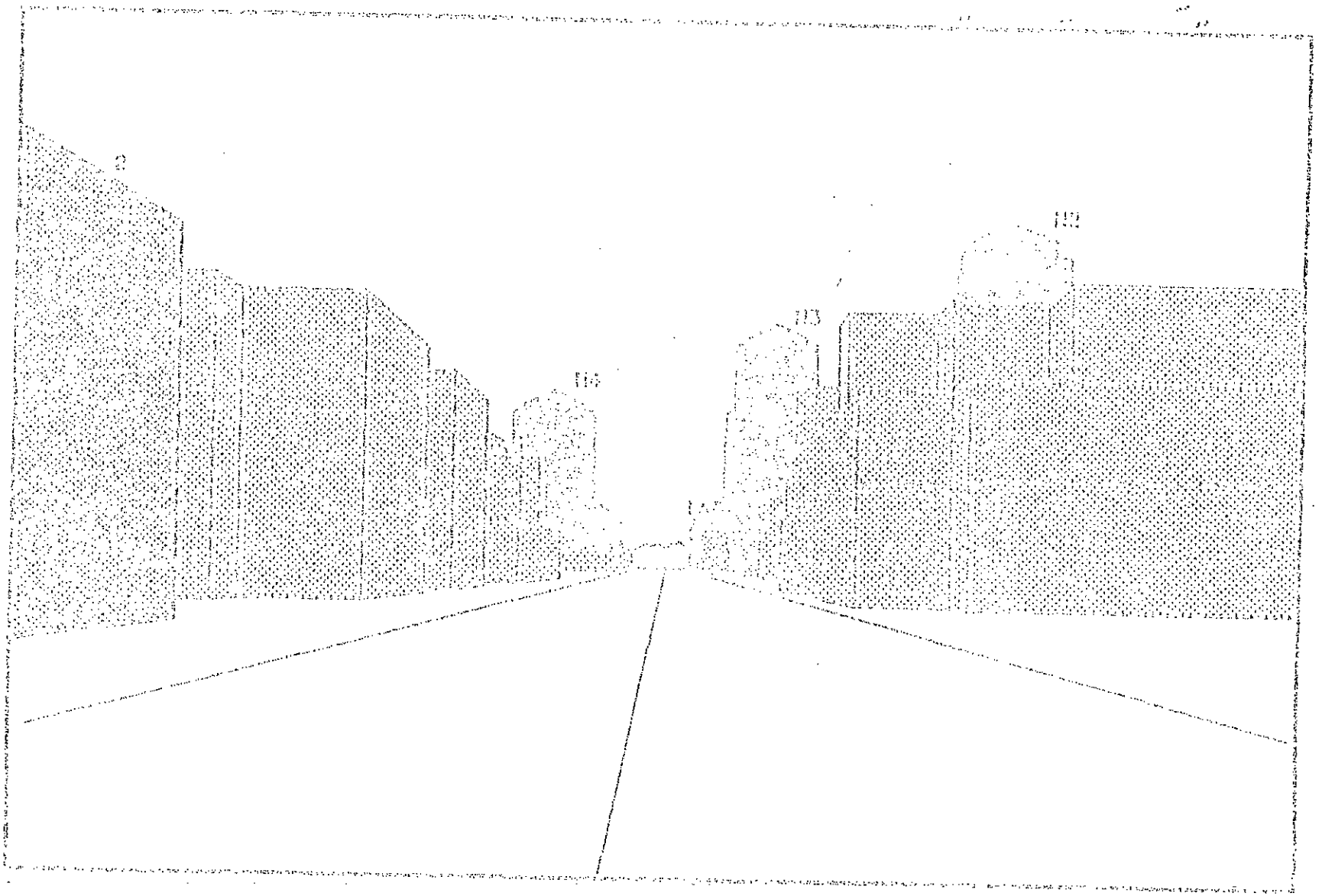
1. Santa Fe Condominiums
2. Courtyard

6640001 1/90

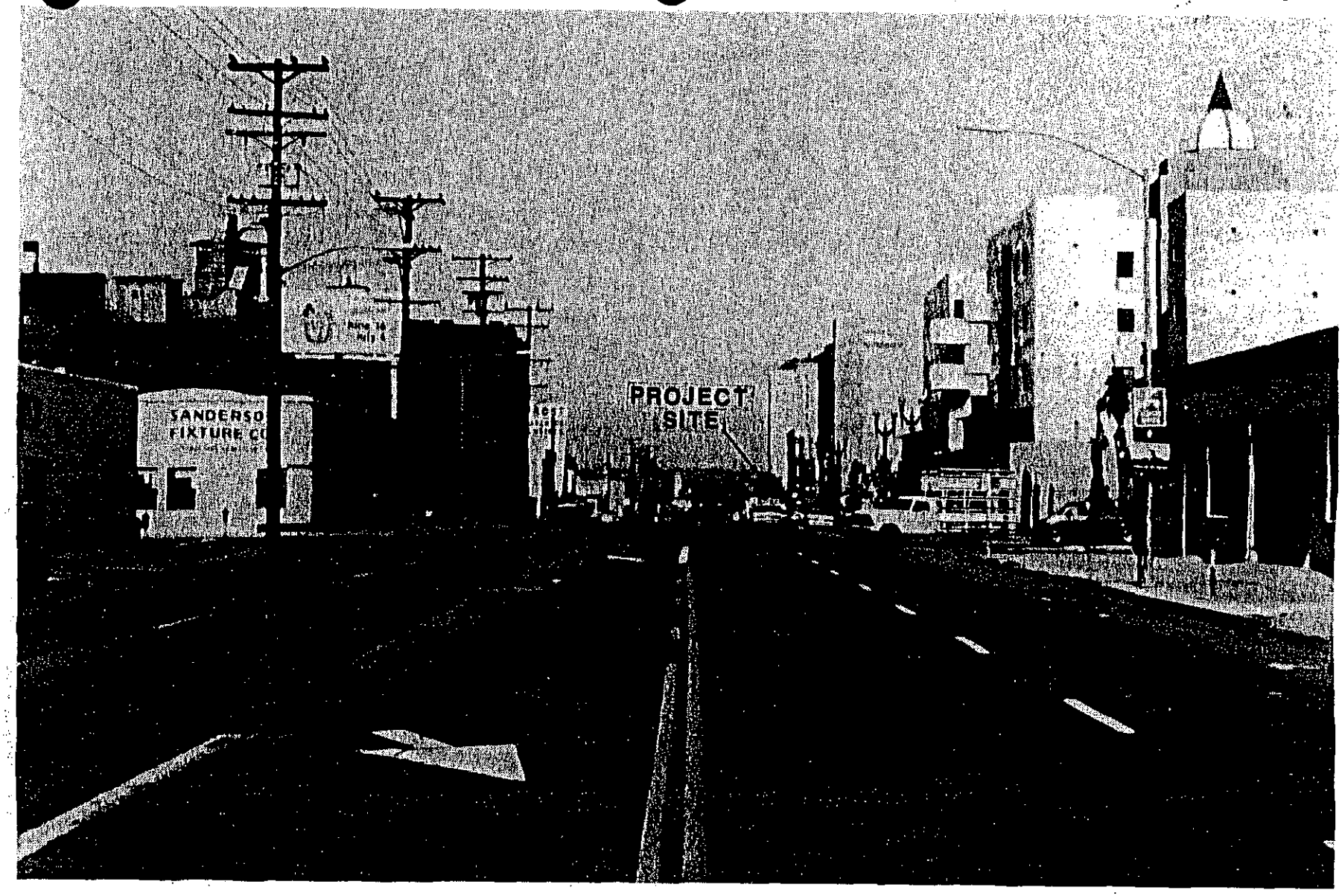
Figure 4-47

Street - End View of Alternative A from G Street at Front Street

Navy Broadway Complex Project



Street End View of Alternative F
from G Street at Front Street
Navy Broadway Complex Project

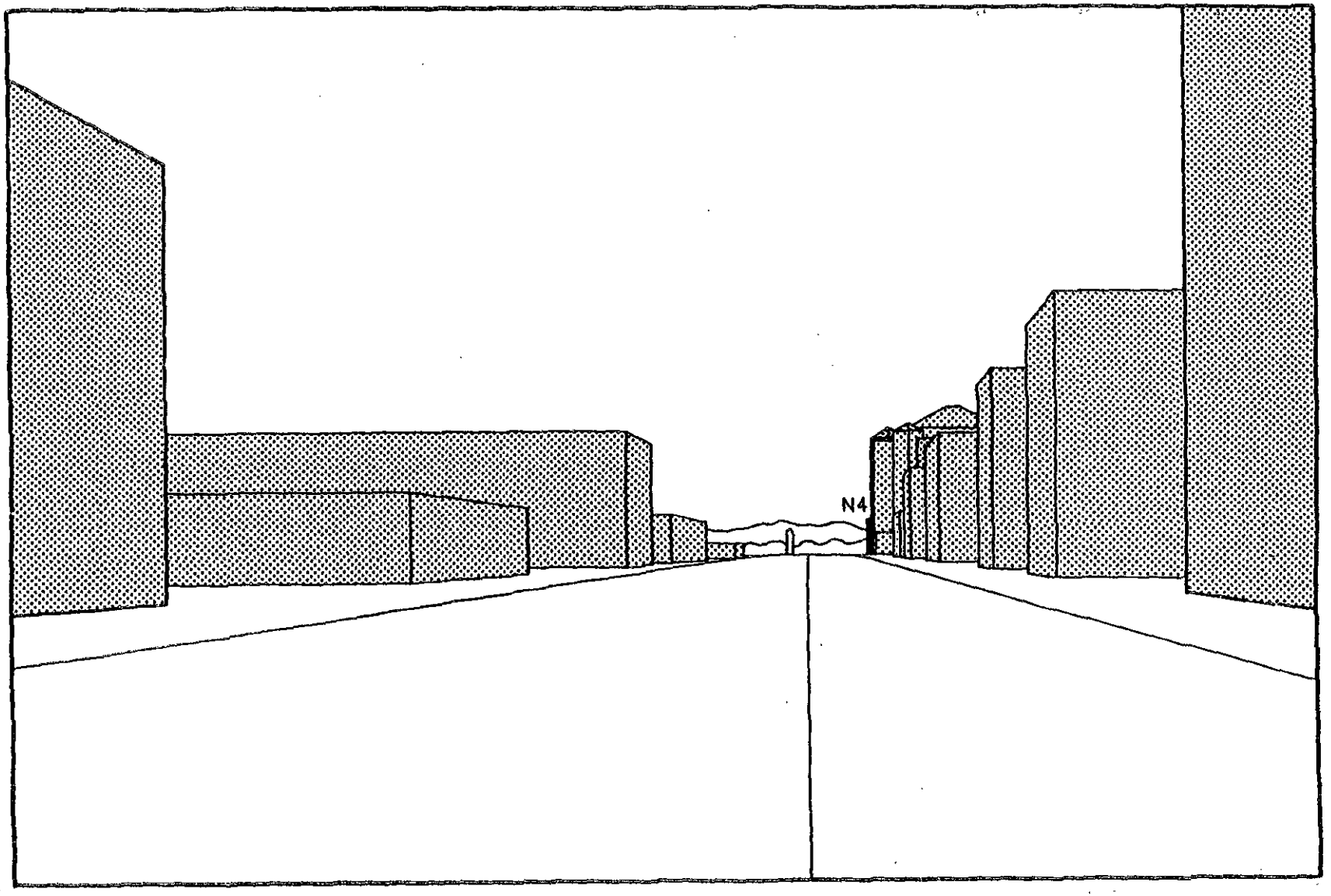


Street - End View from Market Street at Front Street

Navy Broadway Complex Project

6640001 1/90

Fi 4-49



Existing

Downtown Proposed

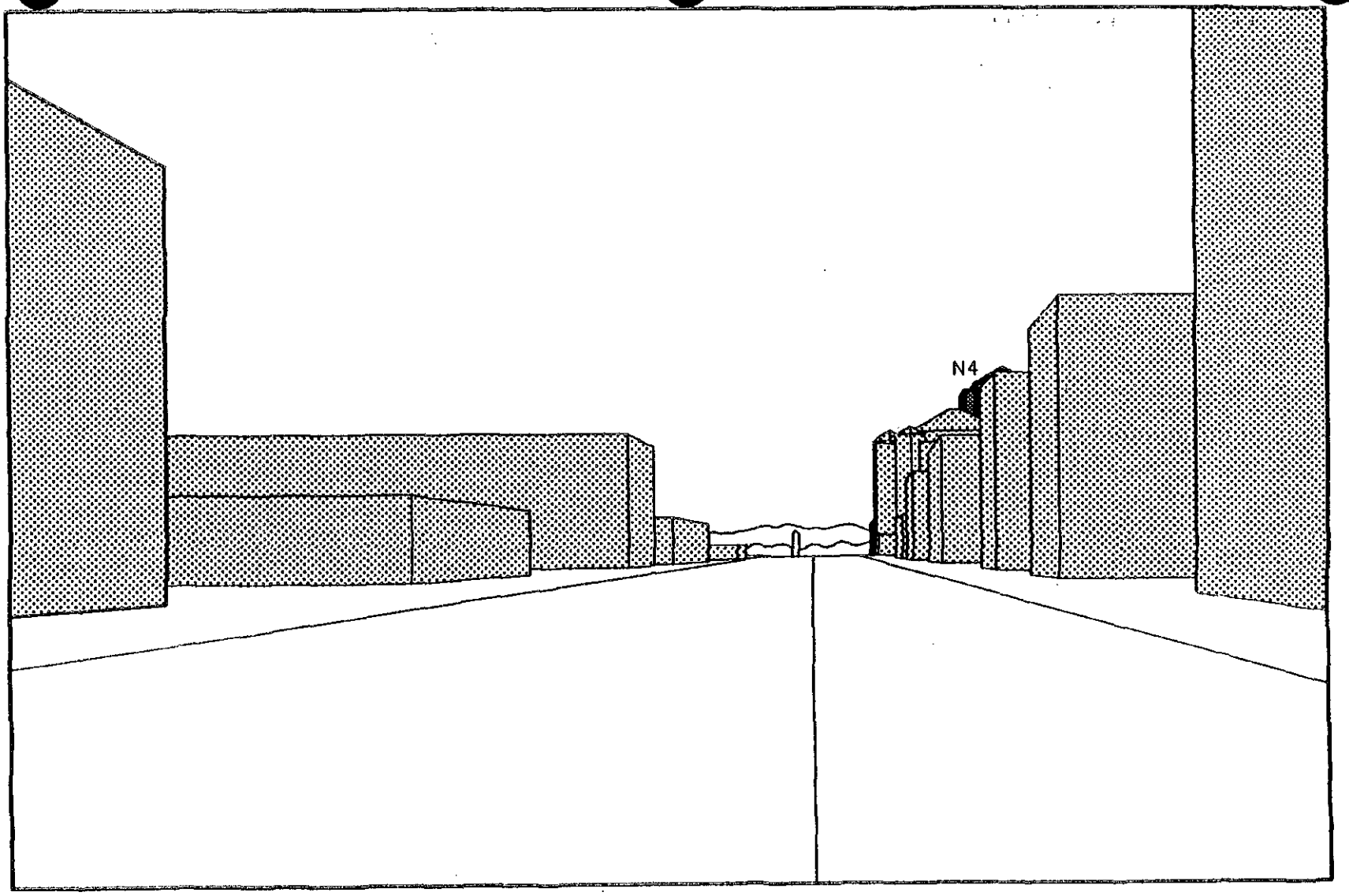
Navy Broadway Complex (Block #)

Street - End View of Alternative A
from Market Street at Front Street

Navy Broadway Complex Project

8640001 1/90

Figure 4-50



Existing

Downtown Proposed

Navy Broadway Complex (Block #)

Street-End View of Alternative F
from Market Street at Front Street

Navy Broadway Complex Project

6640001 1/90

Figure 4-5*

- Market Street--Project site buildings are not visible in the view along Market Street, as depicted in Figure 4-49, page 4-36. Buildings on the project site near Market Street are one to two floors high and are obstructed by intervening buildings located along Market.

Planned View Corridors

As previously discussed in Section 4.1, page 4-30, Broadway, Pacific Highway, and Market Street are all identified as "Gateway Streets" in the Centre City Urban Design Program.[1] "Gateway Streets" link the most intensively developed areas of Centre City with the waterfront and are intended to be major visual corridors, with increased pedestrian use as redevelopment occurs. Private development along these corridors should, according to the program, be designed to enhance the visual quality of the corridor.[2]

Shade/Shadows

Climate in the City of San Diego Centre City is characterized as moderate year-round. The influence of shade from building is not as critical an issue as it is in areas with temperature extremes, where shade can moderate extremely high temperatures and reduce already cool or cold weather.

The primary area of shading from existing project structures is towards the north and northeast, where shadows are cast during the warmest part of the day on the winter solstice. The winter solstice is considered important because it is the day when shadows are at their longest, and it occurs during the cooler part of the year. Due to the current low height of project structures, with no building higher than 150 feet, no substantial shadows are created during the winter solstice.

4.3.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Development of any of the proposed alternatives, except the no-action alternative (Alternative G), would substantially alter the visual characteristics of the Navy Broadway Complex. Existing buildings would be replaced by new or rehabilitated structures. Several currently proposed buildings in the vicinity of the proposed project are anticipated to be completed by the time any of the proposed alternatives are built out (by around 2003), so this analysis assumes buildout of these buildings. Specifically, it is assumed that the Santa Fe Development, Emerald-Shapery Center, Great American Plaza, Koll Center, The Courtyard, One Harbor Drive, and the Hyatt Regency will have been completed, and they are depicted in visual simulations presented herein.

Draft urban design guidelines have been established so that the project will not only complement but also enhance the visual conditions of the project area and create a visually pleasing transition between the downtown core and the Bayfront to the west and south. The draft design guidelines are provided in Appendix D and are subject to minor refinement between the Navy and the City. Alternatives A, B, and the onsite component of Alternative D are all generally consistent with the draft guidelines. Alternatives C and F are partially consistent. Alternatives E and G are not consistent.

Effects on Public Views of the Site

Effects on Panoramic Views

Figure 4-23, page 4-78, depicts a simulated view of Alternative A, as seen from Harbor Island. For comparison, Figure 4-22, page 4-77, depicts the existing view. Figure 4-26, page 4-82, depicts the simulated view of Alternative A from Coronado, compared with the existing view in Figure 4-25, page 4-80. As shown in Figures 4-23, page 4-78, and 4-26, page 4-81, Alternative A provides a smooth visual transition between the downtown core and the waterfront, with buildings stepping down to the south. The Hyatt Regency will become a focal point of the skyline, with the buildings decreasing in height toward the site. Alternative A would not adversely affect the viewshed from this viewpoint; rather, it would complement the existing/planned viewshed and would "complete" the skyline between the downtown core and the proposed Hyatt Regency.

Alternative B and the onsite component of Alternative D would appear the same as Alternative A from this viewpoint, because the buildings would be nearly the same height.

Alternative C would not adversely affect the viewshed from this viewpoint, although it would not provide that same level of visual transition as Alternative A between the downtown core and the area to the south. Rather, this alternative would appear to step down from the downtown, rising as it approaches the southerly area of the site, then stepping down again to the south.

Alternatives E and G would appear visually similar to each other from these viewpoints, and would not substantially alter the viewshed (except that the surrounding skyline would be altered by planned development). Because neither of these alternatives would alter the viewsheds, they would have no adverse visual effect.

Figures 4-24, page 4-79, and 4-27, page 4-82, depict a simulation of Alternative F from Harbor Island and Coronado, respectively. This alternative would provide a contrast in the skyline, with a cluster of higher buildings on Blocks 2, 3, and 4. Both figures show that this alternative would create a second focal point in the viewshed. Compliance with the intent of the draft urban design guidelines for the project (Appendix D) would create a development visually compatible with the skyline.

Effects on Gateway Views

Figures 4-29 (page 4-85), 4-32 (page 4-88), and 4-35 (page 4-91), depict simulated views of Alternative A from Harbor Drive at Laurel Street, Interstate 5 at Olive Street, and Harbor Drive at 5th Avenue, respectively. Figures 4-28 (page 4-84), 4-31 (page 4-87), and 4-33 (page 4-89), depict the existing views. The views of Alternative A from these viewpoints show visual compatibility with the intensity and form of adjacent and surrounding land uses. The greatest visual contrast created is the view from Harbor Drive at 5th Avenue (see Figure 4-35, page 4-91), but smooth visual transition is provided between the existing Embassy Suites Hotel (adjacent to Block 3 in the figure) and the proposed alternative. Alternative A would remain visually subservient to the Hyatt Regency, One Harbor Drive, as well as several other existing and planned buildings that would also be in the viewshed. Thus, it would not adversely affect gateway views.

Alternative B and the onsite component of Alternative D would appear visually similar to Alternative A from these viewpoints, so would also not adversely affect the viewshed.

Alternatives C and E would be less visible than Alternative A. Thus, neither of these alternatives would adversely affect the viewshed.

Figures 4-30 (page 4-86), 4-33 (page 4-89), and 4-36 (page 4-92), depict visual simulations of Alternative F from the same viewpoints as shown in Figures 4-29 (page 4-85), 4-32 (page 4-88), and 4-35 (page 4-91). This alternative would be more visually prominent than either the existing condition or Alternative A. However, it would remain visually compatible with adjacent development, and, therefore, is not considered to have a significant adverse effect on gateway viewsheds.

Effects on Street-End Views

Figures 4-38 (page 4-94), 4-41 (page 4-97), 4-44 (page 4-100), 4-47 (page 4-103), and 4-49 (page 4-105), depict simulated views of Alternative A from Broadway at Front Street, E Street at Union Street, F Street at Pantoja Park, G Street at Front Street, and Market Street at Front Street, respectively. The view along Broadway (Figure 4-38, page 4-94) shows a progression of buildings stepping down to the waterfront, with development on Block 1 of the Navy Broadway Complex providing a smooth transition. The view from E Street (Figure 4-41, page 4-97) shows a corridor framed by the Santa Fe development and buildings on Block 2 of the Navy Broadway Complex. The buildings step down toward the street. Block 1 buildings, which are less visible from this viewpoint, nevertheless step down from the Santa Fe development. The existing Navy Pier would continue to delineate the extension of E Street at the waterfront.

The view from Pantoja Park at F Street (see Figure 4-44, page 4-100) would be of a more intensive development than seen today, with the view of Building 12 blocked by a substantially taller building on Block 2. However, the project would be visually compatible with other buildings in the viewshed. The view along F Street, when closer to the Navy Broadway Complex, would be opened up to provide views of the waterfront, where such views are currently occluded by existing onsite development. This would be a benefit of Alternative A. The view from G Street (Figure 4-47, page 4-103) would also be opened up to the waterfront, another visual benefit of this alternative. Building heights would provide a smooth visual transition from other buildings on the street to the waterfront. Buildings on Alternative A would not be substantially visible from Market Street (see Figure 4-50, page 4-106).

In summary, Alternative A would be generally more visible from street-end views than the existing onsite development. Development would be designed to be visually compatible with surrounding development, and would open up view corridors to the waterfront, from F Street and G Street, where views are currently obstructed by existing Navy Broadway Complex development. Alternative A would not adversely, but would beneficially, affect street-end views.

Alternative B and the onsite component of Alternative D would provide the same level of visual compatibility as Alternative A from these view points, due to the similarity in scale and layout of these alternatives, so they also beneficially affect the street-end views.

Alternative C, with its lower buildings on Blocks 1 and 2, would be less visible than Alternative A, so would also not adversely affect the subject viewsheds. Alternative C would instead appear similar to the existing condition. Alternative E would also have lower buildings than Alternative A, and would have a similar appearance from the subject viewsheds as it currently appears. Thus, it would not adversely alter the current views of the site.

Figures 4-39 (page 4-95), 4-42 (page 4-98), 4-45 (page 4-101), 4-48 (page 4-104), and 4-51 (page 4-107) provide visual simulations of Alternative F from the same viewpoints as depicted with Alternative A. Unlike Alternative A, no development of the Navy Broadway Complex would be seen from Broadway at Front Street (Figure 4-39, page 4-95) because a park would be developed on Block 1, the only block visible from this viewpoint. The view from E Street at Union Street shows a tall building on Block 2 rising well above intervening buildings (see Figure 4-42, page 4-98). This view shows a substantial contrast between the Navy Broadway Complex and other area development. The view from Pantoja Park down F Street would be of intensive development (see Figure 4-45, page 4-101), with no intervening buildings of similar scale. From G Street at Front Street, Alternative F would be larger than the scale of other area development, but the contrast would be less than the view from E Street and from Pantoja Park (Figure 4-48, page 4-104). As with Alternative A, the views of the waterfront down G Street would be opened up with this alternative. The view down Market Street (Figure 4-51, page 4-107) would be similar between this alternative and Alternative A, with existing development dominating the viewshed.

The changes to the views from E Street and Pantoja Park caused by Alternative F would be considered significant aesthetic impacts. This alternative contrasts substantially with surrounding structures seen from these view points. Nonetheless, aesthetic considerations are highly subjective, and this alternative would be required to comply with draft design guidelines that would be adopted by the City and the Navy. Moreover, the view corridors to the bay down F Street and G Street, which are currently blocked by existing Navy Broadway Complex development, would be opened, thereby providing a benefit.

The viewshed of the Alternative G would remain unchanged from current conditions. Although no adverse changes in the viewshed would occur with this alternative, the opportunity to upgrade the appearance of the Navy Broadway Complex and open view corridors through the site would not be created.

Effects on Centre City East Views

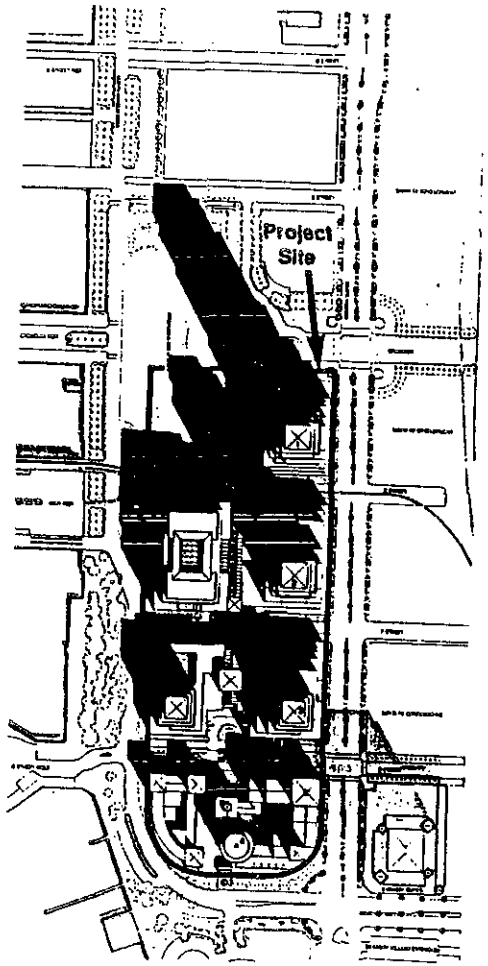
The offsite Navy development associated with Alternative D would be in character with the visual resources in the Centre City East area, in the context of the proposed City Hall and the general intensification of land uses planned for this area. However, because a specific location for this alternative has not been established, the effect of this alternative on its surrounding viewshed has not been determined.

Effects on Planned View Corridors

Please refer to Section 4.1.2 (page 4-33) for a discussion of the consistency of each of the alternatives with the Centre City Urban Design Program.

Effects From Shadows

Figures 4-52 and 4-53 depict the shadows that would be cast at the winter solstice for Alternatives A and F, respectively. These alternatives cast the longest shadows of any alternatives. These shadows are indicative of the largest shadowing between the noon and 2 p.m. that would result from any of the alternatives. The mid-morning shadow (at 10 a.m.) is also shown. As



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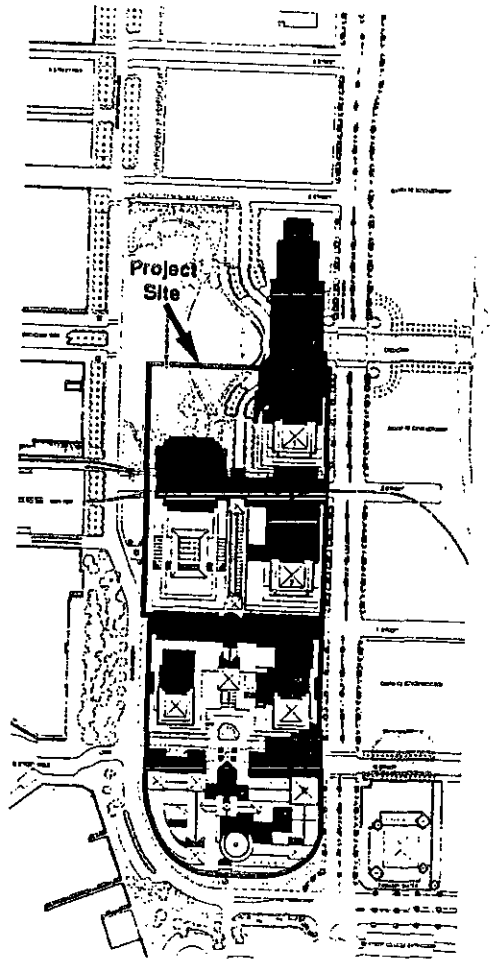

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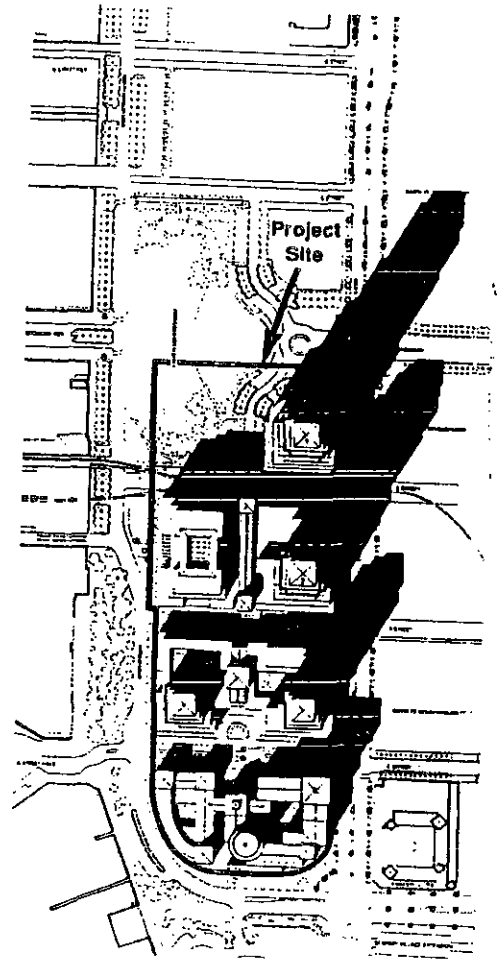
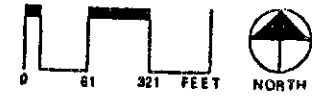


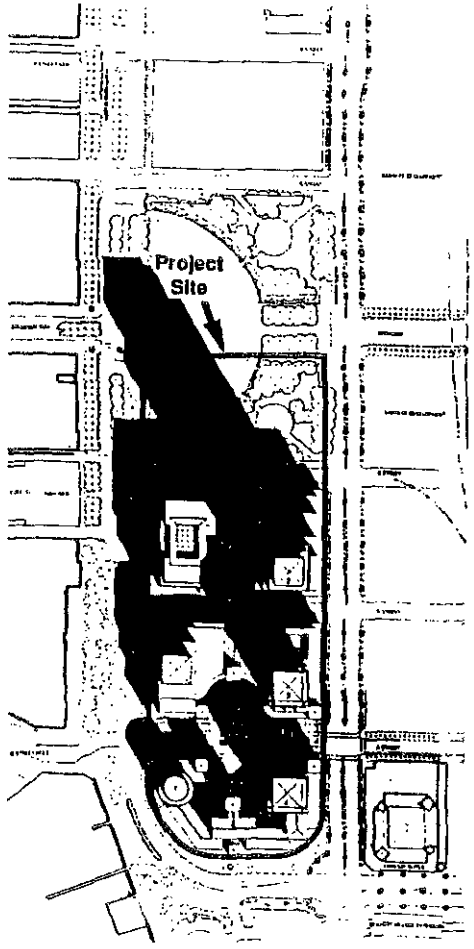
2:00 P.M.

Navy Broadway Complex Project



Solar Access (Dec.22) for Alternative A

Figure 4-52



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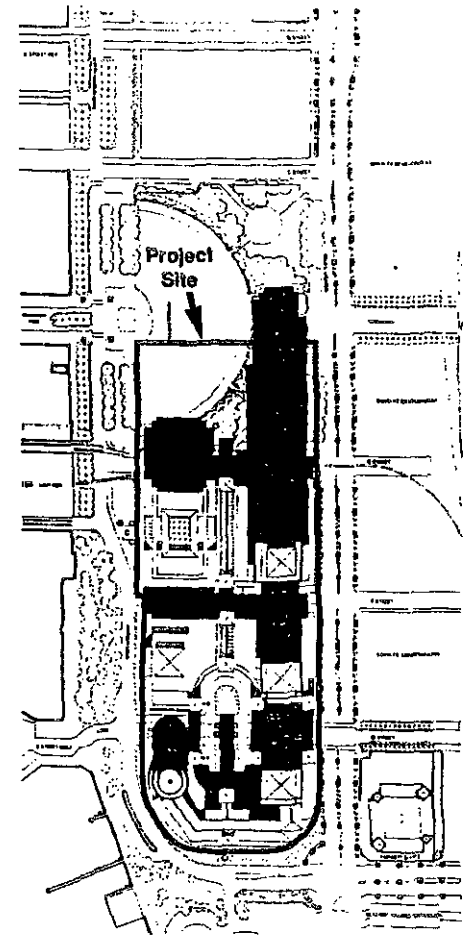
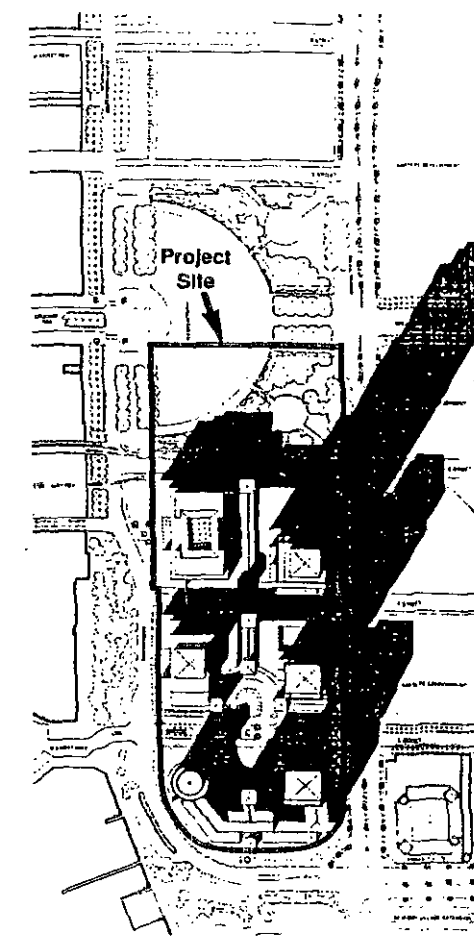


12:00 P.M.



2:00 P.M.

Navy Broadway Complex Project

0 81 321 FEET NORTH

Solar Access (Dec.22) for Alternative F

Figure 4-53

shown, the shadows would extend north to cover a portion of the Block 1 proposed open space areas at noon for each of these alternatives, moving northeast in the afternoon to cast on primarily office development proposed across Pacific Highway. Shadows would only touch, but would not substantially cover the Santa Fe Condominiums proposed east of Block 3. This is the only residential use that would be affected by shadows from Navy Broadway Complex development, and with the longest possible shadows (Alternative F) would not be substantially covered.

The casting of shadows in moderate climate areas such as in the project area is not necessarily adverse. In fact, shading can provide a moderating effect on hotter summer temperatures, so would be considered beneficial to public uses in the warmer times of the year. During the cooler times, temperatures are moderate enough that shading would not be considered substantially adverse. Therefore, no significant adverse effects from shading would result from any of the alternatives.

4.3.3 MITIGATION MEASURES

Compliance with the draft urban design guidelines (Appendix D) would mitigate aesthetic impacts associated with development of Alternative A, Alternative B, Alternative C, the onsite component of Alternative D, and from most viewpoints, Alternative F.

A significant unavoidable adverse change in the visual environment would occur with respect to views of Alternative F, as seen from E Street and Pantoja Park.

No significant adverse visual changes would result from either Alternative E or Alternative G, so no mitigation is necessary for either of these alternatives.

ENDNOTES:

1. Centre City Development Corporation, 1983.
2. Ibid.

4.4 PUBLIC SERVICES AND UTILITIES

The following analysis is based on consultation with purveyors of public services and utilities that may be affected by the proposed alternatives. A major component of the project involves relocation of personnel from one area of San Diego to the project area.

4.4.1 POLICE PROTECTION

AFFECTED ENVIRONMENT

The City of San Diego Police Department provides police protection to the project area. The department's main station is at Broadway and Fourteenth Street. The response distance to the project site is approximately 1 mile. The project area is located within the Central Division Command, which is one of seven area commands. The Central Division staff currently includes a captain, four patrol lieutenants, 16 sergeants, 140 officers, and 15 detectives. There are 59 patrol vehicles assigned to the Central Division. The Central Division services a population of over 67,000 residents and is responsible for 11.3 miles (3 percent) of the City's 330.7-square-mile jurisdiction.[1] The City of San Diego Police Department is adequately staffed to provide police protection to the project region and vicinity.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Police Department has expressed that any of the alternatives that increase vehicular traffic on surrounding streets and arterials may increase the risk of traffic accidents. Only Alternative G would not generate this effect. Circulation system improvements proposed to mitigate impacts from this and other area development, as discussed in Section 4.2.3, page 4-65, would reduce this potential adverse effect to a level that is less than significant.

In addition, the Police Department has identified car prowls on parked vehicles as another potential adverse effect of the higher density uses proposed by all the alternatives except Alternative G. The existing police facilities, manpower, and available equipment are adequate to provide the project site and surrounding area with a sufficient level of police protection in cases of emergency. No significant adverse effects on the ability to provide police protection or public safety are anticipated from development of any of the alternatives.

MITIGATION MEASURES

Because no significant adverse effects are expected from any of the alternatives, no mitigation measures are necessary.

4.4.2 FIRE PROTECTION

AFFECTED ENVIRONMENT

Fire protection services for the project area are provided by the City of San Diego Fire Department. A Federal fire station, located at the 32nd Street Naval Station, has a mutual aid agreement to assist the City at the site, at the City's request.[3,4] The fire stations that serve the project area are listed in Table 4.4-1 along with the equipment located at each station.

TABLE 4.4-1

FIRE STATIONS IN THE
VICINITY OF THE BROADWAY COMPLEX

Station	Location	Equipment
1	1222 1st Street	Two engine companies, chemical fire-fighting rig, light air rig, truck company, and paramedic
3	725 W. Kalamia	Engine company
4	404 8th Avenue	Engine company and rescue unit
11	945 25th Street	Engine company and truck company
Naval Station San Diego	32nd Street	Three engine companies

Source: Sumler, City of San Diego Fire Department, personal communication, 1988.

Station 1 is within 0.5 mile of the project site and is the nearest City fire station. The average response time to the project area from City stations is approximately 4 to 6 minutes. The City stations that serve the project area are currently adequately staffed.[5] The Federal fire station at the 32nd Street Naval Station is 3.7 miles from the project site. It provides fire protection to both federal and nonfederal facilities, pursuant to the San Diego County Mutual Aid Plan. The Federal fire station at 32nd Street is adequately staffed to respond to emergencies in the project vicinity. The average response time to the project area is 6 minutes.

The project site is currently served with a fire flow of 2,500 gallons per minute (gpm).

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Redevelopment of the project site with Alternatives A, B, C, D, E, or F would result in construction of new buildings, and underground parking facilities (i.e., Alternatives A, B, C, D, and F) that would be susceptible to fire hazards. However, the project would include sprinklers and other fire safety measures that would avoid fire hazard impacts. Fire flow of 2,500 gpm would be required with a sprinkler fire system to adequately serve the site. The current flow of 2,500 gpm, therefore, would be sufficient to serve Alternatives A, B, C, D, E, and F.

Existing structures would be retained with Alternative G in their current condition. Many of the older buildings do not contain fire safety equipment such as roof sprinklers. These buildings are existing and would not introduce any new hazards to Navy personnel on the site.

According to fire department personnel, the existing facilities, manpower and equipment at the city and Federal fire departments are adequate to maintain a sufficient level of fire protection

service to the project site if any of the alternatives are developed. Therefore, no significant impacts to fire protection services are anticipated with implementation of any of the alternatives.

MITIGATION MEASURES

No impacts would result from development of the alternatives; therefore, no mitigation measures are necessary.

4.4.3 SCHOOLS

AFFECTED ENVIRONMENT

The project area is within the boundaries of the San Diego Unified School District (SDUSD). The SDUSD provides public school facilities for grades K through 12. As of October 1987, the SDUSD had 107 elementary schools (grades K-6), 8 middle schools (grades 6-8), 12 junior high schools (grades 7-9), and 15 high schools (grades 10-12).[6] A majority of SDUSD schools are currently operating near or over capacity.[7] The SDUSD is levying school impact fees for the long-range planning and construction of new facilities. The fees, authorized through California Government Code Section 53080, are $1.50 per square foot for newly constructed residential structures and $0.25 per square foot for newly constructed commercial structures.[8]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

None of the proposed alternatives would directly contribute students to the elementary and secondary schools within the San Diego Unified School District, since residential uses are not being proposed by any alternative. In general, Alternatives A, B, C, D, E, and F would result in the relocation and centralization of outlying Navy administrative personnel already located in the region, so would not result in the introduction of new Navy personnel to the area. However, indirect impacts could potentially occur from the in-migration of civilian personnel and their families as a result of private development associated with Alternatives A, B, C, D, and F.

The density of uses proposed by Alternative E would be similar to that which currently exists onsite, and would not create the need for additional military employment or civilian employment. This alternative would centralize existing military employees within the region. Thus, the amount of Navy personnel and family members within the region would not increase with Alternative E, and no indirect impacts to city schools are anticipated with this alternative.

With Alternative G (no action), all offsite administrative uses would remain in their existing locations throughout the county. There would be no increase in Navy personnel or influx of military families to the region. Therefore, impacts to schools within the district would not occur with implementation of Alternative G.

Since Alternatives A, B, C, D, and F propose an increase in land use density, and propose both military and private development, in-migration of non-military personnel and their families could occur with these five alternatives. The influx of civilian families with elementary school age children could potentially result in indirect adverse impacts to elementary schools, since the combined capacity of these schools (i.e., 63,990) has already been exceeded by over 2,300 students, as shown in Table 4.4-2. Alternatives A, B, C, D, and F could, therefore, contribute incrementally to a cumulatively significant impact. Secondary schools within the District are below their

combined maximum capacity (Table 4.4-2), and they could accommodate approximately 6,700 more secondary grade students.

TABLE 4.4-2

MAXIMUM CAPACITY AND CURRENT ENROLLMENT OF ELEMENTARY AND SECONDARY SCHOOLS WITHIN SAN DIEGO UNIFIED SCHOOL DISTRICT

Grade	Current Enrollment (October 1988)	Maximum Capacity	Capacity Remaining
Elementary	66,309	63,990	-2,319
Secondary	50,748	57,450	+6,702

Source: San Diego Unified School District, 1989.

MITIGATION MEASURES

The Navy office component of any of the alternatives would not result in increased Navy personnel in the region, so no mitigation measures for Navy offices are necessary. Private development has the potential to cause regional immigration, so the following mitigation measure is proposed for the private development component of Alternatives A, B, C, D, and F:

- As authorized by California Government Code Section 53080, the developer of private uses on the Navy Broadway Complex will be assessed a fee of $0.25 per square foot of private commercial and office uses, but excluding parking structures. The fee will be paid to the San Diego City School District.

4.4.4 RECREATIONAL FACILITIES

AFFECTED ENVIRONMENT

The City of San Diego has 13,776 acres of neighborhood, community, and regional parks. Ninety percent of the parkland within the City is concentrated in a few regional parks, such as Balboa Park, Mission Bay Park, Mission Trails Regional Park, and the La Jolla Underwater Park. The remaining 10 percent (1,272 acres) is located within numerous neighborhood and community parks.[9] The San Diego Unified Port District also provides park facilities, such as the Bayfront Promenade and the G Street Mole.

The City of San Diego Park and Recreation Department has established standards for neighborhood and community parks. Neighborhood parks vary in size from 5 to 10 acres and are intended to serve approximately 3,500 to 5,000 people. Community parks vary from 13 to 20 acres and serve approximately 18,000 to 25,000 residents. The City does not have a standard

for regional parks. The majority of the parkland in Balboa Park (including the San Diego Zoo) and the La Jolla Underwater Park are tourist-oriented and serve both residents and visitors.[10]

The Port District has established a boardwalk along the bay that connects a number of recreation-oriented uses in the project vicinity, such as the G Street Mole and the B Street and Broadway Piers. The boardwalk and associated facilities provide a high level of recreation amenity in the project vicinity.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego determines the amount of park land necessary for recreational activities by the number of people anticipated from proposed residential developments. None of the alternatives include residential uses, so there would be no new demands on park facilities. These facilities would, therefore, not be affected by project development.

Four of the seven alternatives are proposed to include significant active and/or passive recreation opportunities at the foot of Broadway. Most notably, the Navy is proposing to provide 1.9 acres of open space area at the foot of Broadway as part of Alternative A and 3.5 acres as part of Alternative F. This could be combined with adjacent property (not under the control of the Navy) to the north of the site to create even larger open space areas (see Figure 3-4, page 3-7).

Alternatives B and D would provide 0.5 acre of open space plazas at the foot of Broadway (see Figures 3-10 and 3-12, pages 3-16 and 3-21). In addition, Alternatives A, B, C, D, and F propose wide sidewalks along, and the opening up of, E, F, and G Streets through the site. Therefore, each of these alternatives would provide substantial recreational benefits.

Alternatives E and G would not provide any new recreational amenities on the Navy Broadway Complex. Therefore, no beneficial recreational effects would result from these alternatives.

MITIGATION MEASURES

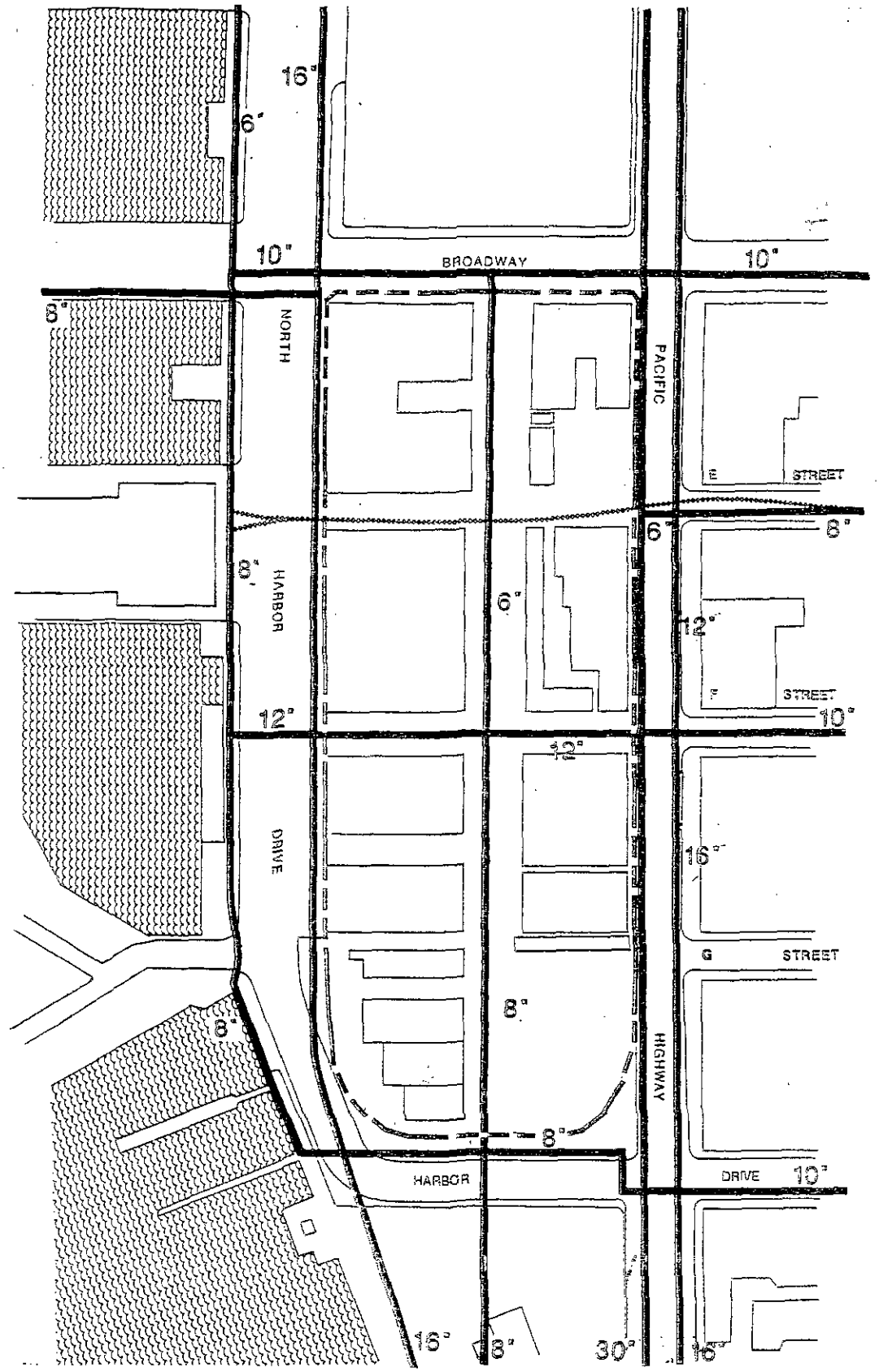
None of the alternatives would generate any significant adverse recreation impacts, so no mitigation measures are necessary.

4.4.5 WATER

AFFECTED ENVIRONMENT

Water for the project area is supplied by the City of San Diego under the administration of the Water Utilities Department. City water is supplied by the Colorado River and the California State Water Project, and is stored in numerous reservoirs. The University Heights Reservoir, located approximately 5 miles northeast of the project site, provides water to the Centre City and the Navy Broadway Complex. Water conveyed from this reservoir is controlled with pressure regulating valves. One of these valves is located at Pacific Highway and F Street adjacent to the project site. Water pressure in the project area is adequate to serve existing needs.[11]

The primary water facilities adjacent to the project site include 30-inch, 16-inch, and 12-inch mains in Pacific Highway; a 16-inch main in Harbor Drive; and a 10-inch main in Broadway (Figure 4-54). In addition, 6- and 8-inch mains bisect the site from Broadway to Market Street. The water facilities in the project area currently operate within their capacity.[12]



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WATER LINE DIAMETER

RAILROAD TRACKS

PROJECT SITE

3640001 1/90

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NORTH

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Water Utilities Department applies daily consumption rates for water usage by land use categories. Table 4.4-3 lists the consumption rates and the amount of water projected to be consumed by each alternative. Alternatives A, B, C, D, and F would consume greater quantities of water per day than the existing uses, Alternative G. Alternative E would consume less water than Alternative G.

The uses proposed for Alternative A, B, and F would consume similar amounts of water (309,171 gallons, 334,171 gallons, and 309,171 gallons of water per day, respectively). Alternative D would consume the largest amount of water (436,221 gallons per day), whereas Alternative E would consume approximately 51 percent less water than the existing uses (Alternative G), or 59,425 gallons per day.

Since the existing water facilities in the project vicinity are currently operating well within their service capacity, there would be no significant impacts to water service from the reduced density uses of Alternative E, or the continued onsite uses of Alternative G. These facilities also have sufficient capacity to serve the additional uses proposed by Alternatives A, B, C, D, and F without resulting in significant impacts to water service.

Although the proposed alternatives would not adversely affect existing water facilities, the City of San Diego Water Utilities Department has expressed the need for upgrading the existing cast iron mains near the project site. The Water Utilities Department has an ongoing capital improvement program to upgrade the cast iron water mains within the City, and recommends replacement of all such mains with new mains ranging from 12 to 16 inches. The City specifically recommends upgrading the mains in those portions of Broadway and F Street onsite, which are currently 10-inch and 12-inch mains, respectively, to 16-inch diameter mains. These would connect to existing 16-inch mains in Broadway, F Street, and Harbor Drive (Figure 4-54, page 4-120). The City plans to change the Harbor Drive main from a high pressure transmission main to a downtown pressure distribution main.

MITIGATION MEASURES

None of the alternatives would significantly affect the ability of the City to provide water service; therefore, no mitigation measures are necessary.

4.4.6 WASTEWATER

AFFECTED ENVIRONMENT

Sanitary sewer and wastewater treatment facilities that serve the project area are operated by the City of San Diego Water Utilities Department. The metropolitan sewage collection system consists of a network of collection sewers and interceptors that convey wastewater from the San Diego Metropolitan Sewer Service Area (and participating agencies) to the Point Loma Wastewater Treatment Plant (PLWTP).

TABLE 4.4-3

WATER CONSUMPTION RATES FOR THE PROPOSED LAND USES
(Net Increases)

Alternative	Proposed Uses	Water Consumption Rate Per Day	Anticipated Daily Water Requirements
A	1,244,247 SF office[a]	100 gal./1,000 SF	124,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**309,171 gallons**
B	1,494,247 SF office[a]	100 gal./1,000 SF	149,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**334,171 gallons**
C	594,247 SF office[a]	100 gal./1,000 SF	59,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**239,221 gallons**
D	1,044,247 SF office[a]	100 gal./1,000 SF	104,425 gallons
	1,800 hotel rooms	180 gal./room	324,000 gallons
	980,000 SF office (offsite)	100 gal./1,000 SF	98,000 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**436,221 gallons**
E	594,247 SF office[a]	100 gal./1,000 SF	59,425 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**(30,779) gallons**
F	1,244,247 SF office[a]	100 gal./1,000 SF	124,425 gallons
	1,500 hotel rooms	180 gal./room	270,000 gallons
	55,000 SF museum	90 gal./1,000 SF	4,950 gallons
	(601,360 SF industrial)	(150 gal./1,000 SF)	(90,204 gallons)[b]
		Total	**309,171 gallons**
G	No New Uses	NA	0 gallons
		Total	**0 gallons**

a Reflects proposed uses in excess of the existing 405,753 square feet of office space onsite. Existing square footage has been subtracted from proposed uses to reflect the potential net increase in water consumption.

b Reflects the reduction in water consumption associated with removal of existing industrial uses.

Source: Jim Wageman, City of San Diego Water Utilities Department, 1989, and Michael Brandman Associates, 1989.

Numerous sewer facilities serve the project site (Figure 4-55). Wastewater from the site is conveyed south to Market Street via a 15-inch sewer main in Pacific Highway. Another 15-inch sewer line in Market Street conveys wastewater to a 36-inch regional trunk sewer in Kettner Boulevard, which then transports wastewater north to the Point Loma Treatment Plant. An abandoned 24-inch line crosses the southwesterly area of the site; there are no current plans to remove this line. Wastewater flows in the project area are currently within the capacity of existing lines; however, approved development in the project area would require upgrading of the 15-inch sewer lines in Pacific Highway and Market Street to Kettner Boulevard.[13]

According to the City of San Diego, Point Loma Plant has capacity to treat 223 million gallons per day (mgd) and has a flow rate of 190 mgd, indicating sufficient capacity[a]. It provides advanced primary treatment, then discharges treated wastewater to the ocean through an outfall. However, the Federal Clean Water Act of 1975 and the National Pollution Discharge Elimination System (NPDES) permit for the PLWTP require that wastewater receive secondary treatment. Therefore, the City does not comply with the Clean Water Act and with the NPDES permit for this plant.[14]

The United States Environmental Protection Agency (EPA) and the Regional Water Quality Control Board (RWQCB) are joint plaintiffs suing the City of San Diego for noncompliance with the Clean Water Act and the NPDES permit, and has issued to the City a cease and desist order requiring compliance by 1996. The City has indicated it may not be able to meet this date and is negotiating an agreement with EPA and RWQCB.[15,16]

Nevertheless, the City has committed to providing secondary treatment at the Point Loma Wastewater Treatment Plant, although the timeline has not been finalized. The City is planning to expand capacity at the plant to 240 mgd by 1992 and to 340 mgd by 2050. Secondary treatment of all this wastewater would be provided.[17] Wastewater flow projections through 2010 are 207 mgd, so adequate plant capacity is projected at least through 2010.[18]

The Point Loma Plant is also subjected to the California State Ocean Plan, which provides water quality standards for wastewater outfalls for the purpose of maintaining beneficial uses of the ocean. Compliance with the plan is monitored by the California Department of Health Services (DHS). DHS has indicated that there are no toxicity problems at the plant's outfall, but that there are periodic coliform problems at the outer edges of some kelp beds. The City of San Diego is considering an outfall extension or a chlorination/dechlorination/discharge program to resolve this problem.[19]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The City of San Diego Water Utilities Department has established daily generation rates for wastewater typically produced by the various land uses. Table 4.4-4 lists the generation rates and the amount of wastewater anticipated from the proposed alternatives. At even the highest rate

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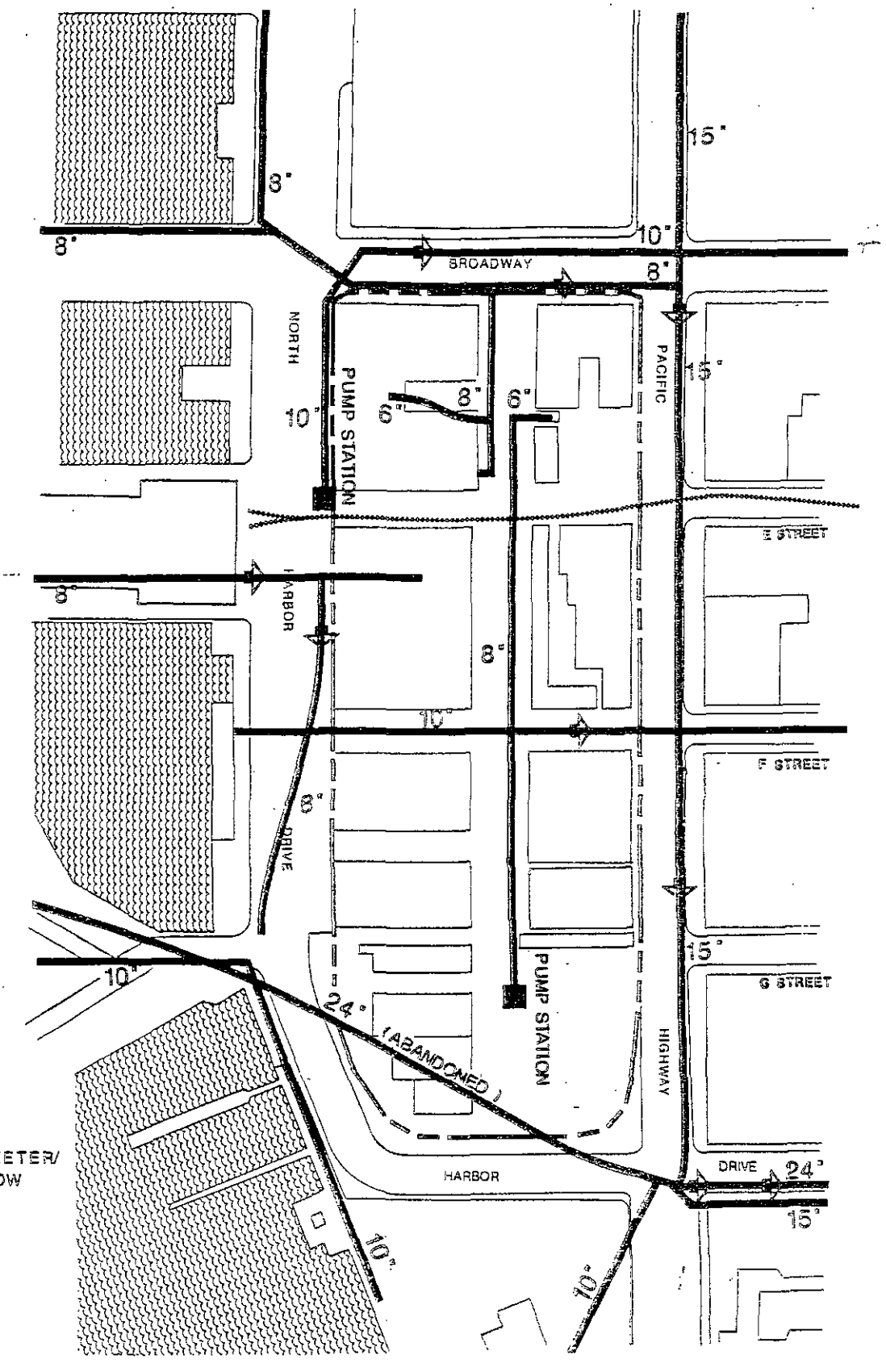
[a] The Regional Water Quality Control Board (RWQCB) has indicated there is some question concerning plant capacity, and is requesting additional information from the city. Nevertheless, RWQCB has also indicated that the system is not capacity constrained.



Legend

- SEWER LINE DIAMETER/ DIRECTION OF FLOW
- RAILROAD TRACK
- PROJECT SITE

5640001 1/90

0 137 275 FEET

NORTH

ewer Facilities

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TABLE 4.4-4

WASTEWATER GENERATION RATES FOR THE PROPOSED LAND USES
(Net Increases)

Alternative	Proposed Uses	Wastewater Generation Rate Per Day	Anticipated Wastewater Generation
A	1,244,247 SF office[a]	85 gal./1,000 SF	105,760 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**250,495 gallons**
B	1,494,247 SF office[a]	85 gal./1,000 SF	127,011 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**271,746 gallons**
C	594,247 SF office[a]	85 gal./1,000 SF	50,510 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**191,395 gallons**
D	1,044,247 SF office[a]	85 gal./1,000 SF	88,760 gallons
	1,800 hotel rooms	140 gal./room	252,000 gallons
	980,000 SF office (offsite)	85 gal./1,000 SF	83,300 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**354,945 gallons**
E	594,247 SF office[a]	100 gal./1,000 SF	50,510 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**(18,605) gallons**
F	1,244,247 SF office[a]	85 gal./1,000 SF	105,760 gallons
	1,500 hotel rooms	140 gal./room	210,000 gallons
	55,000 SF museum	70 gal./1,000 SF	3,850 gallons
	(601,360 SF industrial)	(115 gal./1,000 SF)	(69,115 gallons)[b]
		Total	**250,495 gallons**
G	No New Uses	NA	0 gallons
		Total	**0 gallons**

a Reflects proposed uses in excess of the existing 405,753 square feet of office space onsite. Existing square footage has been subtracted to identify the net increase or decrease in wastewater generation.

b Reflects the reduction in wastewater generation associated with the removal of existing industrial uses.

Source: Jim Wageman, City of San Diego Water Utilities Department, 1989 and Michael Brandman Associates, 1989.

of wastewater generation (354,945 gallons/day, Alternative D), the project would increase flows at the Point Loma Plant by less than 0.2 percent. Both the City of San Diego and the RWQCB have expressed that this additional wastewater would not significantly affect the quality of water discharged from the outfall, nor would it affect the ability of the City to provide secondary treatment of wastewater. It would also not significantly affect the capacity of the treatment system.[20,21] The EPA has concurred with this conclusion.[22]

The density of uses proposed by Alternatives A, B, C, D, and F would significantly increase the amount of wastewater conveyed through existing sewer facilities. Each of these alternatives would represent a substantial increase over the existing uses (i.e., Alternative G), and would result in significant impacts to sewer conveyance facilities.

The uses proposed for Alternative E would result in a decrease in the amount of wastewater currently being generated at the site, so it would not cause any significant impacts. The existing sewer facilities currently provide adequate service to the project site. Therefore, no significant impacts would occur with Alternative G.

MITIGATION MEASURES

The following measures are proposed to mitigate significant impacts from Alternatives A, B, C, D, and F to sanitary sewer facilities:

- The existing 15-inch diameter mains located in Pacific Highway and in Market Street (Figure 4-55, page 4-124) will be upgraded by the project developer, in coordination with the City of San Diego, to a capacity sufficient to serve future onsite development, as well as future upstream and tributary developments that would be linked to them. As recommended in a sewer pipeline capacity analysis, 1,800 linear feet of sewer line will be replaced from the intersection of Pacific Highway and E Street to the intersection of Market Street and Kettner Boulevard. The sewer line will be constructed upon demand for a new line created by the project. Upon implementation of these measures, adverse impacts from Alternatives A, B, C, D, and F related to sewer facilities would be avoided.

4.4.7 SOLID WASTE

AFFECTED ENVIRONMENT

Solid waste disposal in the project area is provided by the combined services of the City of San Diego and private contractors. Refuse collected from the project site is currently taken to the West Miramar Landfill, a Class III facility operated by the City of San Diego Disposal Division. The landfill currently receives 1.6 million cubic yards of refuse per year and has a remaining capacity of 26 million cubic yards. The City has estimated that the landfill will reach capacity in 1995; consequently, the City is in the process of identifying a replacement landfill site. The City has entered into a joint powers agreement with the County of San Diego to determine the location of new sites within the City. In addition, the City is considering expanding the West Miramar site.[23]

Alternatives A through F would generate greater quantities of solid waste than the existing onsite uses (Alternative G). In addition to typical daily solid waste production during project operations, Alternatives A through F would require demolition of most existing onsite structures. The increase of daily solid wastes, and disposal of demolished construction materials, would incrementally decrease the life expectancy of landfills serving the area.

The City of San Diego Waste Management Department has indicated that the current capacity of the West Miramar landfill will provide sufficient solid waste disposal through the year 1995, after which an alternative arrangement will be needed to provide the necessary capacity for future solid waste disposal.

The San Diego County Department of Public Works Solid Waste Division uses a generation factor of 1.6 tons per person per year to determine the quantity of solid waste produced by land uses.[24] Table 4.4-5 lists the quantity of solid waste expected to be generated by future employees of the proposed project alternatives (A through G).

TABLE 4.4-5

ANTICIPATED SOLID WASTE GENERATION
FOR PROPOSED ALTERNATIVES

Alternatives	Increase in Employees[a]	Solid Waste Generation Factor[b]	Solid Waste Generation (tons/yr)
A	8,648	1.6 tons/yr/employee	13,800
B	9,759	1.6 tons/yr/employee	15,600
C	5,745	1.6 tons/yr/employee	9,200
D	12,340	1.6 tons/yr/employee	19,700
E	4,545	1.6 tons/yr/employee	7,300
F	8,648	1.6 tons/yr/employee	13,800
G	0	1.6 tons/yr/employee	0

a Assumes net increase in employment on Navy Broadway Complex over current estimated level of 2,122 employees (Alternative G).

b Generation factor represents average annual per capita trash generation for residential, commercial, and industrial uses, and demolition activities, for 1988 population (Eric Swanson, personal communication, San Diego County Department of Public Works Solid Waste Division, 1989).

Source: Michael Brandman Associates, 1989.

The largest increase of solid waste would occur with the Alternative A, the Alternative B, the Alternative D, and Alternative F, from which an anticipated 13,800, 15,600, 19,700, and 13,800 tons, respectively, would be generated per year. Alternative C and Alternative E would result in lesser increase to solid waste generation (i.e., 9,200 and 7,300 additional tons per year over existing uses, respectively). The West Miramar landfill will provide adequate solid waste disposal through 1995, and the City of San Diego is currently planning to develop new landfills, or expand existing ones, to serve the city's future disposal requirements, so no significant impacts to solid waste disposal are anticipated with implementation of any of the alternatives.

With Alternative G, the site would not be redeveloped, no demolition would take place, and no increase in solid waste generation would occur. Therefore, there would be no significant impacts.

MITIGATION MEASURES

As no significant impacts to solid waste would result from any of the alternatives, no mitigation measures are necessary.

ENDNOTES:

1 City of San Diego, 1987c.
2 Hagman, San Diego Police Department, personal communication, 1988.
3 Inman, San Diego Fire Department, personal communication, 1988.
4 George, San Diego Fire Department, personal communication, 1988.
5 Sumler, San Diego Fire Department, personal communication, 1988.
6 San Diego Unified School District, personal communication, 1988.
7 Cherry, San Diego Unified School District, personal communication, 1988.
8 City of San Diego, op. cit.
9 Smith, San Diego Parks and Recreation Department, personal communication, 1988.
10 Ibid.
11 Jacoby, San Diego Water Conservation Department, personal communication, 1988.
12 Ibid.
13 Graft, San Diego Water Utilities Department, personal communication, 1988.
14 Child, San Diego Water Utilities Department, personal communication, 1989.
15 McCann, Regional Water Quality Control Board - San Diego Region, personal communication, 1989.
16 Tomsavic, Environmental Protection Agency, personal communication, 1989.
17 Child, op. cit.
18 City of San Diego, op. cit.
19 Child, op. cit.
20 McCann, op. cit.
21 Child, op. cit.
22 Tomsavic, op. cit.
23 Clay, West Miramar Landfill, personal communication, 1988.
24 Swanson, San Diego Public Works Department, personal communication, 1988.

4.5 SOCIOECONOMICS

The socioeconomic analysis is based primarily on local and regional growth projections that are provided by the City of San Diego and the regional planning agency for San Diego, the San Diego Association of Governments (SANDAG). Statistics are generally provided by geographic area. The largest area is the "Major Statistical Area" (MSA), which covers the entire San Diego Bay area to several miles inland; next is the "Sub-Regional Area" (SRA), which includes the north-central area of the bay; and the smallest geographic area for which statistics are provided is Centre City, which includes the downtown core and waterfront. The boundaries of the areas are depicted on Figure 4-56. The SRA is a statistical subarea of the MSA, and the Centre City is a statistical subarea of the SRA.

4.5.1 AFFECTED ENVIRONMENT

Regional Population, Housing, and Employment

Existing Regional Population

San Diego County has an estimated 1988 population of 2,320,700,[1] making it the 10th largest metropolitan area in the country. San Diego County is one of the fastest growing counties in California with a 71-percent population increase between 1970 and 1988.[2]

The City of San Diego comprises almost half of the county's population and is now the second largest city in California.[3] The 1988 population is estimated at 1,058,700.[4] Although the City's rate of growth is not as high as the county's, the City's population has increased 51 percent since 1970 and 4.5 percent since 1986.

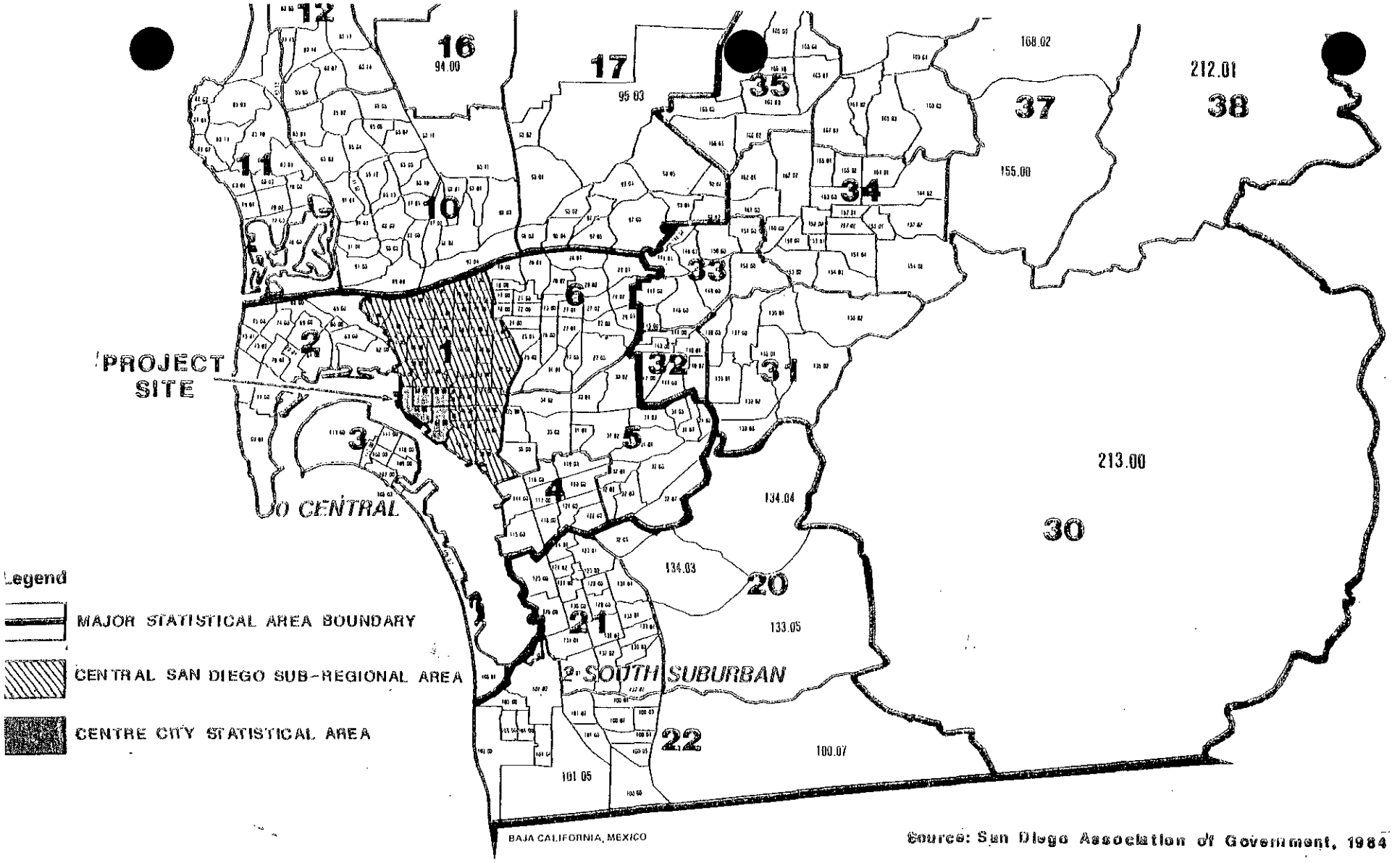
Existing Regional Housing

San Diego County had an estimated 855,545 housing units (as of January 1,1987), an increase of nearly 19 percent since 1980 and nearly 4 percent since 1986. Single-family units have dominated the regional housing inventory, constituting over 57 percent of the total housing. The countywide vacancy rate is 5.6 percent. There are an estimated 10,411 military housing units in the county.

The City of San Diego had an estimated 401,570 housing units (as of January 1, 1987), an increase of over 17 percent since 1980 and nearly 4 percent since 1986. Single-family residences constitute approximately 55 percent of all units. There are an estimated 5,745 military housing units in the City, which is more than half the county total. The City's housing vacancy rate is 4.9 percent.[5]

Existing Regional Employment

San Diego County's civilian labor force numbered 833,300 as of 1986, the most recent year for which data were available. For the third consecutive year, the county's employment showed a significant growth rate of 5.5 percent and a drop in the unemployment rate. The largest growth was in the services sector, which includes an expanding tourism industry and wholesale-retail trade. Table 4.5-1 depicts the labor force by occupation.



Source: San Diego Association of Government, 1984

6640001 1/90

NO SCALE

NORTH

Statistical Areas
Navy Broadway Complex Project

Figure 4-56

TABLE 4.5-1

EMPLOYMENT BY OCCUPATION
COUNTY OF SAN DIEGO

Occupation	1986 Number of Employees	1986 Percent of total
Agricultural, Forestry, Mining, Fishing	12,400	1.5
Construction	52,000	6.2
Nondurable Manufacturing	21,600	2.6
Durable Manufacturing	100,400	12.1
Transportation, Communication	32,100	3.9
Wholesale Trade	34,800	4.2
Retail Trade	162,700	19.5
Finance, Insurance, Real Estate	56,200	6.7
Services	211,1002	5.3
Government	150,000	18.0
TOTAL	833,300	100.0

Source: California Employment Development Department, 1987.

As shown in Table 4.5-1, the county employment base is diverse. According to the City of San Diego, the county's and city's economy has broadened substantially over the past 20 years "from a base of aerospace and the military to include significant manufacturing and tourism."[6] However, it is estimated that the Navy and the Marine Corps still contribute approximately 20 percent of the county's gross product,[7] which constitutes a substantial segment of the overall economy.

Projected Regional Population

Population forecast data prepared by SANDAG in 1987 indicate that "long-term forecasts show a slight decline of population growth; however, San Diego will nevertheless maintain its status as one of the fastest growing counties in California."[8] The county is forecast to gain 444,726 persons by the year 2000, as shown in Table 4.5-2.

TABLE 4.5-2

REGIONAL GROWTH PROJECTIONS

	City of San Diego			County of San Diego		
Year	Population	Housing	Employment	Population	Housing	Employment
1988[a]	1,058,700	415,590	592,562	2,320,700	765,262	1,026,761
1990[b,c]	1,029,600	385,600	534,500	2,424,240	865,800	930,200
1995[b]	1,160,234	446,385	659,448	2,567,193	958,023	1,263,391
2000[b]	1,238,738	484,941	707,915	2,765,421	1,051,006	1,366,140
2010[b]	1,375,232	543,437	812,583	3,133,851	1,204,899	1,589,260

a 1988 estimates from City of San Diego Planning Department.
b SANDAG, 1987c.
c Current (1988) population employment and housing estimates exceed the projected 1990 estimates by approximately 30,000.

Source: Michael Brandman Associates, Inc., 1989.

The average annual projected growth rate in San Diego County is 2.2 percent, which is greater than both California's (1.1 percent) and the United States (0.8 percent).[9] The estimated average annual increase of 41,000 people is not as large as the recent growth of 69,000 persons between 1986 and 1987. Most growth is expected north of I-8. By the year 2010, the majority of the region's population is expected to reside in north city and north county MSAs.

The City of San Diego is also expected to grow at a reduced rate over the next decade. The growth rate is expected to remain steady and average approximately 1 percent annually through 2000, with an anticipated overall increase of approximately 180,000 persons over 1988 estimates (Table 4.5-2). The most current (as of 1988) population estimates for the city exceed, by 30,000 people, the projected (in 1987) city population by 1990, indicating a more rapid rate of growth than expected.

Projected Regional Housing

The county is anticipated to increase its housing inventory by 37 percent, or nearly 286,000 units, to reach approximately 1,051,000 units by 2000 (Table 4.5-2). A majority of the growth is expected to occur in the northern region where more land is considered available for development.[10]

The City of San Diego's recent building boom is expected to slow to a degree and the north should continue to grow faster than the south. By the year 2000, 69,000 new houses are projected to be built, bringing the citywide total to 484,941 units.[11] As with population, however, the City's estimated housing stock in 1988 exceeds by 30,000 units the total projected (in 1987) for 1990, suggesting a more rapid growth rate than projected.

Projected Regional Employment

The county is expected to gain 339,379 civilian jobs by 2000, a civilian employment increase of 33 percent over 1988 (Table 4.5-2). The highest rate of growth is expected in the wholesale, retail, and services sectors (including tourism), with high technology, manufacturing, transportation, communication, utilities, finance, insurance, and real estate also showing growth. Along with agriculture, forestry, and fisheries, construction and government jobs will decline in percentage of total regional employment. Little change is anticipated in the number of military ships, aircraft, and personnel assigned to San Diego.[12]

The City of San Diego is expected to experience slower employment growth than the region as a whole. By 2000, it is projected that there will be 115,253 new jobs--a 19 percent increase over 1988 levels. However, the current estimate of city employment exceeds the projected employment for 1990 by 58,000, suggesting a more rapid than projected rate of employment growth.

Local Population, Housing, and Employment

Existing Local Population

The population of the Central MSA (where the project site is located) (Figure 4-30, page 4-86) grew 11 percent between 1980 and 1986, reaching a total 1986 population of 548,722. The smaller statistical area--Central San Diego SRA--represented approximately 6.4 percent of the region's 1980 population, with a total of 117,400 persons.

The SRA population has increased 23 percent since 1980 and is currently (1988) 144,805.[13] The Centre City substatistical area had a 1987 population of 12,132.[14]

Existing Local Housing

The 1986 housing inventory for the MSA was 199,105 units, a 7-percent increase from 1980. The SRA's housing inventory grew 9 percent during the same time period to 60,560 in 1986.[15] Centre City had a housing inventory of 7,709 units in 1987.[16]

Existing Local Employment

Employment totaled 259,722 in the Central MSA in 1986, a growth of 5 percent between 1980 and 1986. The SRA had an increase in employment of 20 percent for the same time period, reaching 151,000 in 1986.[17] Centre City had 60,300 jobs in 1986.[18]

Projected Local Growth

Population, housing, and employment growth projections are provided by MSA and SRA, but not for the smaller Centre City statistical area, where only current data are available (except with

regard to employment). Estimates of current (1986/1987) population, housing, and employment exceed 1990 projections for the Central MSA and Central San Diego SRA, indicating a greater than expected level of growth. Table 4.5-3 depicts projected local population, housing, and employment growth.

Projected Local Population

Central MSA population is projected to increase by approximately 28,400 between 1986 and 2000, which is an overall increase of 5.2 percent. At this rate, the Central MSA is projected to be San Diego's slowest growing MSA. The smaller Central San Diego SRA is projected to increase by 3,100 people between 1986 and 2000, a 2-percent increase. However, as noted in Table 4.5-3, the current (1986) population for the SRA already exceeds the projected 1990 population by nearly 21,000 people (or 17 percent). Given this, it is reasonable to assume that actual growth will exceed projected growth in 2000.

Projected Local Housing

Most housing growth in the region between 1986 and 2000 is projected to occur outside the Central MSA. The housing inventory in the MSA is anticipated to increase 12 percent between 1986 and 2000, to 222,134 units. The SRA is projected to increase by 14 percent during this period, bringing the total housing inventory to 69,329 for the SRA.

Projected Local Employment

Total employment for Central MSA is projected to increase by 23 percent (or approximately 60,000 jobs) between the years 1986 and 2000. The largest projected growth in employment in the MSA is anticipated to occur south of I-8. Employment in the Central San Diego SRA is expected to increase by 44 percent (or 56,776 jobs) over the same period. One-third of the projected increase is expected to occur in Centre City, with a projected increase of 19,000 jobs--a 32-percent growth--between 1986 and 2000.

4.5.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Direct Effects on Population, Housing, and Employment

None of the alternatives include the development of residential uses, and therefore, they would not directly contribute to local or regional growth in population or housing. Employment growth associated with development of Alternatives A, B, C, D, and F could result in indirect housing demands and population growth through project-induced in-migration to the region. However, given the substantial housing and population base in San Diego (415,590 housing units and a population of over 1 million in 1988), new employees to the region associated with the project would be absorbed without notable secondary effects. Alternative E (military construction), which consolidates existing Navy administrative staff located in San Diego on the project site and provides no other employment, and Alternative G (no action) would not generate any substantial long-term employment opportunities and, therefore, would not result in-migration to the region. Table 4.5-4 shows the anticipated employment levels for each alternative and Table 4.5-5 compares these levels with the employment growth projected for the Central MSA, Central San Diego SRA, and the Centre City area for 1995 and 2000. Employment levels depicted in Tables 4.5-4 and 4.5-5 represent the jobs in excess of the approximately 2,100 jobs currently held by Navy and civilian administrative personnel onsite.

TABLE 4.5-3

GROWTH PROJECTIONS BY STATISTICAL AREA

	Central MSA			Central San Diego SRA			Centre City Statistical Area		
Year	Population	Housing	Employment	Population	Housing	Employment	Population	Housing	Employment
1980[a]	495,500	180,800	247,600	117,400	55,700	126,100	--	--	--
Current[b,c]	548,721	199,105	259,772	144,806	60,560	128,233	12,132	7,709	60,300
1990[a,d]	521,900	196,100	251,900	123,900	61,100	152,200	--	--	--
1995[c]	559,763	212,554	303,112	150,733	65,645	176,422	--	--	76,740
2000[c]	577,118	222,134	319,311	157,212	69,329	185,009	--	--	79,344

a Unmarked SANDAG Series 6; 1980, 1990, 2000.

b 1987 (i.e., "current") population and Centre City housing provided by the City of San Diego.

c SANDAG Series 7; 1986, 1995, 2000. (The "current" year for housing and employment outside of Centre City is assumed to be 1986, the most recent data year available.)

d Note that current (1986) population, housing, and employment exceeds the 1990 projected levels in the Central MSA. Current (1986) population also exceeds the projected 1990 population in the Central San Diego SRA.

Source: SANDAG.

TABLE 4.5-4

NET EMPLOYMENT LEVEL--ALTERNATIVES A THROUGH G

Proposed Alternative	Land Use Assumptions	Employment Levels[a]
Alternative A	1,000,000 SF Navy office	6,667
	650,000 SF commercial office	2,889
	1,500 hotel rooms	1,200
	55,000 SF museum	15
	25,000 SF retail	50
	Subtotal	**10,821**
	Net Increase	**8,699[a]**
Alternative B	1,000,000 SF Navy office	6,667
	900,000 SF commercial office	4,000
	1,500 hotel rooms	1,200
	55,000 SF museum	15
	25,000 SF retail	50
	Subtotal	**11,932**
	Net Increase	**9,810[b]**
Alternative C	1,000,000 SF Navy office	6,667
	1,500 hotel rooms	1,200
	25,000 SF retail	50
	Subtotal	**7,917**
	Net Increase	**5,795[b]**
Alternative D	20,000 SF Navy office	133
	1,430,000 SF commercial office	6,355
	1,800 hotel rooms	1,440
	25,000 SF retail	50
	980,000 SF Navy office (offsite)	6,544
	Subtotal	**14,522**
	Net Increase	**12,400[b]**
Alternative E	1,000,000 SF Navy office	6,667
	Subtotal	**6,667**
	Net Increase	**4,545[b]**

TABLE 4.5-4 (continued)

Proposed Alternative	Land Use Assumptions		Employment Levels[a]
Alternative F	1,000,000 SF Navy office		6,667
	650,000 SF commercial office		2,889
	1,500 hotel rooms		1,200
	55,000 SF museum		15
	25,000 SF retail		50
		Subtotal	10,821
		Net Increase	8,699[b]
Alternative G	405,753 SF Navy office		-----
	601,360 SF industrial		-----
		Subtotal	2,122[c]
		Net Increase	0

a Employment levels assume 150 gross square feet (gsf) of Navy office use per employee, 225 gsf of commercial office use per employee, 1.25 hotel rooms per employee, and 4,000 gsf of museum use per employee.

b Net total assumes future employment level in excess of existing 2,122 employees onsite.

c Estimated existing onsite employment.

Source: Korve Engineering, Inc. and Michael Brandman Associates, 1989.

TABLE 4.5-5

RELATIONSHIP OF ANTICIPATED EMPLOYMENT LEVELS TO EMPLOYMENT GROWTH PROJECTIONS FOR 1995 AND 2000

Project Alternative	Anticipated Emp. Level For Project Alternative	Central MSA 1995 Employ.	Central MSA 1995 Proj. %	Central MSA 2000 Employ.	Central MSA 2000 Proj. %	Central San Diego SRA 1995 Employ.	Central San Diego SRA 1995 Proj. %	Central San Diego SRA 2000 Employ.	Central San Diego SRA 2000 Proj. %	Centre City Statistical Area 1995 Employ.	Centre City Statistical Area 1995 Proj. %	Centre City Statistical Area 2000 Employ.	Centre City Statistical Area 2000 Proj. %
A	8,648[a]	307,485	2.8%	324,753	2.6%	176,473	4.9%	180,100	4.8%	76,740	11%	79,344	11%
B	9,759[a]	307,485	3.2%	324,753	3.0%	176,473	5.5%	180,100	5.4%	76,740	13%	79,344	13%
C	5,745[a]	307,485	1.8%	324,753	1.8%	176,473	3.3%	180,100	3.2%	76,740	7%	79,344	7%
D	10,899[a]	307,485	3.5%	324,753	3.4%	176,473	6.2%	180,100	6.0%	76,740	14%	79,344	14%
E	4,545[a]	307,485	1.5%	324,753	1.4%	176,473	2.6%	180,100	2.5%	76,740	6%	79,344	6%
F	8,648[a]	307,485	2.8%	324,753	2.6%	176,473	4.9%	180,100	4.8%	76,740	11%	79,344	11%
G	0[a]	307,485	0.0%	324,753	0.0%	176,473	0.0%	180,100	0.0%	76,740	0.0%	79,344	0.0%

[a] Anticipated employment level assumes future employment in excess of existing 2,122 employees onsite.

Source: SANDAG, Series 7 Regional Growth Forecasts, July 1988 and Michael Brandman Associates 1989.

Alternatives A, B, C, D, E, and F would provide employment opportunities that vary according to the uses proposed (see Tables 4.5-4, page 4-136 and 4.5-5, page 4-138). Alternatives C and E propose 1 million square feet of Navy office uses and would result in similar employment levels (5,745 and 4,545, respectively). In addition to the proposed office uses, Alternative C also includes 1,500 hotel rooms, resulting in an additional 1,200 jobs. Alternatives A, B, and F propose similar land uses (i.e., office, hotel, and museum uses) and intensities, and would generate similar employment levels (8,699, 9,810, and 8,699, respectively). The uses proposed by Alternative D would generate the highest net employment level (12,400 employees). Approximately 980,000 square feet of Navy office uses would be developed at an offsite location in the Centre City East area, supporting 6,544 employees, and 7,978 employees would be on the Navy Broadway Complex.

Long-term employment generated by Alternatives A through G would represent a minor percentage (averaging 2 percent) of the projected employment within the Central MSA by the year 2000 (Table 4.5-5, page 4-138). The largest percent contribution to employment growth would be experienced within the Centre City Census Tract, the smallest statistical area. Long term employment levels associated with Alternatives A, B, D, and E (i.e., 11, 13, 14, and 11 percent, respectively) would represent a substantial contribution of employment opportunities for the Centre City area by 2000, which would be a beneficial effect of these alternatives.

Employment opportunities associated with Alternatives C, E, and G would represent a relatively minor percentage of the predicted employment within the Central MSA (1 to 2 percent), Central San Diego SRA (1 to 3 percent), and Centre City area (7, 6, and 3 percent, respectively). The additional employment associated with Alternative C and Alternative E would also beneficially affect employment levels.

Fiscal Impact Assessment

A fiscal impact report was prepared for the proposed alternatives and is on file at the Broadway Complex Office, 555 West Beech Street, Suite 101, San Diego, California, 92101-2937. Provided below is a summary of the report's conclusions.

Methodology

The fiscal impact assessment evaluates the public (governmental) cost and revenue implications derived from changes in employment associated with the project. Only the primary costs that would be incurred and the immediate revenues which would be generated from the proposed development alternatives have been evaluated. Indirect impacts were not addressed due to the difficulty in accurately predicting the secondary consequences of growth, and the potential for double counting when primary and secondary impacts are viewed simultaneously. Three methodological approaches are used: (1) application of municipal tax rates for property, sales, and transient occupancy tax revenues; (2) per capita multipliers for anticipated police and fire protection costs; and (3) per acre multipliers for other revenues and municipal expenditures such as planning, engineering, and other support services. The projected total employment generated from the proposed project alternatives is summarized in Table 4.5-6.

TABLE 4.5-6

PROJECTED TOTAL EMPLOYMENT BY PHASE[a]

Alternative	Phase 1 1992-1994	Phase 2 1995-1997	Phase 3 1998-2000	Phase 4 2001-2003	Stabilized Occupancy 2004-2006
A	2,122	2,572	3,349	10,021	10,821
B	2,122	2,572	3,349	11,143	11,932
C	2,122	2,572	3,701	7,128	7,917
D	2,122	2,572	3,920	11,783	14,513
E	2,122	2,122	6,667	6,667	6,667
F	2,122	2,922	3,699	8,815	10,821
G	2,122	2,122	2,122	2,122	2,122

a Total employment includes existing 2,122 Navy personnel currently on the site. Years refer to approximate years required to reach stabilized occupancy by phase. Based on employment assumptions presented in WK&A fiscal impact assessment report.

Source: Korve Engineering, Inc. and William-Kuebelbeck & Associates, Inc. 1989.

The per acre and per capita revenue and expense multipliers were calculated based upon the current land use distribution and daytime population of the City of San Diego. These multipliers were then applied to employment estimates shown in Table 4.5-6 and the acreage from the project site to derive fiscal impacts from development on the Navy Broadway Complex.

Conclusions

The annual tax revenues generated to the City of San Diego at project buildout (for property taxes) and stabilized occupancy (for retail sales tax and hotel occupancy tax) are summarized in Table 4.5-7. The fiscal impacts of the respective development alternatives are presented in Table 4.5-8. The key findings of the fiscal impact assessment are listed below.

TABLE 4.5-7

PROJECTED ANNUAL TAX REVENUES TO CITY OF SAN DIEGO AT PROJECT BUILDOUT[a]
(in Thousands of Dollars)

Alternative	Annual Property Tax Revenue[b]	Annual Sales Tax Revenue[c]	Annual Transient Occupancy Tax[d]
A	$2,115[e]	$565	$9,286
B	5,371	565	9,286
C	3,193	565	9,286
D	7,364	652	11,246
E	0	0	0
F	4,659[e]	565	9,286
G	0	0	0

a Property taxes based on project buildout in 2003. Retail sales and transient occupancy tax revenues based on project stabilized occupancy in 2005.

b Includes 1 percent property tax increment to city as well as zoological exhibits tax at $0.005 per $100 assessed value. Based on estimated construction cost value of private development at project buildout in 2003. Increases 2 percent annually, per Proposition 13.

c Based on 1 percent of taxable retail sales tax at project stabilized occupancy in 2005. Increases annually at estimated 5 percent inflation rate.

d Based on 9 percent of gross hotel room revenues at project stabilized occupancy in 2005. Increases annually at estimated 5 percent inflation rate.

e After deduction of estimated annual $2.55 million tax allocation bond payments for city-funded public improvement.

Source: Williams-Kuebelbeck & Associates, Inc. 1989.

TABLE 4.5-8

PROJECTED NET AND CUMULATIVE FISCAL IMPACTS OF PROJECT
(in Thousands of Dollars)

Development Alternative	Net Annual Fiscal Impact in 2005[a]	Cumulative Fiscal Impact in 2005[a]	Net Annual Fiscal Impact in Year 20	Cumulative 30-Year Fiscal Impact
A	$19,383	$100,936	$41,317	$576,104
B	23,691	130,275	47,188	686,206
C	18,743	101,592	38,224	547,827
D	30,708	176,476	60,825	894,620
E	-2,138	-19,325	-4,667	-72,435
F	21,209	129,806	42,371	628,408
G	-697	-8,248	-1,521	-25,554

a At full development stabilized occupancy.

Source: Williams-Kuebelbeck & Associates, Inc., 1989.

- Alternatives A, B, C, D, and F all generate significant property tax increment, as well as retail sales tax and hotel transient occupancy tax revenues to the City of San Diego from the proposed private development on the site. Alternatives E and F do not generate tax revenues to the city, as they include only Navy facilities.

- Transient occupancy tax is the most significant component of the tax revenues that would be generated from private development of the Navy Broadway Complex. Annual transient occupancy tax at stabilized occupancy (2005) ranges from $9.3 million under the A, B, C, and F Alternatives, to $11.2 million under Alternative D.

- Alternatives A, B, C, D, and F would all generate net annual operating surpluses to the City of San Diego by 1994, while the Alternatives E and G would consistently yield annual operating deficits throughout the 30-year projection period.

- By year 30 of the proposed project (2021), Alternatives A, B, C, D, and F would generate cumulative surpluses to the City of San Diego of $576.1 million, $686.2 million, $547.8 million, $894.6 million, and $628.4 million, respectively. Conversely, Alternatives E and G would yield cumulative deficits of $72.4 million and $25.6 million, respectively.

4.5.3 MITIGATION MEASURES

Alternatives A through F would provide positive economic and employment effects to the project area and would not result in any significant impacts. Therefore, no mitigation measures are necessary. Even though Alternative G would not generate an increase in employment opportunities, and Alternatives E and G would not generate positive fiscal effects, no significant environmental impacts would result.

ENDNOTES:

1 Turner, City of San Diego, personal communication, 1988.
2 Ibid.
3 City of San Diego, 1987b.
4 Turner, op. cit.
5 San Diego Association of Governments, 1987a.
6 City of San Diego, op. cit.
7 Ibid.
8 San Diego Association of Governments, op. cit.
9 City of San Diego, op. cit.
10 San Diego Association of Governments, op. cit.
11 Ibid.
12 City of San Diego, op. cit.
13 Polinsky, San Diego Association of Governments, 1988.
14 Turner, op. cit.
15 Polinsky, op cit.
16 Turner, op. cit.
17 Polinsky, op. cit.
18 Turner, op. cit.

4.6 PHYSICAL ENVIRONMENT

4.6.1 GEOLOGY AND SEISMICITY

The following discussion summarizes a geotechnical investigation[1] conducted for the project site by Hirsch and Company in February 1988.

AFFECTED ENVIRONMENT

Geologic Setting

The project site lies in an area of low relief within the coastal plain adjacent to San Diego Bay. The project area is located west of the historical high tide line in an area that was previously characterized by the tidal flats and marshes that naturally existed around the margins of San Diego Bay. Holocene-age lagoon and bay sediments accumulated in these areas over a gently sloping surface of older Pleistocene-age deposits. The site has subsequently been reclaimed by the hydraulic fill placed between 1920 and the late 1930s. The fill was placed over the depositional surface of the bay deposits to form the existing land surface.

Soils

The project site is covered with surface pavement. Below the surface pavement the site is underlain by a layer of fill soils that was placed over the natural bay deposits. The bay deposits are in turn underlain by older Pleistocene sedimentary deposits of the Bay Point Formation. These geologic units are described below in the order of increasing age.

Fill

Hydraulic fill soils derived from bay dredging operations are located on the project site. The average fill depth is about 10 feet north of F Street. South of F Street, the fill ranges from 7 to 10 feet with an average of approximately 8 feet. The hydraulic fill soils consist of light brown to gray silty and poorly graded fine sands which contain abundant shell fragments, few silt and clay layers, and occasional clay balls and pockets.

The upper few feet of the hydraulic fill soils have been locally reworked. Imported fill (up to 3 feet) has been placed on the hydraulic fill in the northwestern and eastern portions of the site. The observed imported fill soils are generally similar to the hydraulic fill soils and consist of brown silty sands with some clay layers and balls.

Bay Deposits

Late Quaternary-age embayment deposits underlie the fill soils. The deposits generally consist of very loose to medium dense silty and clayey sands with some sandy and clayey silt layers. The average depth of bay deposits is approximately 8 feet north of F Street and 16 feet south of F Street. The bay deposits south of F Street generally thicken toward the west.

Bay Point Formation

Pleistocene-age terrace deposits of the Bay Point Formation underlie the bay deposits to the maximum depths explored (approximately 44 feet). The deposits consist of medium dense to very

dense clayey and silty sands, poorly graded sands, sandy silts, and very stiff to hard sandy lean clays, with clay interbeds and zones within the granular strata. The deposits transition from clayey sands to poorly graded sands and from medium dense to dense or very dense conditions with depth below the top of the Bay Point Formation soils. The depth of dense to very dense portions of the deposits varies across the site and appears to range from approximately 15 to 40 feet below the existing ground surface.

Faulting and Seismicity

The project site, like much of downtown San Diego, is within the Rose Canyon Fault zone. The onshore portion of the Rose Canyon Fault zone extends along the northeast flank of Mount Soledad and continues southward along the eastern portion of Mission Bay. The zone widens and diverges between Mission Bay and San Diego Bay as it continues across to Coronado and beyond to the south. The most significant traces of the Rose Canyon Fault zone generally trend north to north-northwest near downtown San Diego.

The Rose Canyon Fault zone is considered to present a significant seismic hazard to the coastal San Diego area; recent earthquake activity within the general area of southern San Diego Bay further demonstrates the seismic activity of this zone of faults. During July 1985 a series of earthquakes up to Richter magnitude 4.2 were recorded in the vicinity of San Diego Bay. The surface rupture potential associated with faults in the Rose Canyon Fault zone is not well understood. In downtown San Diego, fault traces within the Rose Canyon Fault zone have been difficult to locate due to development dating back many decades which may obscure or obliterate surface geologic expression of faults. In many areas, shallow groundwater conditions also limit geologic studies to shallow exposures. Recent studies in the eastern downtown area have found faults that show Holocene (last 10,000 years) displacements, and many of the offshore faults in and around San Diego Bay are also believed to displace Holocene sediments. Therefore, at least some portions of the fault zone are considered "active."

In addition to the Rose Canyon Fault zone, other major active faults (which have produced recurring earthquakes having a magnitude greater than 4.0) are the Elsinore Fault zone and the Coronado Banks Fault zone, which are approximately 45 miles northeast and 13 miles southwest of the site, respectively.

Liquefaction Potential

The soils on the site, especially the loose sands, could be subject to liquefaction. Liquefaction is a phenomenon known to occur when loose, sandy, water-saturated soils are subjected to strong seismic ground motion of signification duration. The soil loses its normal cohesive properties and behaves more like a liquid than a solid.

The very loose to medium dense sands and nonplastic silts of the hydraulic fills and bay deposits below the groundwater level represent a potential liquefaction hazard to the project site during significant ground shaking. The consequences of liquefaction, should it occur at this site, probably would be seen as localized sand boils, ground cracks, and ground settlements. It is possible that lateral movement of soils into the bay could occur as a result of soil liquefaction. The relatively dense sands and silts of the Bay Point Formation have a low potential for liquefaction. The project site would not be subject to a greater risk of liquefaction potential than other adjacent areas along the San Diego Bay.

Effects on Soils and Erosion

Construction of Alternatives A through F would result in the potential short-term exposure of soils to wind and rain, resulting in two potential environmental impacts:

1. Erosion and hydraulic conveyance of sediments downstream of the site into San Diego Bay, which could affect marine life.

2. Contribution of particulates to the air stream, which could degrade air quality. This is discussed in Section 4.8, page 4-163.

Alternative D, with its additional offsite component, could add sedimentation to storm drains in the easterly Centre City area (in addition to the erosion that could occur at the Navy Broadway Complex site). This sedimentation, if it were to occur, would eventually be conveyed to San Diego Bay. If large areas of the project site(s) were left with exposed soils during storms, the environmental impact from erosion could be significant, because sedimentation of the Bay could adversely affect marine biological resources.

Alternative G would retain the site in its current condition, which is mostly covered with pavement and buildings, with few areas of exposed soils. Therefore, no significant erosion impacts would result.

Effects from Geologic Hazards

Faulting and Seismicity

The precise location of the Rose Canyon Fault and its associated branches is not known. Thus, it is unknown if there is any faulting within the boundaries of the project site or the Centre City site for Alternative D. If the fault does bisect the project or alternative site, seismic activity could cause surface rupture and substantial damage to structures, which would be a significant impact to all of the alternatives.

Since the project site and alternative site are located in a seismically active region, strong seismic activity would be expected to occur within the lifetime of the project. Seismic groundshaking could result in substantial damage to structures and is considered a significant impact to Alternatives A through F.

Additional damage to the Navy Broadway Complex could occur if liquefaction is realized during a seismic event. This is considered a significant impact to Alternatives A through F. It is unknown if a liquefaction hazard is present at the alternative site for Alternative D. However, due to its inland location, the liquefaction potential at this site is likely to be lower than at the Navy Broadway Complex.

With Alternative G, potential seismic shaking could affect existing structures onsite. With the exception of a portion of Building No. 1, none of the existing buildings comply with earthquake safety standards set by the Uniform Building Code. This does not represent a change from current conditions, so no impact would result.

MITIGATION MEASURES

The Regional Water Quality Control Board (RWQCB) was consulted regarding specific mitigation measures for erosion control. RWQCB does not generally develop erosion control measures. The following measure would mitigate any impacts from soil erosion during construction:

- An erosion control plan will be implemented during construction of new structures at the Navy Broadway Complex site and (if it is selected) at the alternative site. The plan will be prepared by the project developer and will receive appropriate approvals prior to the initiation of construction. Major components of the plan would include (but not be limited to) the following:

  - Regular watering of exposed soil.

  - Hydroseeding of large (1-acre-plus) areas of exposed soils that will remain exposed and undisturbed by construction for 3 or more months at a time.

  - Draining any areas where ponding occurs.

  - Placing sandbags in gutters and near storm drains wherever construction activities occur.

  Upon implementation of this measure, adverse impacts from soils erosion would be avoided (Alternatives A through F).

Compliance with building codes would mitigate significant impacts from geologic hazards.

4.6.2 EXTRACTABLE RESOURCES

AFFECTED ENVIRONMENT

An analysis was conducted of the potential for extractable resources to be located on or beneath the site. Based on information available from the U.S. Bureau of Land Management[2] and the California Division of Oil and Gas,[3] the project site is not known to have any extractable resources such as oil, gas, or aggregate, and no resources are currently or are known to have been extracted from the site.

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The project site and the second site location for Alternative D are not known to contain any extractable resources, and there is no evidence to suggest any would be found during the excavation and grading phases of Alternatives A through F. Therefore, construction of Alternatives A through F would not result in significant impacts to extractable resources.

Since the project site does not contain extractable resources, the existing onsite structures associated with Alternative G would not preclude the mining of essential natural resources. Thus, no significant impacts to extractable resources would occur.

MITIGATION MEASURES

Because no significant impacts to extractable resources would occur, no mitigation measures are necessary.

4.6.3 HYDROLOGY

AFFECTED ENVIRONMENT

Surface Hydrology/Drainage

The project site is level, at street grade, and covered with impervious surfaces. During rain storms, surface water flows to existing subsurface storm drains located on and adjacent to the project site. Five storm drains (one 36-inch, one 24-inch, two 18-inch, and one 16-inch) convey storm water to the San Diego Bay (see Figure 4-57).[4]

The project site is west of the historic mean high tide line of San Diego Bay. However, according to the National Flood Insurance Program, it is within flood hazard Zone C, which denotes minimal flooding.

Groundwater

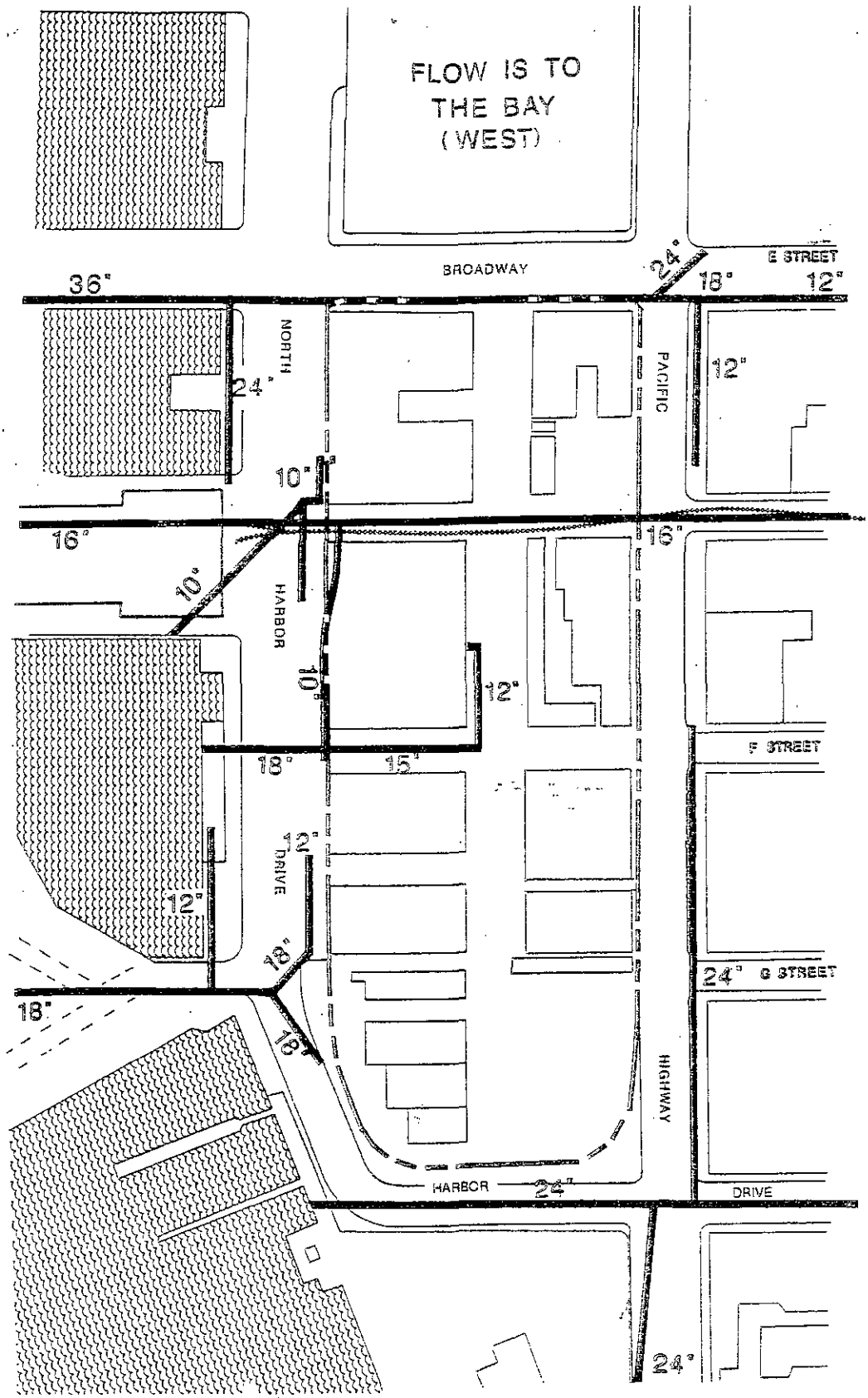
Groundwater was encountered at depths ranging from approximately 7.5 to 11 feet below the project site (approximately 0.5 to 2.5 feet above mean sea level). The proximity of the site to the San Diego Bay causes groundwater level variations due to tidal fluctuations.[5]

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

Implementation of Alternatives A through F would result in increased sedimentation during demolition and construction activities as subsurface soils are exposed to runoff (see Section 4.6.1, page 4-146). No long-term increases in runoff would occur since the Navy Broadway Complex site is already fully developed with impervious surfaces.

One additional concern, expressed by the Environmental Protection Agency (EPA) with respect to water quality, is associated with the potential for nonpoint source pollution from an accidental fuel spill from construction vehicles during project construction or from runoff from the site. In the unlikely event that a large spill were to occur, hydrocarbons could be released directly to the storm-drain system and flow to the bay. The EPA also expressed concern with regard to nonpoint source water contamination from runoff across parking lots. The RWQCB was consulted on this issue and indicated it has not adopted standards or programs for accidental spill response or for control of runoff water quality. RWQCB is developing a runoff control program that would be implemented by municipalities and include standards for water quality in storm-drain systems prior to release into receiving waters. This would have no effect on the project, as the standards would not be directed toward individual developments.[6]

Alternatives A, B, C, D, and F would all include subsurface parking. Construction and operation of these alternatives would require temporary and permanent groundwater dewatering. There is a potential for contaminated groundwater to be drawn to the site during dewatering. This issue is discussed in Section 4.11, page 4-220.



Legend

24" STORM DRAIN DIAMETER

RAILROAD

PROJECT SITE

3640001 1/90

Storm Drain Facilities
Navy Broadway Complex Project

0 137 275 FEET

NORTH

MITIGATION MEASURES

- The erosion control plan, described in Section 4.6.1, page 4-147, includes the placement of sandbags in gutters and around storm drains during grading. If fuel was accidentally released during construction, it would collect near the sandbags before it enters the storm drain. The construction personnel will be required to notify local health officials immediately to clean up spilled fuel in order to minimize the amount entering the storm-drain system.

ENDNOTES:

1 Hirsch and Company, 1988.
2 Ortiz, Bureau of Land Management, personal communication, 1988.
3 Guerard, California Division of Oil and Gas, personal communication, 1988.
4 Hirsch and Company, op. cit.
5 Hirsch and Company, Ibid.
6 Posthumous, Regional Water Quality Control Board, personal communication, 1989.

4.7 BIOLOGICAL RESOURCES

4.7.1 AFFECTED ENVIRONMENT

Regional Setting

The project site is located in a highly urbanized region that fronts San Diego Bay. Because of this urbanization, the diversity of native biological species is generally low. However, the adjacent San Diego Bay displays a rich variety of biologic resources. There are three major areas in which significant levels of environmental pollution are found in the bay: heavy metals associated with ship anticorrosion activities near the entrance to the bay, PCBs associated with runoff from activities near Harbor Island, and copper ore residuals associated with ship loading in National City.

Local Setting

The project site is fully developed with urban uses and has been for several decades. As such, there are no areas of the site where biological resources are located that are not substantially disturbed.

Vegetation is confined to a number of invasive weedy species, with a limited amount of landscape material at the periphery of the site. Typical flora found on the site includes mustard (Brassica sp.), Russian thistle (Salsola iberica), horseweed (Conyza canadenis), and sow thistle (Sonchus sp.). None of these species is indigenous to the area and none is considered threatened or endangered by either Federal or state resource agencies.

Wildlife is limited to those species typically associated with highly disturbed urban environments. Species that could be found on the site include the side-blotched lizard (Uta stansburiana), house finch (Carpodacus mexicana), mourning dove (Zenaida macroura), American crow (Corvus brachyrnchos), and European starling (Sturnus vulgaris). As with vegetation, none of these species is considered threatened or endangered by either Federal or state resource agencies.

The San Diego Bay waterfront is located one block west of the site. A monitoring program near the Broadway Pier was conducted in the 1970s to determine if the San Diego Gas and Electric plant, located adjacent to the Navy Broadway Complex, was causing any degradation of marine wildlife habitat. The monitoring program found a rich and diverse marine habitat in this area, and found no signs of substantial deterioration. No other studies are known to have been conducted in the project area since.[1,2] The project site contributes urban runoff to this area through storm water flows that exit the site via storm drains that empty into the bay. Although not conclusive, it can be assumed that runoff from the site does not substantially affect the marine habitat of San Diego Bay because the habitat value in this area is considered rich and diverse.

The offsite location for Navy offices under Alternative D would be in the highly urbanized Centre City East area. Although a specific site has not been selected, it is probable that the biological resources on the site would be similar to those found on the Navy Broadway Complex site.

4.7.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

None of the alternatives would alter the biological nature of the Navy Broadway Complex site, which would continue to function as a developed, urban site. There would be no direct effect

on terrestrial biological resources associated with any of the alternatives because there are no known threatened or endangered biological resources on the Navy Broadway Complex site.

The offsite Navy offices associated with Alternative D would also be located in an urbanized area. Although a specific site has not been selected, it is improbable that any sensitive biological resources would be affected due to the urban nature of the area.

Three primary concerns to biological resources have been raised through the environmental scoping process. The first issue raised was that if any over-water structures were developed, they could shade the marine environment and reduce productivity of nearshore plants and animals. Such structures could also eliminate foraging habitat for such birds as the Federal- and state-listed endangered California least tern (Sterna antillarum browni). None of the alternatives includes over-water structures. Representatives of the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) were informed of this and agreed that the project would not have a significant shading impact on marine habitat.[3,4]

A second concern is the potential for bird strikes if reflective materials are used on project structures. The design guidelines proposed for the project (Appendix D) prohibit the use of large areas of reflective glass. Thus, compliance with these guidelines would resolve this potential concern. If nonreflective glass is used, USFWS agrees there would be no significant impact.[5]

The third concern was shading marine resources from onshore project structures. None of the alternatives include any construction in, over, or within 150 feet of the waterfront. An investigation of shading effects of the alternatives found that the highest proposed buildings, a 400-foot-high building on Block 1 and a 500-foot-high building on Block 2 (Alternatives A and F, respectively), would not cast a shadow over the waterfront when the sun is most direct, between 10 a.m. and 2 p.m., during the winter solstice, when shadows are longer than at any other time of the year (see Figures 4-52, page 4-112 and 4-53, page 4-113). Under this condition, shadows would be cast over the near-shore area in the immediate vicinity of the site between sunrise and approximately 9:00 to 9:30 a.m. However, an existing seawall facing the same direction already casts shadows over this area during the same time period. Thus, shadows from development of any of the alternatives would not cause any apparent adverse effects to bay bottom habitats. After reviewing this issue, both USFWS and NMFS agree there would be no adverse effects.[6,7]

An additional concern that was addressed with USFWS and NMFS, but not expressed during environmental scoping, is the discharge of groundwater that would result from construction and operation of Alternatives A, B, C, D, and F, all of which would have subsurface parking that is below the groundwater table. As discussed in Section 4.11 (page 4-212), groundwater beneath the site was tested for contamination and was found to contain no hazardous or toxic substances. Given its proximity to the waterfront and the fact that groundwater beneath the site is near sea level, it is probable that groundwater beneath the site is of similar composition as San Diego Bay. Given these factors, USFWS and NMFS do not feel that discharge to the ocean would adversely affect marine resources.[8,9]

Both USFWS and NMFS would be concerned if it was found that groundwater being discharged contained toxic substances (see Section 4.11, page 4-220). However, both agencies stated that compliance with conditions that may be imposed as part of a National Pollution Discharge Elimination System permit application (also see Section 4.11, page 4-220) would avoid adverse impacts to marine resources.[10,11]

4.7.3 MITIGATION MEASURES

- Design guidelines adopted by the Navy and City of San Diego will specify that no reflective glass will be used in development of new buildings (Alternatives A, B, C, D, and E).

ENDNOTES:

1 Kenney, United States Department of Interior, Fish and Wildlife Service, personal communication, 1989.
2 Hoffman, United States Department of Commerce, National Marine Fisheries Service, personal communication, 1989.
3 Kenney, op. cit.
4 Hoffman, op. cit.
5 Kenney, op. cit.
6 Ibid.
7 Hoffman, op. cit.
8 Kenney, op. cit.
9 Hoffman, op. cit.
10 Kenney, op. cit.
11 Hoffman, op. cit.

4.8 AIR QUALITY

4.8.1 AFFECTED ENVIRONMENT

Climate

San Diego's climate is largely determined by the position of the semi-permanent mid-Pacific high pressure system and the proximity of the moderating effects of the nearby ocean. The resulting Mediterranean-type climate is characterized by cool, dry summers and mild winters. Limited rainfall occurs in winter while summers are often completely dry. Rainfall averages only 10 inches per year and falls mainly from November to late March from the fringes of mid-latitude storms. Temperatures average 62 degrees Fahrenheit with winter lows around 48 degrees Fahrenheit. Temperatures over 100 degrees Fahrenheit or below 32 degrees Fahrenheit almost never occur in the coastal area because the ocean and the onshore breezes moderate any temperature extremes.[1]

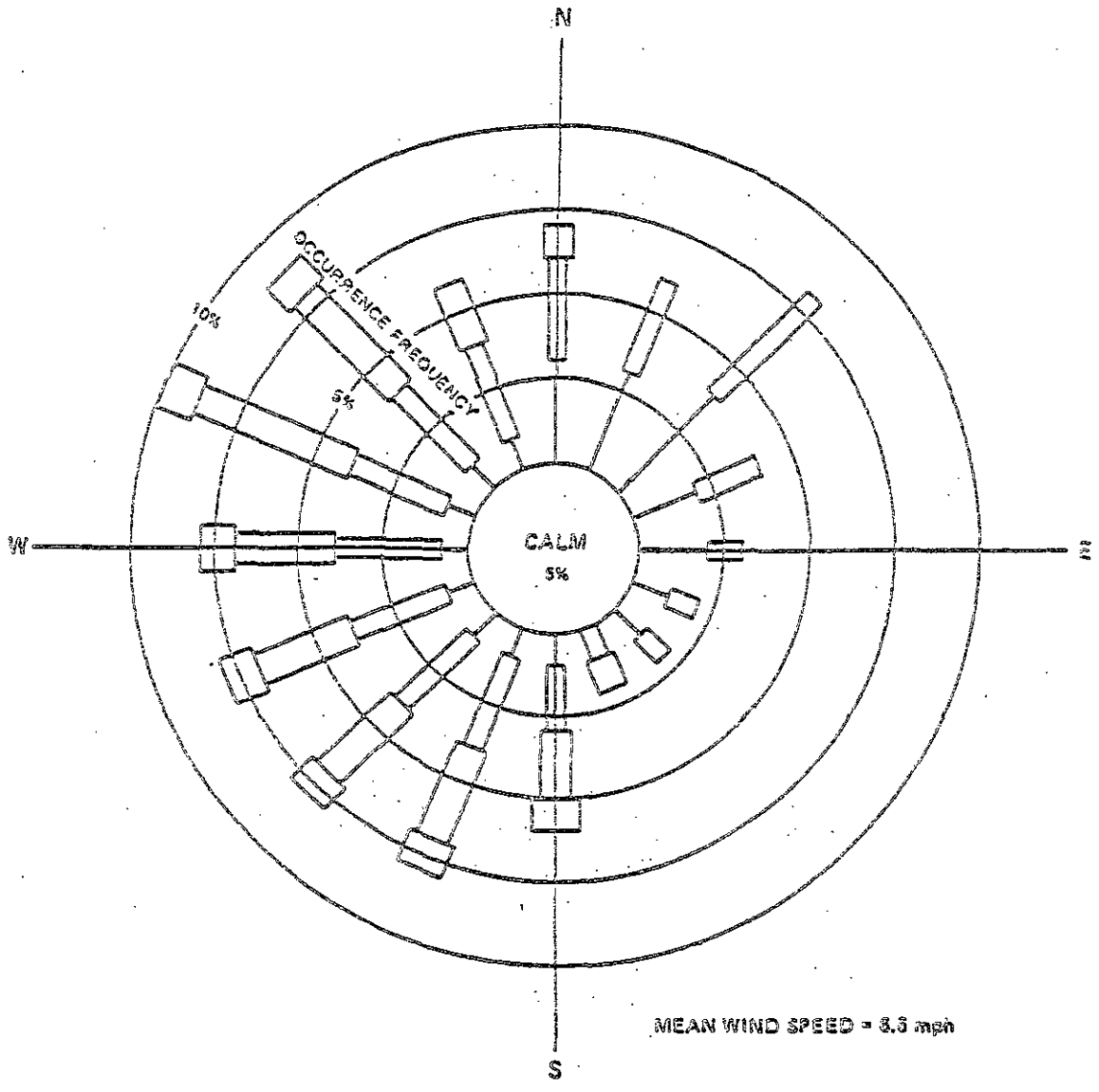
Meteorology

Air pollution transport is primarily affected by prevailing wind patterns. The dominant winds are onshore except in the winter. Figure 4-58 indicates the wind direction frequencies at Lindbergh Field, 1.5 miles north of the project site. Onshore flow dominates with a wide distribution of directions from south-southwest to north-northwest. Offshore flow is less frequent and blows from north-northeast. The onshore flow has moderate average wind speeds of 8 to 12 miles per hour (mph) while the offshore flow is weaker with average speeds of 2 to 4 mph. The onshore flow coming off the ocean is usually unpolluted.[2]

Local air pollution sources contribute to air quality degradation that can become significant when the onshore flow affects the foothill communities east of the metropolitan area. Whereas the moderate onshore flow rapidly ventilates the coastal corridor by day, a slow nocturnal return flow may allow for localized stagnation of pollutants, especially on cool, clear winter nights. There may be isolated carbon monoxide "hot spots" in traffic-intensive areas in the downtown area.[3]

In conjunction with the winds that control horizontal dispersion, there are two characteristic temperature inversions that affect the vertical depth through which any locally generated air pollutants are mixed. When the cool, onshore flow of marine air undercuts a large dome of warm, sinking air over the ocean, a marine/subsidence inversion is formed that creates an impermeable barrier that traps all pollutants within the marine air layer. As this layer moves inland and pollutants are added from urban activities without any dilution from above, the shallow layer becomes progressively more polluted. Hydrocarbons and oxides of nitrogen emitted mainly by vehicular sources in coastal areas react under sunlight, forming photochemical smog (mainly ozone) that can create unhealthful levels of air quality in foothill communities.[4]

A second characteristic inversion forms when the air near the ground cools at night by heat radiation while the undisturbed air aloft remains warm. A shallow radiation inversion forms, trapping surface-based emissions within a few hundred feet of the ground. These inversions may trap vehicular pollutants such as carbon monoxide (CO) or oxides of nitrogen near sources such as freeways, major intersections, or large parking facilities, creating localized health concerns.



Wind Rose at Lindbergh Field
Navy Broadway Complex Project

SS40001 1/90

Figure 4-58

Both inversions occur throughout the year, but their maximum effectiveness and impact are well separated seasonally. About 70 percent of all summer afternoons have marine/subsidence inversions that may cause degraded air quality in inland areas such as El Cajon or Alpine, while 60 percent of all winter nights have radiation inversions that may cause elevated CO levels around the project site.[5]

Air Quality

Ambient Air Quality Standards

Ambient air quality standards (AAQS) are the levels of air pollutant concentration considered safe to protect the public health and welfare. They are designed to protect people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Collectively, these are called "sensitive receptors." National AAQS were established by the Environmental Protection Agency (EPA) in 1971 for six air pollution constituents. States have the option to add other pollutants, to require more stringent compliance, or to include different exposure periods.[6] Standards applicable in California are shown in Figure 4-59.

Ambient Air Quality

Ambient air quality is described in terms of compliance with state and Federal standards. One requirement of the California Clean Air Act (1988) is for the California Air Resources Board (CARB) to establish criteria and designate areas of the state as attainment, nonattainment, or unclassified for any state standard. In June 1989, CARB adopted criteria and designations for each area based on those criteria. An attainment designation for an area signifies that pollutant concentrations did not violate the state standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the state standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria. The designation of attainment or nonattainment for each pollutant with respect to national standards is based on similar criteria as required by the Clean Air Act Amendments (1977).

The San Diego Air Basin is designated nonattainment for several pollutants. The entire Basin is designated nonattainment of state and national ozone standards, and state PM_{10} (particulate matter less than 10 microns in diameter) standards. The western half of the Basin is designated as nonattainment of state and national carbon monoxide standards and state nitrogen dioxide standards.

Baseline levels of air quality near the project site have been monitored by the San Diego Air Pollution Control District (APCD) for many years at the monitoring station on Island Avenue in downtown San Diego. Table 4.8-1 summarizes the air quality monitoring results from this station for the past 5 years. Specific AAQS exceedances are discussed below.

AMBIENT AIR QUALITY STANDARDS

	CALIFORNIA	FEDERAL	
AIR POLLUTANT	CONCENTRATION	PRIMARY (>)	SECONDARY (>)
Ozone	0.09 ppm, 1-hr. avg. >= *	0.12 ppm, 1-hr. avg.	0.12 ppm, 1-hr. avg.
Carbon Monoxide	9.0 ppm, 8-hr. avg. > a) 20 ppm, 1-hr. avg. >	9 ppm, 8-hr. avg. d) 35 ppm, 1-hr. avg.	9 ppm, 8-hr. avg. 35 ppm, 1-hr. avg.
Nitrogen Dioxide	0.25 ppm, 1-hr. avg. > f)	0.053 ppm, annual avg. e)	0.053 ppm, annual avg. e)
Sulfur Dioxide	0.05 ppm, 24-hr. avg. >= with ozone >= 0.10 ppm, 1-hr. avg. or TSP >= ug/m³, 24-hr. avg. 0.25 ppm, 1-hr. avg. > b)	0.03 ppm, annual avg. 0.14 ppm, 24-hr. avg.	0.50 ppm, 3-hr. avg.
Suspended Particulate Matter (PM10)	30 ug/m³, annual geometric mean > 50 ug/m³, 24-hr. avg. > c) **	50 ug/m³, annual g) arithmetic mean 150 ug/m³, 24-hr. avg.	50 ug/m³, annual g) arithmetic mean 150 ug/m³, 24-hr. avg.
Sulfates	25 ug/m³, 24-hr. avg. >=		
Lead	1.5 ug/m³, 30-day avg. >=	1.5 ug/m³, calendar quarter	1.5 ug/m³, calendar quarter
Hydrogen Sulfide	0.03 ppm, 1-hr. avg. >=		
Vinyl Chloride	0.010 ppm, 24-hr. avg. >=		
Visibility Reducing Particles	In sufficient amount to reduce the prevailing visibility to less than 10 miles at relative humidity less than 70%, 1 obs.		

a) Effective December 15, 1982. The standards were previously 10 ppm, 12-hour average and 40 ppm, 1-hour average.
b) Effective October 5, 1984. The standard was previously .5 ppm, 1-hour average.
c) Effective August 19, 1983. The standards were previously 60 ug/m³ TSP, annual geometric mean, and 100 up/m³ TSP, 24-hour average.
d) Effective September 13, 1985, standard changed from > 10 ug/m³ (>= 9.3 ppm) to > 9 ppm (>= 8.5 ppm).
e) Effective July 1, 1985, standard changed from > 100 ug/m³ (> .0532 ppm) to > .053 ppm (> .0534 ppm).
f) Effective March 9, 1987, standard changed from >= .25 ppm to > .25 ppm.
g) Effective July 1, 1987. The standards were previously:
Primary - Annual geometric mean TSP > 75 ug/m³, and 24-hour average TSP > 260 ug/m³.
Secondary - Annual geometric mean TSP > 60 ug/m³, and 24-hour average TSP > 150 ug/m³.

* ppm = parts per million by volume.
** ug/m³ = micrograms per cubic meter.

National & State Ambient Air Quality Standards

Navy Broadway Complex Project

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Figure 4-59a

AMBIENT AIR QUALITY STANDARDS (continued)

NOTES:

1. California standards, other than carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter — PM_{10}, are values that are not to be equaled or exceeded. The carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter — PM_{10} standards are not to be exceeded.

2. National standards, other than ozone and those based on annual averages or annual geometric means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25° C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

8. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

9. At locations where the state standards for oxidant and/or suspended particulate matter are violated. National standards apply elsewhere.

10. Measured as ozone.

TABLE 4.3-1

DOWNTOWN SAN DIEGO AIR QUALITY MONITORING
SUMMARY 1982-1986
(Number of days standards were exceeded, and maximums for periods indicated)

Pollutant/Standard	1983	1984	1985	1986	1987
Ozone					
1-HR $\geq$ 0.10 ppm[a]	15	17	23	12	8
1-HR > 0.12 ppm	5	3	5	2	1
1-HR $\geq$ 0.20 ppm	1	0	0	0	0
Max. 1-HR (ppm)	0.23	0.16	0.16	0.16	0.14
Carbon Monoxide					
1-HR > 20 ppm	0	0	0	0	0
8-HR > 9 ppm	0	0	0	0	
Max. 1-HR (ppm)	16.0	12.0	15.0	16.0	12.0
Max. 8-HR (ppm)	8.0	7.6	9.4	9.0	9.4
Nitrogen Dioxide					
1-HR $\geq$ 0.25 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.20	0.17	0.21	0.18	0.22
Sulfur Dioxide					
1-HR $\geq$ 0.25 ppm	0	0	0	0	0
24-HR $\geq$ 0.05 ppm	0	0	0	0	0
Max. 1-HR (ppm)	0.04	0.09	0.05	0.05	0.05
Max. 24-HR (ppm)	0.017	0.038	0.023	0.027	0.011
Total Suspended Particulates					
24-HR $\geq$ 100 ug/m^3	7/58[b]	11/61[b]	14/63[b]	13/59[b]	12/60[b]
24-HR > 260 ug/m^3	0/58[b]	0/61[b]	0/63[b]	0/59[b]	0/60[b]
Max. 24-HR (ug/m^3)	150	164	176	214	194
Lead Particulates					
1-MO $\geq$ 1.5 ug/m^3	0/12[b]	0/12[b]	0/12[b]	0/12[b]	0/61[b]
Max. 1-MO (ug/m^3)	0.82	0.60	0.38	0.28	.15
Sulfate Particulates					
24-HR $\geq$ 25 ug/m^3	1/58[b]	0/61[b]	0/54[b]	0/60[b]	ND[c]
Max. 24-HR (ug/m^3)	25.8	18.0	15.4	17.6	

a Changed to 0.09 in 1988.
b Number of days standard was exceeded/number of days sample was taken.
c No Data.

Source: California Air Resources Board, Summary of Air Quality Data, 1983-1987. San Diego APCD Island Avenue Station.

Ozone

During summer's longer daytime hours, plentiful sunshine provides the energy needed to fuel photochemical reactions between nitrogen dioxide and reactive organic compounds. Levels of ozone, a colorless toxic gas that irritates the lungs and damages materials and vegetation, exceed Federal and state standards throughout the Basin. The state standard (0.09 parts per million [ppm], 1 hour) was exceeded an average of 12 days each year at the Island Avenue Station. The less restrictive Federal standard (0.12 ppm, 1 hour) was exceeded an average of 3 days each yearduring 1983 through 1987. The stage one episode (or stage one "smog alert") (over 0.20 ppm/hr),during which hazards to persons with sensitive health can occur, was exceeded once during the 5-year period in 1983. The highest 1-hour ozone level was 0.23 ppm in 1983.[7]

Carbon Monoxide

Carbon monoxide (CO) is a colorless gas, produced almost entirely from automobiles, that interferes with the transfer of oxygen to the brain. From 1983 to 1986, the state and Federal 8-hour CO standard (over 9.0 ppm) was exceeded only once, in 1985. The state and Federal 1-hour CO standards (20.0 ppm and 35.0 ppm, respectively) were not exceeded from 1983 through 1987. The highest 1-hour CO level recorded during this period at the downtown San Diego monitoring station was 9.4 ppm in 1985 and 1987, well within Federal and state standards.[8]

Nitrogen Dioxide

Nitrogen dioxide is a reddish-brown gas that can cause breathing difficulties at high levels. The 1-hour state standard for nitrogen dioxide (over 0.25 ppm, 1 hour) was not exceeded at the Island Avenue Station from 1983 through 1987. The maximum daily nitrogen dioxide concentration measured during the last 5 years was 0.22 ppm in 1987.[9]

Total Suspended Particulates/Particulate Matter

The 24-hour standard for total suspended particulates (TSP) was exceeded on approximately 19 percent of the days monitored between 1983 and 1987. The maximum concentration during this period was approximately twice the standard. On July 1, 1987, the Environmental Protection Agency (EPA) replaced the TSP Standard with a new particulate standard known as PM_{10}. PM_{10} includes only particulate matter 10 microns or less in diameter. PM_{10} is not monitored at the Island Avenue Station. However, the entire air basin is designated as nonattainment for PM_{10} standards, so exceedances at this station would be expected.

State Implementation Plan

The California Air Resources Board (CARB) is the agency responsible for preparing and implementing an Air Quality Management Plan (AQMP). To do this, the CARB has compiled the State Implementation Plan (SIP), which outlines air quality conditions in each of the state's 14 air basins and details measures to achieve the National Ambient Air Quality Standards. In addition, the CARB has established more strict standards for some pollutants due to unique circumstances in California.

The SIP is compiled from air quality plan revisions prepared for each air basin by designated local agencies. In the San Diego Air Basin (SDAB), the Air Pollution Control District (APCD) is responsible for preparing and revising the basin's plans.

The current SIP for the San Diego Air Basin was adopted in 1982. The purpose of the SIP is to develop implementation strategies that will lead to attainment of Federal clean air standards. The San Diego Air Basin continues to be a nonattainment area for ozone and carbon monoxide. However, the SIP for San Diego acknowledged that the region would not likely become an attainment area by the target year, 1987, because of atmospheric conditions that draw polluted air from the South Coast Air Basin to the north into the San Diego Air Basin.[11]

Nevertheless, the SIP contained a number of strategies to reduce air pollutant emissions originating in the San Diego Air Basin. The SIP based its strategies on growth projections for population, employment, and housing. These projections are derived, in part, from adopted general plans. The projections used for the SIP are the San Diego Association of Governments (SANDAG) "Series V" growth projections prepared in 1980. The forecast projected a regionwide population of 2,454,000 in the year 1995. Based on the 1989 population level of 2,418,000, it is anticipated that the 1995 forecast level will be achieved by 1990. The SIP is in the process of being updated to reflect current and expected growth projections. SANDAG Series VII growth projections, which have not yet been adopted, are expected to be the basis for the updated SIP.[13,14,15]

SANDAG is the agency responsible for planning transportation control measures aimed at improving air quality and coordinating the implementation of these measures by local governments. Table 4.8-2 describes four transportation tactics developed by SANDAG that were included in the 1982 SIP for the San Diego Air Basin.

The new SIP is due to CARB in 1991.[16] According to SANDAG and the CARB, the primary means that would be used to reduce emissions within the San Diego Air Basin would be to encourage a reduction in single-occupancy vehicles through ridesharing and public transit.[17,18]

4.8.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

A project will normally have a significant effect on the environment if it will violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation or expose sensitive receptors to substantial pollutant concentrations.[19]

The approval of the proposed project would result in increased stationary and mobile sources in the basin. Stationary sources include short-term emissions onsite from construction activities and long-term stationary-source emissions resulting from offsite electrical power generation, natural gas consumption onsite and equipment and materials required by the land uses associated with the completed project. Mobile source considerations include short-term construction activities and long-term traffic generation. The proposed commercial land uses impact air quality almost exclusively through vehicular traffic generated by the development. Generally, such impacts occur both regionally and on a local scale. Regionally, personal commuting, hotel visitor traffic and commercial service trips will add to regional trip generation and increase the vehicle miles traveled (VMT) within the San Diego Air Basin. Locally, traffic within the project vicinity, especially during peak hour traffic, will be added to the local roadway system. The most adverse scenario would be with a congested traffic condition occurring during periods of poor atmospheric ventilation. If this condition occurs there will be a definite potential for the formation of micro-scale air pollution "hot spots" within the project vicinity.

TABLE 4.8-2

1982 STATE IMPLEMENTATION PLAN
TRANSPORTATION TACTICS (T1-T4)

T-1 Ridesharing

- Increase Level of Rideshare Matching Service
- Expand Employer Promotion
- Expand Vanpools
- Expand Subscription Bus Service
- Taxipool

T-2 Transit

- Increase Frequency of Service
- Increase Service Area Coverage
- Decrease Transit Travel Times
- Reduce Transit Fares
- Increase Express Bus Service
- Construct Light Rail Transit
- Restructure Transit Routes
- Increase Transit Attractiveness and Convenience

T-3 Bicycling

- Bicycle Lanes and Paths
- Bicycle Parking
- Showers and Lockers for Bicyclists
- Bicycle Racks on Buses
- Direct Subsidy to Bicycle Commuters

T-4 Intercity Bus and Rail

- Increase Frequency of Rail Service
- Decrease Rail Travel Time
- Increase Frequency of Intercity Bus Schedule

The following impact discussion is organized into two general categories for ease of presentation: short-term impacts (fugitive dust and construction equipment emissions) and long-term impacts (stationary and mobile sources).

Short-Term Emissions

The preparation of the project site for building construction would produce two types of air contaminants: exhaust emissions from construction equipment and motor vehicles traveling to the site, and fugitive dust generated as a result of soil movement. These construction impacts could be expected during each phase of development. The emissions produced during grading and

construction activities, although of short-term duration, could be troublesome to workers and adjacent developments, even if prescribed wetting procedures are followed.

Exhaust Emissions From Construction Equipment and Vehicles

Heavy-duty equipment emissions are variable because of day-to-day differences in construction activities and equipment used. Typical emissions for construction equipment were obtained from the Environmental Protection Agency, "Compilation of Air Pollution Emission Factors, Volume I: Mobile Sources," September 1985. Assumptions regarding the type of construction equipment to be used during each phase of construction were based on an environmental impact report prepared for a 700,000-square-foot building in Los Angeles.[20] Appendix E contains the heavy-duty equipment emission factors. Air pollutant emissions for each alternative are given in Table 4.8-3. The amount of pollutants generated by construction equipment indicated in Table 4.8-3 assumes equipment is operating 8 hours each day and all equipment is assumed to be operating at the same time. Also, the phases would occur independent of one another and the total amount of emissions generated for each alternative would occur over several years. Because the emissions would be temporary and would not likely contribute substantially to the exceedance of any air quality standards, the impact would not be significant. Alternative D would generate the greatest amount of construction equipment emissions, followed by Alternative B, Alternatives A and F, Alternative C, and Alternative E. Alternative G would not generate any construction equipment emissions.

Fugitive Dust Emissions

Construction activities are a source of fugitive dust that may have a substantial temporary impact on local air quality. Emissions are associated with demolition, ground excavation and site preparation. Dust emissions vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. The quantity of fugitive dust generated is proportional to the silt content of the soil (that is, particles smaller than 75 microns in diameter) and inversely proportional to the square of the soil moisture. Based on the U.S. EPA-42 emission factor, typical dust lofting rates are 1.2 tons of fugitive dust per month per acre disturbed.[21] However, this factor does not take into account the relatively high water table at the Navy Broadway Complex, which results in moister soil and less dust generation. Dust control through regular watering and other fugitive dust abatement measures required by the San Diego Air Pollution Control District (APCD) can reduce levels from 50 to 75 percent. Dust emission rates therefore depend on the length of the construction activities and the care with which dust abatement procedures are implemented.

If the uncontrolled dust emission factor is applied to the 15.6-acre site for Alternatives A, B, E, and F, an estimated 18.7 tons of fugitive dust could be generated for each month of construction activity. However, this amount assumes the entire site would be under construction simultaneously and no watering or other dust-palliative measures will be used. In reality, only one-fourth of the site would be under construction at any one time, so the maximum dust generation (not considering the higher moisture content of onsite soils) would be approximately 4.7 tons per month. With dust control measures, the total is reduced to about 2 tons per month of construction activity. Alternative C would generate substantially less dust than Alternatives A, B, and E since the two major buildings on Blocks 1 and 2 would be rehabilitated and not demolished. Alternative D would generate additional fugitive dust at the offsite location. Alternative G would not generate any construction-related fugitive dust. While the overall dust generation is substantial for Alternatives A, B, C, D and E, the daily rate of fugitive dust generation is well

TABLE 4.8-3

ESTIMATED HEAVY-DUTY CONSTRUCTION EQUIPMENT EMISSIONS

	Pollutant (lb/day)				
	Carbon Monoxide	Exhaust Hydrocarbons	Nitrogen Oxides	Sulfur Oxides	Particulates
Alternative A					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	933	141	2,183	219	146
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,026**	**306**	**4,751**	**477**	**318**
Alternative B					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	1,098	166	2,568	258	172
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,191**	**331**	**5,136**	**516**	**344**
Alternative C					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	77	12	180	18	12
Phase 3 (1998-2000)	115	17	270	27	18
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**1,176**	**178**	**2,761**	**277**	**185**
Alternative D					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	380	58	899	90	60
Phase 3 (1998-2000)	1,667	252	3,898	392	261
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**3,031**	**459**	**7,108**	**714**	**476**
Alternative E					
Phase 1 (1996-1998)	**194**	**29**	**455**	**46**	**30**
Alternative F					
Phase 1 (1992-1994)	380	58	899	90	60
Phase 2 (1995-1997)	109	16	257	26	17
Phase 3 (1998-2000)	933	141	2,193	219	146
Phase 4 (2001-2003)	604	91	1,412	142	95
Total	**2,026**	**306**	**4,751**	**477**	**318**
Alternative G	**0**	**0**	**0**	**0**	**0**

Source: U.S. EPA-42 1985 and Michael Brandman Associates 1988.

within the dispersive capacity of the air basin without any adverse air quality impacts. It should also be noted that much of this dust is comprised of large particles that are easily filtered by human breathing passages and settle out rapidly on nearby foliage, parked cars and other horizontal surfaces. The dust thus comprises more of a nuisance rather than any potentially unhealthful air quality impact.

In addition to dust, demolition of onsite structures could result in the release to the airstream of asbestos particles. This issue is addressed in Section 4.11.

Long-Term Mobile-Source Emissions

Regional Air Quality

Emissions from vehicle usage for all the alternatives were calculated in this study with the California Air Resources Board (CARB) computer model. The Urbemis 2 program was specifically designed to quantify the number of vehicles generated by a given land use and the associated emissions. Input variables include the types and extent of the land uses, trip generation rates, wind speed, and temperature. Based on the proposed land uses, as well as other data provided by the traffic consultant, the number of vehicle trips and pollutant emissions were calculated. The projected vehicle trips and emissions are summarized in Table 4.8-4.

TABLE 4.8-4

NET MOBILE SOURCE POLLUTANT EMISSIONS AT PROJECT BUILDOUT

Alternative	Total Vehicle Trips[a]	Net Emissions[a] (lbs/day) TOG[b]	CO[c]	NOx[d]
A	23,000	270	2,405	445
B	25,100	315	2,810	525
C	17,800	180	1,590	280
D	29,200	425	3,800	725
E	9,400	20	190	50
F	23,000	270	2,405	445
G	10,700	0	0	0

a Net vehicle emissions are based on alternative land uses' vehicle-related emissions less the existing (Alternative G) land uses' vehicle-related emissions.
b Total organic gases.
c Carbon Monoxide.
d Nitrogen oxides.

Source: URBEMIS 2 (CARB 1987) and Michael Brandman Associates Analysis 1989.

Alternative A would have the potential to generate 270 pounds per day of total organic gases, 2,406 pounds per day of carbon monoxide and 445 pounds per day of nitrogen oxides. Alternative D would generate more total vehicle trips and vehicle-related emissions than Alternatives A, B, C, E and F. Alternative G (no project) would not generate any additional vehicle-related emissions. Reactive organic gases are a component in the formation of ozone. The model slightly overestimates the quantity of reactive organic gases generated by the project, since total organic gases (TOG) is the category that is quantified by the computer model, and reactive organic gases is a subset of TOG. Ozone measurements taken over the past 5 years at the Island Street Station in Downtown San Diego have exceeded both the state and federal standards for ozone. The project would contribute to an already existing violation of the ozone standard; however, the significance of its impact must be considered in the context of air quality planning, discussed on pages 4-170 through 4-172.

Local Air Quality

The impact of the proposed project alternatives on local air quality with respect to carbon monoxide was assessed through the use of Caltrans Caline 4 Air Quality Model, which allows microscale carbon monoxide concentrations to be estimated along a roadway corridor or intersection. Figure 4-60 shows the locations for which the Caline 4 model was completed. The locations were selected because they were the areas with the highest concentration of traffic near the project site and adjacent to sensitive receptors. Areas along the waterfront were not modeled because traffic volumes are less and, as explained below, the locations selected with higher volumes did not exceed Federal or state standards for carbon monoxide.

Computer readouts for the Caline 4 model appear in Appendix E, and Table 4.8-5 presents the results of the analysis for the worst-case wind angle and windspeed condition. Input to the model was based on the following assumptions and methodology:

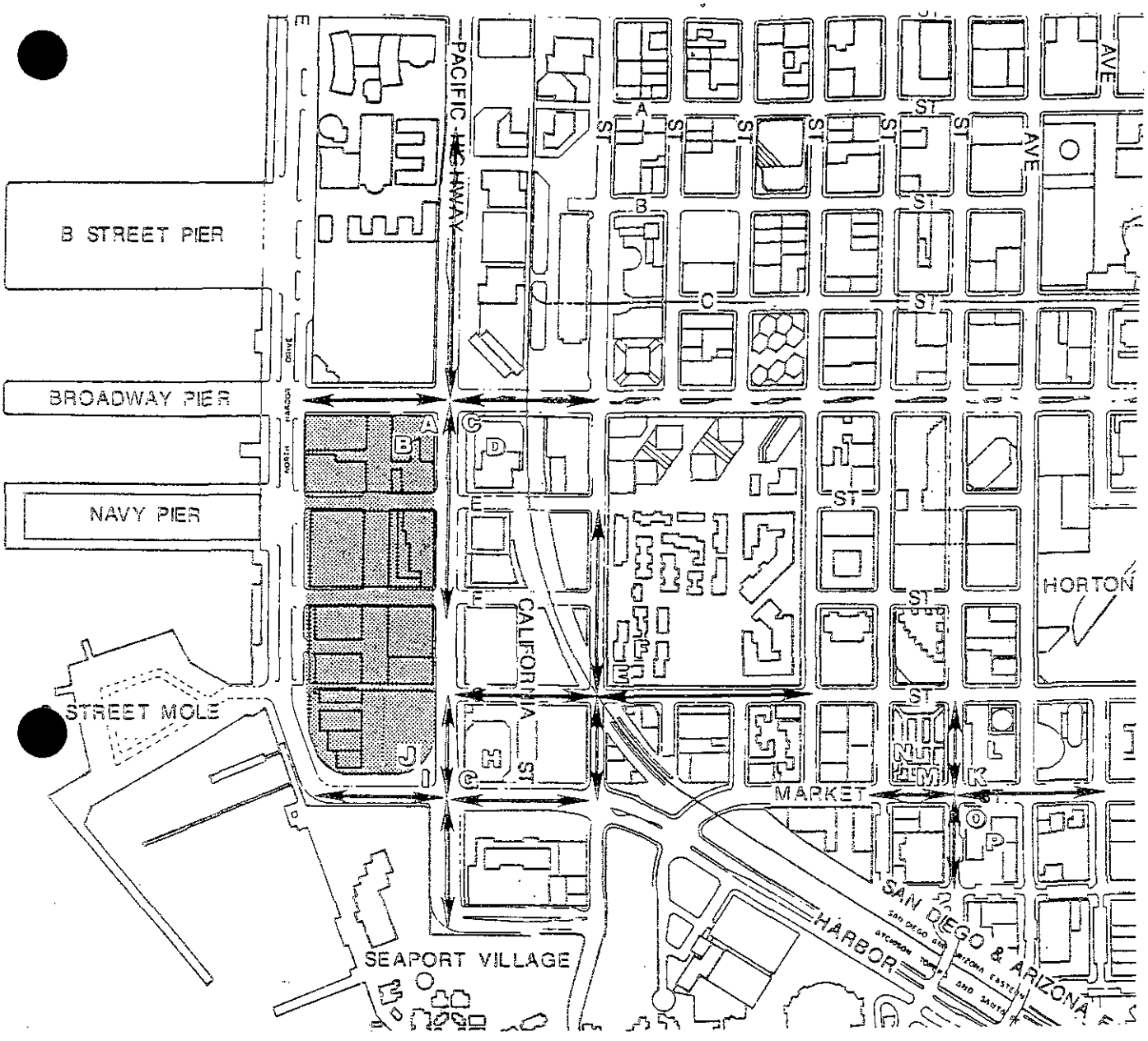
- The calculations assume a meteorological condition of almost no wind (1.0 meters/second), a flat topographical condition between the source and receptor and a mixing height of 1,000 meters.

- CO concentrations are calculated for the 1-hour averaging period, and then compared to the state and Federal 1-hour standards.

- Concentrations are given in parts per million (ppm) at each of the receptor locations indicated in Figure 4-60. The receptor locations indicate sensitive receptors (i.e., condominiums, hotel, park, etc.).

- The average travel speed (most adverse-case assumption) was assumed to be 20 miles per hour on the roadways analyzed. Emission factors provided by the CARB for 1989 were used for existing conditions and emission factors for 2002 were used for all alternative conditions (EMFAC7C, CARB 1987).

- Ambient (background) CO concentrations that represent the second worst-case CO concentration at the San Diego - Island Avenue monitoring station were added to the model results. The background concentration is 11.0 ppm for the 1-hour average (CARB 1987).



Legend

- Project Site
- Indicates Roadway Link Modeled
- A — Receptor Locations

3640001 1/90

Caline Modeling Locations

Navy Broadway Complex Project

0 175 350 FEET

NORTH

TABLE

MAXIMUM CARBON MONOXIDE CONCENTRATIONS[a]
(Parts per Million)

Intersection	Receptor Location on Figure 4-60	Carbon Monoxide Concentrations (1 hr)[b] Existing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
Broadway/Pacific Coast Highway									
Receptor 1	A	12.1	12.5	12.5	12.5	12.3	12.5	12.5	12.4
2	B	11.7	11.9	11.9	11.9	11.8	11.9	11.9	11.9
3	C	12.1	12.5	12.5	12.5	12.3	12.5	12.5	12.4
4	D	11.7	11.9	11.9	11.9	11.8	11.9	11.9	11.9
G Street/Kettner St.									
Receptor 1	E	11.8	12.1	12.1	12.1	12.0	12.1	12.1	12.0
2	F	11.5	11.7	11.7	11.7	11.6	11.7	11.7	11.7
Pacific Coast Highway/ Market Street									
Receptor 1	G	12.5	12.5	12.5	12.5	12.3	12.5	12.5	12.1
2	H	12.0	12.0	12.0	12.0	11.9	12.0	12.0	11.7
3	I	12.4	12.5	12.4	12.5	12.3	12.5	12.4	12.1
4	J	11.9	12.0	12.0	12.0	11.8	12.0	12.0	11.7

TABLE 4.8-5 (continued)

Intersection		Receptor Location on Figure 4-60	Carbon Monoxide Concentrations (1 hr)[b] Existing	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F	Alternative G
Market/Front Street										
Receptor	1	K	12.3	12.5	12.4	12.4	12.3	12.4	12.4	12.3
	2	L	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8
	3	M	12.3	12.5	12.4	12.4	12.3	12.4	12.4	12.3
	4	N	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8
	5	O	12.3	12.5	12.4	12.4	12.3	12.3	12.4	12.3
	6	P	11.9	11.9	11.9	11.9	11.8	11.9	11.9	11.8

a The federal standards are 35 ppm (1-hour average) and state standards are 20 ppm (1-hour average).

b Concentrations of carbon monoxide in ppm. Background CO levels of 11.0 ppm have been added to the 1-hour average concentrations.

Source: Korve Engineering, Inc. and Michael Brandman Associates, Inc. 1989.

As indicated in Table 4.8-5, carbon monoxide concentrations at the 16 receptor locations for all of the alternatives would not violate state or Federal 1-hour standards. Therefore, none of the project alternatives would have a significant impact on local air quality.

Long-Term Stationary Source Emissions

Stationary source emissions were quantified based on the various proposed land uses and gas and electric consumption rates provided by the San Diego Gas and Electric Company (Sigman 1988 and Schlu 1989). Emission factors were obtained from the U.S. Environmental Protection Agency's Compilation of Air Pollutant Emission Factors, AP-42. Appendix F contains the computer runs for these emissions. The stationary emissions for the proposed project alternatives are summarized in Table 4.8-6.

Consistency With the State Implementation Plan

According to the San Diego APCD, the CARB will be responsible for determining whether the project is consistent with the SIP.[22] CARB indicates that measures to substantially reduce the number of single-occupancy vehicles would be the primary measure of consistency. This is the primary means by which the updated SIP will reduce emissions, so incorporation of such measures would determine conformance with not only the 1982 SIP, but also with the updated SIP currently in preparation.[23]

The U.S. Environmental Protection Agency (EPA) has indicated that because the San Diego Air Basin is a nonattainment area for air quality, all reasonable efforts should be made to not increase vehicular air emissions. In discussions with the EPA, it was agreed that no net increase in vehicle emissions is a desirable goal, but may not be feasible; nevertheless, a reduction in potential emissions to the maximum extent practical is strongly encouraged. EPA acknowledged that conformance with the SIP is a decision made on the local level.[24]

The proposed mixed-use alternatives (A, B, C, D, F) would generate, without mitigation, between 28,000 (Alternative C) and 42,000 (Alternative B) daily vehicle trips, with Alternatives A, D, and F each generating approximately 38,000 trips. Including offsite Navy offices, Alternative D would generate approximately 52,000 daily trips. Approximately 40 percent of these trips (16,000) would be associated with Navy-personnel relocated to the site (except Alternative D, in which 30 percent would be Navy personnel related). These personnel are already located in the San Diego Air Basin, and would simply be relocated to the Navy Broadway Complex. This consolidation provides substantial opportunities to reduce regional emissions loads associated with commute trips by these personnel, as discussed below.

Vehicle trips that are new to the San Diego Air Basin would constitute the remaining approximately 60 percent of the project's trip generation. A Travel Demand Management (TDM) plan (see Section 4.2.3, page 4-70) will be implemented as part of the project to substantially reduce single-occupancy vehicle usage at the site. In addition, the site is located within walking distance of an AMTRAK rail station, 10 bus lines, and two light-rail transit lines (one is under development). This provides a substantial opportunity for utilizing mass transit and reducing single-occupancy vehicle use. By consolidating Navy personnel from a number of smaller, dispersed facilities to a single facility proximate to these transit opportunities, single-occupancy vehicle usage by Navy personnel would be substantially reduced in the air basin, with estimated reductions of 40 percent. Please see Section 4.2.3, page 4-60, for a discussion of TDM-related reductions.

TABLE 4.8-6

PROJECTED STATIONARY SOURCE EMISSIONS[a]
(lbs/day)

Alternative	Pollutant CO	NOx	SOx	Particulates	HC
A	30.04 (14.32)	161.30 (74.83)	14.10 (6.08)	4.74 (2.04)	2.90 (1.60)
B	32.72 (17.00)	176.10 (89.80)	15.50 (7.48)	5.22 (2.52)	3.12 (1.82)
C	23.08 (7.36)	122.82 (36.52)	10.44 (2.42)	3.52 (0.82)	2.38 (1.08)
D	31.50 (15.78)	166.60 (80.3)	13.92 (5.90)	4.70 (2.00)	3.36 (2.06)
E	10.70 (-5.02)	59.22 (-27.08)	5.62 (-2.40)	1.88 (-0.82)	0.82(-0.48)
F	32.72 (17.00)	176.10 (89.80)	15.50 (7.48)	5.22 (2.52)	3.12 (1.82)
G	15.72 (0)	86.30 (0)	8.02 (0)	2.70 (0)	1.30 (0)

a Numbers in parentheses indicate the net emissions over Alternative G (no action).

Source: U.S. EPA-42 1985 and San Diego Gas and Electric 1988 and 1989.

Based on City of San Diego estimates of TDM effectiveness, the TDM measures proposed for this project and the project's proximity to mass transit are estimated to reduce daily vehicle trips from each of the proposed land uses by the following amounts:

Land Use	Estimated Trip Reduction by TDM
Office	60 percent
Hotel	25 percent
Retail	15 percent

Implementation of the TDM plan would reduce the number of trips by approximately 40 percent, which would result in a substantial reduction in potential vehicular emissions. After application of the TDM plan, trips associated with the mixed-use alternatives (A, B, C, D, and F) would range from 17,800 (Alternative C) to 25,100 (Alternative B), with Alternatives A, D, and E at approximately 23,000. Alternative D (including its offsite component) would generate a total of 30,200 trips. If the existing 16,000 vehicles that are associated with Navy personnel located throughout the air basin are discounted, the net increase in daily vehicle trips would be reduced to 2,800 and 7,100 at Navy Broadway Complex, and up to 14,200 with the onsite and second site component of Alternative D (see Table 4.8-7). These net trip levels assume that all of the

remaining vehicles are new to the air basin, a premise which probably overstates the new vehicle travel.

TABLE 4.8-7

NET INCREASE IN VEHICULAR TRAFFIC

Mixed-Use Alternative	Daily Trips After TDM	Less Trips Associated With Navy Personnel	Net New Trips
A	23,000	16,000	7,100
B	25,100	16,000	9,100
C	17,800	16,000	2,800
D (onsite only)[a]	21,700	16,000	5,700
(onsite and offsite)	30,200	16,000	14,200
F	23,000	16,000	7,000

a Does not include offsite Navy offices.

Source: Michael Brandman Associates 1990 and Korve Engineers 1990.

According to the CARB, the incorporation of measures into the project which substantially reduce single-occupancy vehicles would demonstrate consistency with the SIP.[23] As with the CARB and as stated previously, the EPA strongly encourages a reduction in single-occupancy vehicles to the maximum extent practical. The reduction in vehicle trips achieved by implementing the TDM plan would be considerable. There are no known measures to cause a further reduction. Since the Navy Broadway Complex Project would be consistent with the current (1982) and proposed SIP, no significant impacts to air quality would be caused by the project.

4.8.3 MITIGATION MEASURES

The following mitigation measure would be applicable to Alternatives A, B, C, D, E, and F.

Short-Term (Construction) Emissions

- Fugitive dust will be controlled by regular watering as required by the SDAPCD and through erosion control and street washing to reduce dirt spillage onto traveled roadways near the construction site. This measure will be implemented by the project developer and will be included in construction bid packages.

Long-Term Emissions

The primary means by which long-term emissions will be reduced is through a Travel Demand Management (TDM) program. The TDM program for the proposed alternatives is outlined in detail in Section 4.2.3, page 4-60.

ENDNOTES:

1. National Oceanic and Atmospheric Administration (NOAA), 1986.
2. Ibid.
3. San Diego Air Pollution Control District (APCD), 1982.
4. Ibid.
5. Ibid.
6. Ibid.
7. California Air Resources Board, 1983, 1984, 1985, and 1986.
8. Ibid.
9. Ibid.
10. Ibid.
11. San Diego APCD, op. cit.
12. Davis, San Diego APCD, personal communication, 1989.
13. Ibid.
14. Valerio, San Diego Association of Governments (SANDAG), personal communication, 1989.
15. Wyman, California Air Resources Board, personal communication, 1989.
16. Davis, op. cit.
17. Valerio, op. cit.
18. Wyman, op. cit.
19. State of California, California Environmental Quality Act, Statutes and Guidelines, 1986.
20. Michael Brandman Associates, Draft Environmental Impact Report for the California Receptor Center - Los Angeles County, July 1988.
21. U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors (AP-42), September 1985.
22. Davis, op. cit.
23. Wyman, op. cit.
24. Tomsavic, Environmental Protection Agency, personal communication, 1989.
25. Wyman, op. cit.

4.9 NOISE

4.9.1 AFFECTED ENVIRONMENT

Background

People are often subjected to a multitude of sounds in the urban environment. Many of these sounds are by-products of desirable and necessary day-to-day activities. Some of these sounds, such as from cars and trucks, jet aircraft, and air conditioners, are undesirable and may be detrimental to health. These sounds are generally referred to as noise.[1]

The human ear is not equally sensitive to sound at all frequencies, so a specific frequency-dependent rating scale was devised to relate noise to human sensitivity. An A-weighted decibel (dBA) scale performs this compensation by discriminating against frequencies not discernible to the human ear. The basis for comparison is the faintest sound audible to the average, young male, human ear at the frequency of maximum sensitivity.[2]

Using the dBA scale as a base, noise metrics have been developed that attempt not only to measure noise levels but also to adjust those levels according to their duration, frequency, and time between single noise events. A number of Federal agencies, including the Department of Defense, have adopted the day-night average noise level or Ldn as their noise metric to evaluate noise compatibility. The Ldn weights noise events occurring during the nighttime (10:00 p.m. to 7:00 a.m.) hours by 10 dBA, to account for increased sensitivity to noise during that period.[3]

While the Federal government has adopted the Ldn metric for project evaluation, the State of California and the City of San Diego have adopted the Community Noise Equivalent Level (CNEL) as their noise metric.[4] CNEL applies an additional 5 dB penalty to sounds occurring in the evening (7:00 p.m. to 10:00 p.m.). However, the two metrics are essentially equal and used interchangeably. The noise analysis for the Navy Broadway Complex uses the CNEL metric.

Noise Standards

State of California Standards and Guidelines

The State of California has adopted noise standards in areas of regulation not preempted by the Federal government. State standards regulate noise levels of motor vehicles, freeway noise affecting classrooms, noise insulation, occupational noise control, and airport noise. The state has also developed land use compatibility guidelines for community noise environments.[5] None of these state standards would apply to the project because the site is being considered for office, commercial, and hotel uses. However, as a guideline for hotel uses, an interior noise level of 45 dB CNEL in habitable rooms is a residential noise standard.

The State Office of Noise Control has published guidelines for noise and land use compatibility. The objective of the guidelines is to provide a community noise environment that the state deems to be generally acceptable. Office, business commercial, and professional uses are normally acceptable in areas of 70 dB CNEL or less and conditionally acceptable in areas of up to 78 dB CNEL if sound attenuation is provided.[5]

The City of San Diego

The City of San Diego's General Plan provides applicable noise criteria for land use compatibility for transportation sources within its circulation element, as shown in Figure 4-61. Hotels are compatible in areas of 65 dB CNEL or less, office buildings are compatible in areas of 70 dB CNEL or less, and commercial-retail uses are compatible in areas of 75 dB CNEL or less.[7]

Existing Noise Levels

Navy Broadway Complex Site

The dominant noise source in the area is roadway traffic and rail movements. The area is also exposed to aircraft noise from Lindbergh Field, located 1.5 miles to the north, but the levels are not significantly above ambient levels because the site is not directly beneath the primary runway flight tracks. AMTRAK rail lines are located immediately east of the project site. Rail lines, used an average of twice per year by the Navy, also cross through the site along E Street.

A noise survey was conducted by MBA staff on July 6 and 7, 1988 to document the existing noise environment in the project vicinity. Noise measurements were conducted at four sites for a total of 8 hours. The noise monitoring locations are identified in Figure 4-62, and the results are summarized in Table 4.9-1. The Lmax (maximum sound level recorded during the noise measurement duration) ranged from 72.0 dB to 84.0 dB. Noise sources contributing to the Lmax were those typical of an urban environment (i.e., semi-trucks, buses, a fire truck with siren, and airplanes).

Traffic Noise

Existing traffic noise along the major roadway was calculated using the Federal Highway Traffic Noise Prediction Model.[8] This model was modified to generate CNEL and 24-hour average noise level (Leq) values. Model input data were derived from the traffic analysis (Section 4.2, page 4-35) and from field observations. Input includes ADT levels; day/night percentages of autos, medium, and heavy trucks; vehicle speeds; ground attenuation factors; and roadway widths.

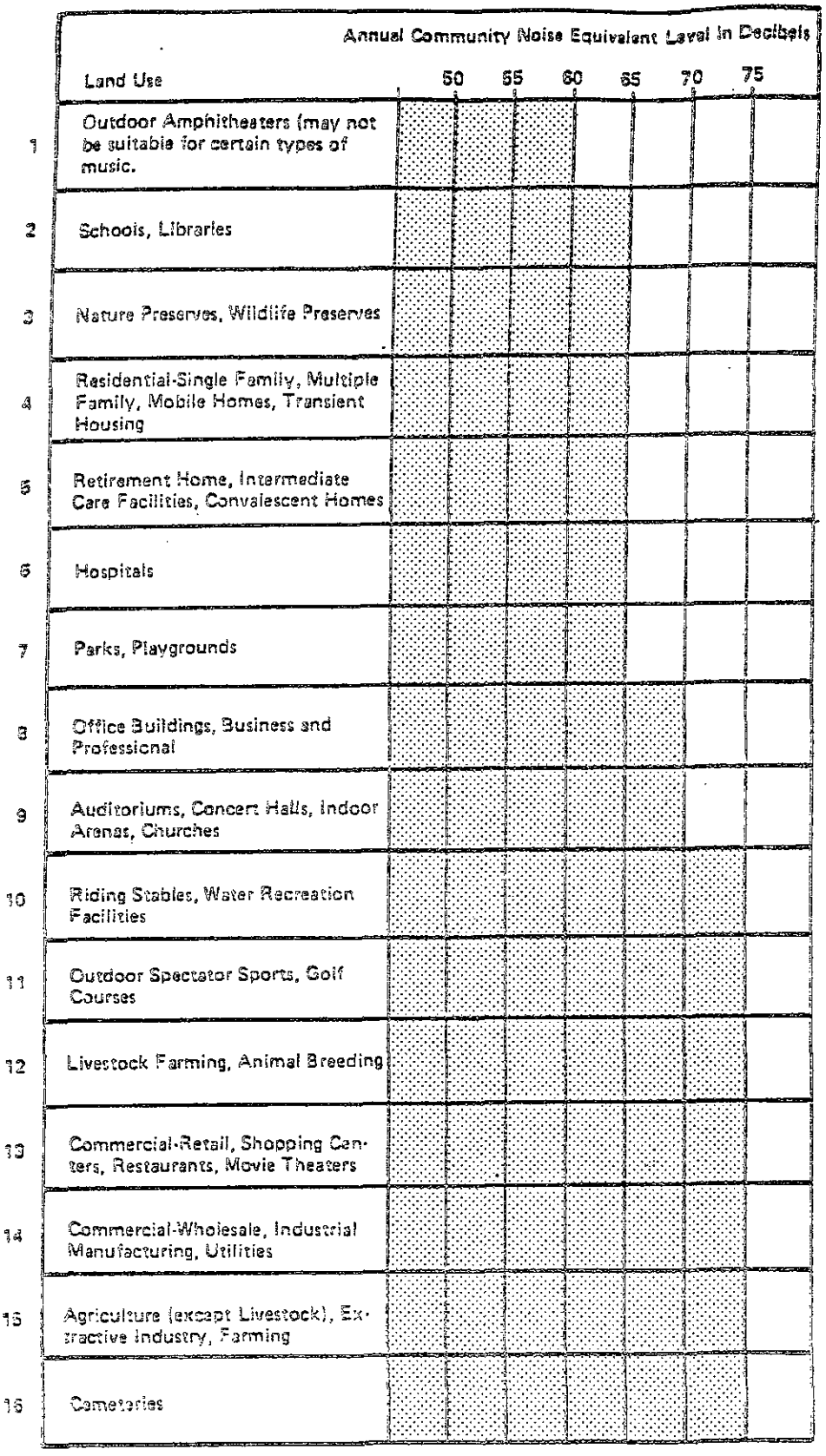
The distances from existing roadway centerlines to the 60, 65, and 70 dB CNEL and Leq are provided in Table 4.9-2. The noise contour distances describe worst-case conditions since they do not take into account any obstructions to the noise path (i.e., walls, buildings, etc.). The existing 70 dB CNEL and Leq do not extend onto the project site.

Lindbergh Field Aircraft Noise

According to the Lindbergh Field Quarterly Noise Report (for the period ending March 31, 1988), the project site is located outside the 65 dB CNEL and thus is not subject to significant aircraft noise impacts.[9]

4.9.2 ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ALTERNATIVES

The potential noise impact of the project can be divided into short- and long-term impacts. Short-term impacts are due to noise generated by equipment during the construction phase. Long-term impacts are associated with the generation of project traffic along both existing and proposed



Source: City of San Diego Planning Department

City of San Diego Noise
Land Use Compatibility Chart
Navy Broadway Complex Project

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Figure 4-61

Legend

① Noise Monitoring Locations

Project Site

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Noise Monitoring Locations
Navy Broadway Complex Project

0 225 450 FEET

NORTH

TABLE 4.9-1

NOISE MEASUREMENT RESULTS

Location	Lmax[a]	L_{10}[b]	L_{33}[c]	L_{50}[d]	L_{90}[e]
Site 1					
July 6, 1988 (5:07-6:07 p.m.)	84.0	69.0	65.0	63.5	59.5
July 7, 1988 (1:13-2:13 p.m.)	79.0	72.0	69.0	67.0	62.0
Site 2					
July 6, 1988 (12:35-1:35 p.m.)	82.5	70.5	66.5	64.5	60.0
July 7, 1988 (12:01-1:01 p.m.)	80.5	68.0	64.0	62.5	58.5
Site 3					
July 6, 1988 (2:30-3:30 p.m.)	84.0	69.0	65.0	63.0	58.0
July 7, 1988 (7:59-8:59 a.m.)	72.0	76.0	67.0	62.0	57.0
Site 4					
July 7, 1988 (9:13-10:13 a.m.)	77.5	62.5	58.5	57.0	53.5
July 7, 1988 (10:17-11:17 a.m.)	77.5	63.5	60.0	58.5	55.5
Range	72.0-84.0	62.5-76.0	58.5-69.0	57.0-67.0	53.5-62.0

a Lmax is the maximum sound level recorded during the noise measurement duration.
b L_{10} is the sound level exceeded 10 percent of the noise measurement duration.
c L_{33} is the sound level exceeded 33 percent of the noise measurement duration.
d L_{50} is the sound level exceeded 50 percent of the noise measurement duration.
e L_{90} is the sound level exceeded 90 percent of the noise measurement duration; it is also considered the background noise level.

Source: Michael Brandman Associates 1989.

TABLE 4.9-2

EXISTING ROADWAY NOISE LEVELS (LEQ-P.M. PEAK)[a]

Roadway Segment	Distance to CNEL From Roadway Centerline (ft.) 55 dB	65 dB	72 dB	LEQ at[b] 50 feet (dB)
Harbor Drive				
North of Grape Street	3,515	353	<50	71.5
Grape Street to Ash Street	2,264	218	<50	69.9
Ash Street to Broadway	1,481	150	<50	68.3
South of Broadway	619	62	<50	65.5
Ash Street				
West of Pacific Highway	586	61	<50	64.5
Pacific Highway to India	439	46	<50	63.6
Broadway				
West of Pacific Highway	956	99	<50	66.4
Pacific Highway to India	1,453	147	<50	68.2
Grape Street				
West of Pacific Highway	1,042	105	<50	67.3
Pacific Highway to India	1,083	109	<50	67.5
Hawthorne Street				
West of Pacific Highway	929	94	<50	66.8
Pacific Highway to India	1,073	108	<50	67.5
India Street				
North of Hawthorne	248	28	<50	61.1
Hawthorne to Ash Street	258	28	<50	61.3
Ash to Broadway	207	<50	<50	60.3
G Street to Market	140	<50	<50	58.6
Kettner Boulevard				
North of Hawthorne	346	37	<50	62.6
Hawthorne to Ash	269	29	<50	61.4
Ash to Broadway	305	33	<50	62.0
Broadway to F Street	181	<50	<50	59.7
F Street to Market	289	31	<50	61.8
Market Street				
West of Pacific Highway	786	81	<50	65.8
East of Kettner Boulevard	672	70	<50	65.1

TABLE 4.9-2 (continued)

Roadway Segment	Distance to CNEL From Roadway Centerline (ft.) 55 dB	65 dB	72 dB	LEQ at[b] 50 feet (dB)
Laurel				
Pacific Highway to Kettner Blvd.	2,171	218	<50	70.2
Pacific Highway				
North of Hawthorne	2,343	237	<50	70.0
Hawthorne to Ash	2,252	228	<50	69.6
Ash to Broadway	1,792	183	<50	68.6
Broadway to Market	1,282	133	<50	67.2
South of Market	1,680	172	<50	68.3

a Does not measure any obstructions to noise path.
b CNEL measured in feet form centerline of near travel lane.

Source: Michael Brandman Associates 1988.

roadways. The following describes the general characteristics of each type of noise impact for each of the project alternatives.

Short-Term Construction Noise Impacts

Construction noise represents a short-term impact on ambient noise levels for each of Alternatives A through F. Noise generated by construction equipment, including earth movers, material handlers, and portable generators can reach high levels. The U.S. Environmental Protection Agency[10] has found that the noisiest equipment types operating at construction sites typically range from 88 dBA to 91 dBA at 50 feet. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower settings. Although noise ranges were found to be similar for all construction phases, the erection phase (laying subbase and paving) tended to be less noisy. Noise levels vary from 79 dBA to 88 dBA (energy average) at 50 feet during the erection phase of construction.

Implementation of any of Alternatives A through F would cause a short-term annoyance to noise-sensitive land uses in the surrounding area due to construction activities. On weekends when, due to the visitor-serving nature, more people are in the area, this impact may be considered a significant nuisance impact to users of the nearby waterfront.

Alternative G, the no action alternative, would result in no short-term noise impacts to the project area.

Long-Term Noise Impacts

With community noise assessment, changes in noise levels greater than 3 dB are often identified as significant to sensitive receptors, while changes less than 1 dB are not discernible to most residents and are not considered significant. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. No scientific evidence is available to support the use of 3 dB as the significant threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, in a community noise situation, the noise exposure is over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory situation. Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB appears to be appropriate for most people.

Table 4.9-3 quantifies the distances to the 60, 65, and 70 dB CNEL contours and lists the CNEL value at 50 feet from the centerline of the near travel lane for roadways in the project vicinity for each of the alternatives. Long term buildout of the project area is assumed. As with the existing noise levels, the future roadway noise levels were calculated based on the Federal Highway Administration's Highway Traffic Noise Prediction Model. The roadway noise levels presented in Table 4.9-3 assume no natural or man-made shielding between the roadway and the noise receptor.

As in any downtown urban area characterized by dense development, future traffic noise levels are expected to be relatively high in the vicinity of the Navy Broadway Complex. The proposed hotels in Alternatives A, B, C, D, and F would be within the 65 dB CNEL contour from Pacific Highway. This could result in noise levels in excess of 45 dB CNEL in hotel rooms, which would be significant.

TABLE 4.9-3

FUTURE ROADWAY NOISE LEVELS[a]

Roadway Segment: Broadway East of Harbor

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	70	208	654	69.7	3.6	0.6
B	71	212	666	69.8	3.6	0.6
C	69	205	643	69.6	3.5	0.5
D	68	202	634	69.6	3.4	0.4
E	69	205	643	69.6	3.5	0.5
F	71	212	666	69.8	3.6	0.6
G	62	184	577	69.2	3.0	0.0

Roadway Segment: Broadway East of Kettner

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	111	344	1,086	71.9	4.0	0.8
B	107	329	1,037	71.7	3.8	0.6
C	108	333	1,052	71.8	3.8	0.6
D	100	306	965	71.4	3.4	0.2
E	108	333	1,052	71.8	3.8	0.6
F	107	329	1,037	71.7	3.8	0.6
G	95	292	919	71.2	3.2	0.0

TABLE 4.9-3 (continued)

Roadway Segment: Harbor South of Broadway

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	82	258	66.7	1.4	0.7
B	0	79	250	66.5	1.3	0.6
C	0	82	258	66.7	1.4	0.7
D	0	67	212	65.8	0.5	(0.2)
E	0	82	258	66.7	1.4	0.7
F	0	79	250	66.5	1.3	0.6
G	0	69	218	65.9	0.7	0.0

Roadway Segment: Harbor West of Pacific

Alternative	Distance (feet) From Roadway Centerline to CNEL: 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	72	221	695	70.3	4.3	2.5
B	74	227	715	70.4	4.4	2.6
C	63	191	601	69.6	3.7	1.9
D	57	170	536	69.1	3.2	1.4
E	63	191	601	69.6	3.7	1.9
F	74	227	715	70.4	4.4	2.6
G	0	126	394	67.8	1.8	0.0

TABLE 4.9-3 (continued)

oadway Segment: Kettner South of Broadway

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	92	289	66.8	7.3	0.2
B	0	94	294	66.8	7.3	0.2
C	0	93	292	66.8	7.3	0.2
D	0	76	238	65.9	6.4	(0.7)
E	0	93	292	66.8	7.3	0.2
F	0	94	294	66.8	7.3	0.2
G	0	89	280	66.6	7.1	0.0

oadway Segment: Pacific South of Broadway and North of Market

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	97	288	904	70.6	3.4	2.1
B	92	270	848	70.4	3.1	1.8
C	105	313	983	71.0	3.7	2.4
D	84	241	754	69.9	2.6	1.3
E	105	313	983	71.0	3.7	2.4
F	92	270	848	70.4	3.1	1.8
G	67	181	563	68.6	1.3	0.0

TABLE 4.9-3 (continued)

Roadway Segment: G Street West of Seventh

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	0	110	347	67.6	3.5	0.5
B	0	111	348	67.6	3.5	0.5
C	0	109	342	67.5	3.5	0.5
D	0	107	337	67.4	3.4	0.4
E	0	109	342	67.5	3.5	0.5
F	0	111	348	67.6	3.5	0.5
G	0	97	305	67.0	3.0	0.0

Roadway Segment: Market Street West of Ninth and East of Kettner

Alternative	Distance (feet) From Roadway Centerline to CNEL 70 CNEL	65 CNEL	60 CNEL	Future CNEL (dB) at 50 Feet[b]	Increase Over Existing CNEL (dB) at 50 Feet	Increase of Each Alternative Over Future CNEL (dB) at 50 Feet
A	87	271	854	71.2	3.6	0.6
B	85	263	829	71.0	3.4	0.4
C	85	262	826	71.0	3.4	0.4
D	76	235	740	70.5	2.9	(0.1)
E	85	262	826	71.0	3.4	0.4
F	85	263	829	71.0	3.4	0.4
G	77	239	753	70.6	3.0	0.0

a Does not consider any obstructions to the noise path.
b CNEL measured in feet from the centerline of the near travel lane.

As Table 4.9-3 indicates, roadway noise level increases due to each of the development alternatives ranges from 0.4 dB to 2.6 dB over the no action alternative, Alternative G. The projected noise level increases for each of the alternatives are at a level that is less than significant.

Rail traffic along the rail lines that bisect the site would be infrequent, occurring an average of twice per year. Thus, any noise associated with this source would not be considered significant due to its infrequency.

Alternative G would result in no long-term noise impacts to the project area, although it would be exposed to additional noise from traffic as traffic levels associated with cumulative development increase.

4.9.3 MITIGATION MEASURES

The following mitigation measures are recommended for each of the Alternatives A through F of the proposed Navy Broadway Complex project.

Short-Term Impacts

- Compliance with the San Diego County Code requires that significant noise-generating construction activities will be limited to Monday through Saturday, 7:00 a.m. to 7:00 p.m.

Long-Term Impacts

- Prior to the issuance of building permits for the hotel structures (Alternatives A, B, C, D, and F), building specifications for hotel structures describing the acoustical design features of the structures and evidence prepared by an acoustical consultant that these sound attenuation measures will satisfy the interior noise standard of 45 dB CNEL shall be submitted to the City Building Inspection Department for approval.

ENDNOTES:

1 U.S. Department of Housing and Urban Development, 1985.
2 Harris, 1979.
3 Federal Interagency Committee on Urban Noise, 1980.
4 City of San Diego, 1976a.
5 State of California, 1976.
6 Ibid.
7 City of San Diego, op. cit.
8 U.S. Department of Transportation, 1978.
9 San Diego Unified Port District, 1988.
10 U.S. Environmental Protection Agency, 1971.

4.10 CULTURAL RESOURCES

This section is based upon a cultural resources study that was prepared for the project. A complete copy of the report is available for review at the Broadway Complex Project Office, 555 West Beech Street, Suite 101, San Diego, California 92101-2937. The study involved a literature search of the historical background of the project area and a surface and subsurface investigation of the site, to document cultural properties located within the project area that may qualify for the National Register of Historic Places. The cultural resources study was prepared in accordance with the regulations for protection of Historic Properties (36 CFR Part 800), which implement Section 106 of the National Historic Preservation Act. Section 106 mandates Federal agencies to take into account the effects of their undertakings on properties included in or eligible for the National Register. The National Register Criteria for Evaluation (36 CFR 60.4) are used to assess a property's eligibility. This study is being used to make determinations of eligibility in consultation with the California State Historic Preservation Officer (SHPO). SHPO has concurred with the basic findings of this analysis. For those properties found to meet National Register criteria, consultation will be initiated with the Advisory Council on Historic Preservation, as required by Section 106. The Advisory Council's comment will be included in the final environmental documentation.

4.10.1 AFFECTED ENVIRONMENT

Regional Historic Setting

The Navy Broadway Complex includes 10 major structures and various smaller buildings that were constructed between the early 1920s and the mid-1940s. Many of the buildings have been remodeled and are well maintained, giving the impression that the complex is not as old as the original construction dates would suggest.

The project site is bounded by Pacific Highway, Harbor Drive (on two sides), and Broadway. These streets were formerly known as Atlantic Street (Pacific Highway), Ocean Street (Harbor Drive), and D Street (Broadway), and were laid out as part of the development of New Town San Diego during the 1850s. The majority of the project site was actually located below the high tide line during the 1800s (when New Town San Diego was laid out). It was only after the improvement of the harbor began in the early 1900s, culminating in the construction of a bulkhead and the use of dredged materials to fill behind the bulkhead, did the project site become dry land.

Overview of Project Area History

Prior to 1850, the focus of activity in San Diego revolved around the Presidio of San Diego, Old Town, and the Mission San Diego de Alcala, all of which were located near the San Diego River several miles to the north of the site. The project area consisted primarily of tidal flats and open shore. In 1850, a survey party that included William Heath Davis and Andrew B. Gray chose the upland area near the project site for a camp. Gray thought the place would make a fine site for a town. Gray and Lieutenant T. D. Johns drew up plans for a new town site, which encompassed the project area. The New Town concept was presented to a group of San Diegans, who on March 16, 1850, formed a partnership to buy and develop the 160-acre site[1]. At the time, about half of the New Town plots lay below the level of mean high tide.

The construction of New Town began in the summer of 1850. A deep-water wharf was constructed just to the south of the present Navy Broadway Complex. After the wharf was

completed in 1851, ships could off-load cargo and passengers directly at the pier rather than requiring the use of lighters to ferry them to the shore.[2,3] In October 1868, Stephen S. Culverwell constructed a wharf at New Town at the foot of F Street, which extended 150 feet into the bay.[4]

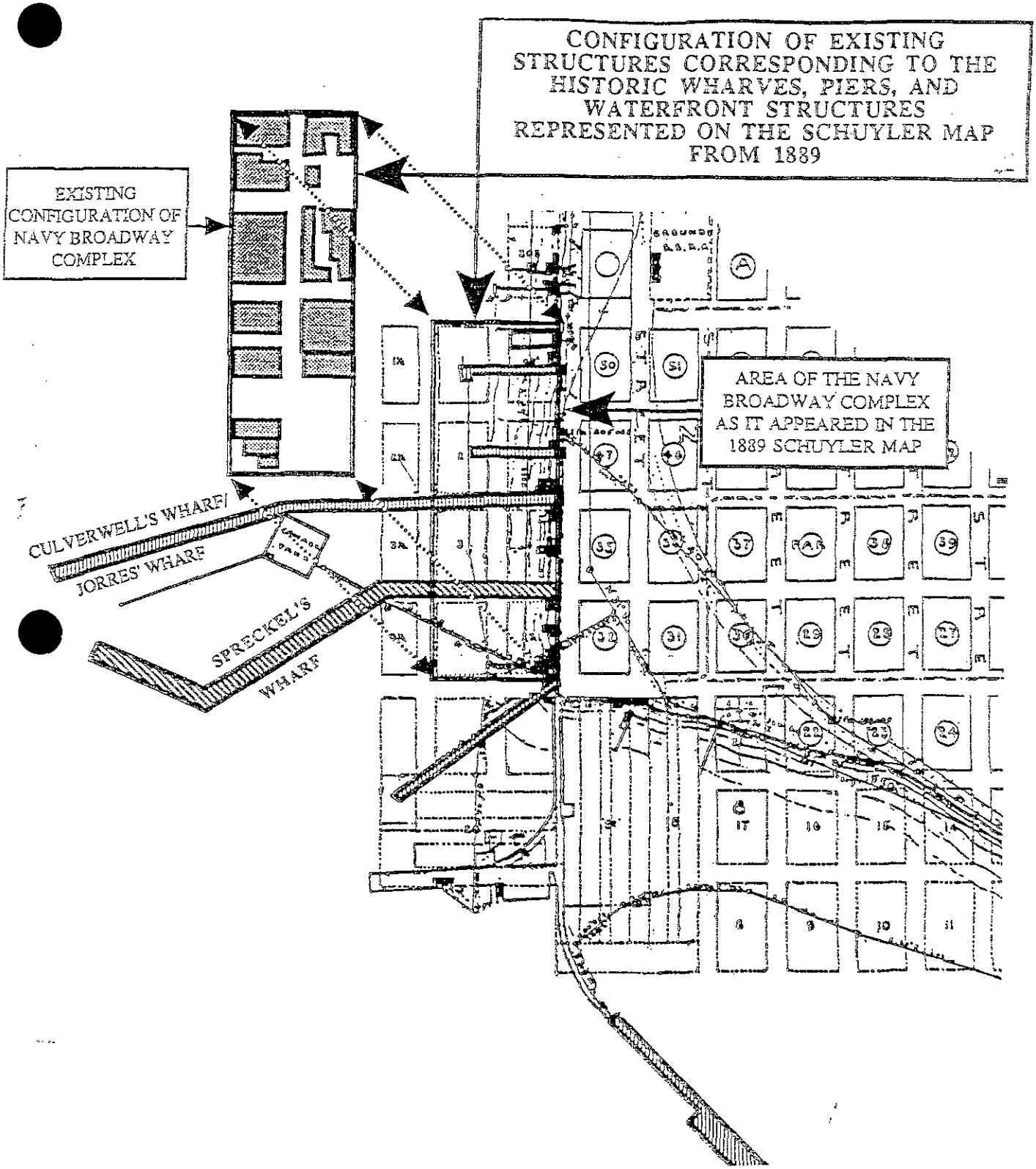
In the mid-1880s, the City experienced the first of a series of major construction booms. City crews paved streets, gas and electricity were introduced, street car tracks were laid down, and several water mains and drains carried sewage and stormwater to the deep waters of the bay. Along the waterfront, wharves became a focal point of the importation of goods into San Diego.

The major wharves constructed within the current boundaries of the project site included Culverwell's Wharf and the Spreckels Brothers' Wharf (see Figure 4-63). The Spreckels Brothers' Wharf was also known as the Coal Bunkers Wharf.[5] It was approximately 2,000 feet long, in a zig-zag configuration, with rail carts and steam-driven cable lines and winches to unload cargos of coal, cement and lumber. The wharf was located at the foot of G Street and extended through the southern area of the present Navy Broadway Complex. Adjacent to the Spreckels Brothers' Wharf was Culverwell's Wharf, at the foot of F Street, which also extended out several hundred feet over the tidal area to deep water. Culverwell's Wharf was subsequently purchased by William Jorres and later bore his name. Structures were constructed at the end of the wharf in the approximate locations of Buildings Nos. 7 and 8. The construction of these wharves improved shipping conditions and further solidified the advance in the harbor development and waterfront activities.[6]

Prior to 1900, the area along Pacific Highway, paralleling the high tide line, included a concentration of shanties, wharves, and businesses. The area was unique to San Diego and played an important role in the flourishing development of New Town. As shown on the illustrations drawn from the Sanborn Fire Map of 1904, the Navy Broadway Complex site included several recorded structures (see Figure 4-64). In addition, photographs from the 1880s through the early 1900s reveal that the concentration of structures was even greater than was shown on the Sanborn Fire Maps (see Figure 4-65).

In 1911, the City of San Diego, along with Los Angeles and Oakland, petitioned the State of California to grant the tidelands within the respective harbors to the cities for development. The bill authorizing this transfer passed, with the provision that the City of San Diego would make improvements (primarily dredging, filling, and the construction of bulkheads) to the tideland areas.[7] The construction of the new concrete bulkhead and the filling of the tidelands occurred by dredging of the channel along Broadway and the deposition of the dredged material behind the bulkhead.

Based upon photographs of the dredging operation, it appears that the shanties and piers or wharves that were located in the fill area were buried beneath the dredged fill. In 1919, the City of San Diego deeded approximately 1.55 acres to the Navy at the corner of Broadway and Harbor Drive. The remaining Navy Broadway Complex property was subsequently granted to the Navy in several land exchange transactions with the City of San Diego.



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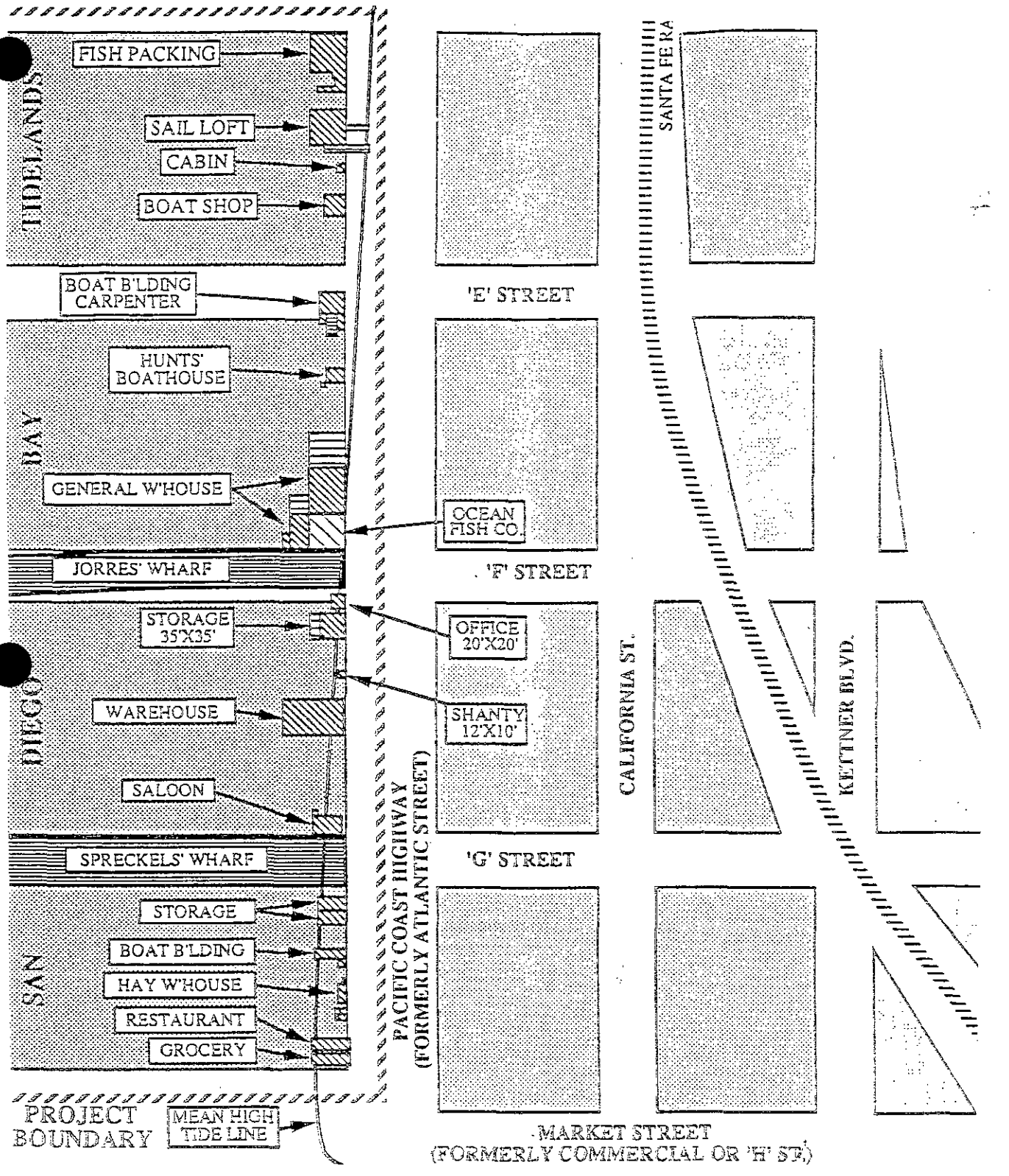
NO SCALE

NORTH

San Diego Bay Waterfront (1889) with Present Day Navy Broadway Complex Superimposed

Navy Broadway Complex Project

Figure 4-63



Source: Sanborne Fire Maps

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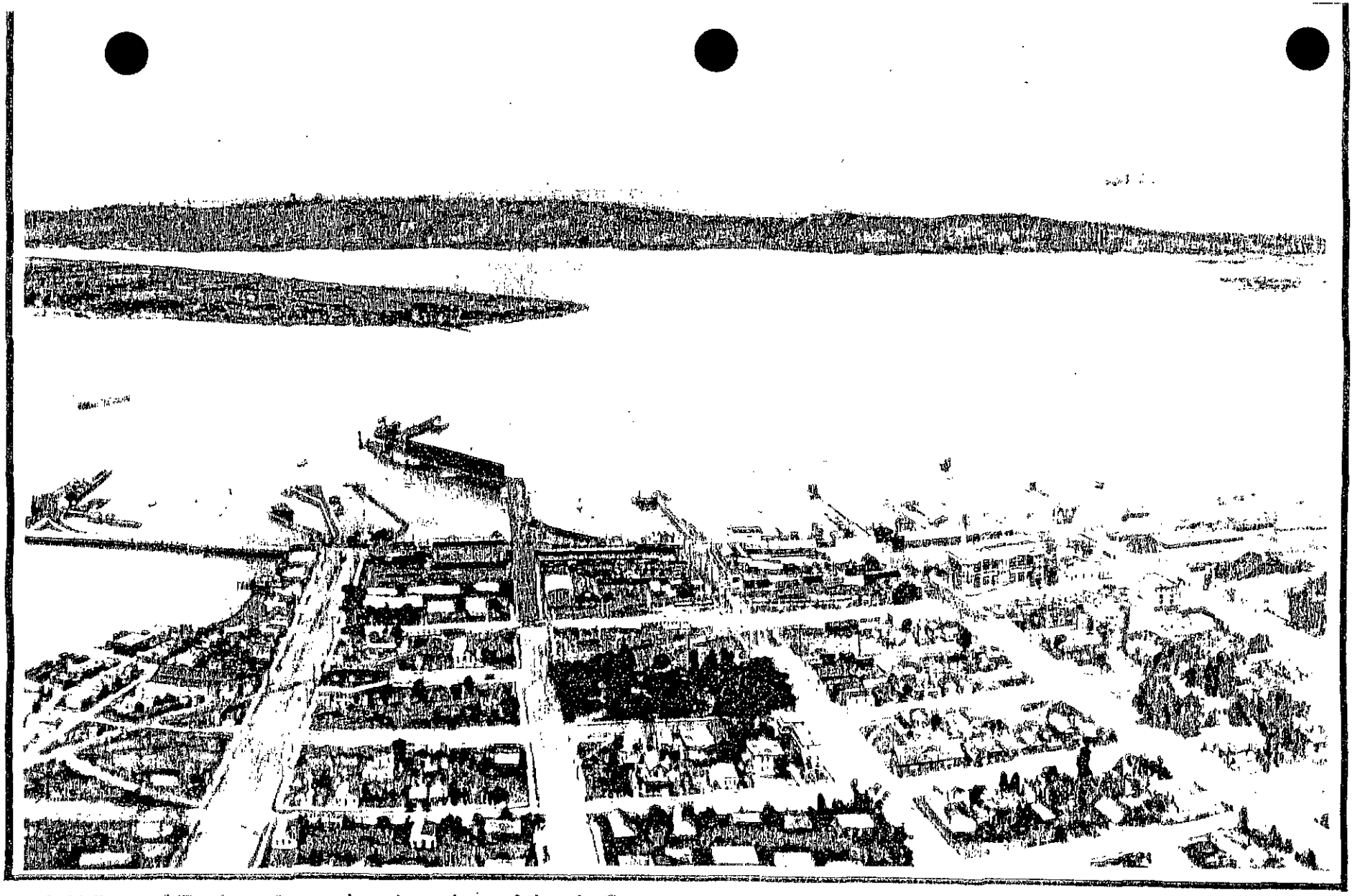
0 100 200 FEET NORTH

New Town Waterfront Area Map
(circa 1904)

Navy Broadway Complex Project

Figure 4-64



Aerial View of Project Area showing along Atlantic Street (now Pacific Highway). Large Wharf in left-center is Spreckels Brothers' Wharf (Photograph circa 1910)

Navy Broadway Complex Project

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Figure 4-65