City of San Diego
Planning Department

Development and Environmental
Planning Division
236-6460

Environmental Impact Report

DEP No. 90-0133
SCH No. 90010287

SUBJECT: Barrio Logan Redevelopment Plan. APPROVAL of the Barrio Logan Redevelopment Plan, and amendments to the Barrio Logan Planned District Ordinance, Community Plan, and the Local Coastal Program. The project consists of a proposed Plan to eliminate existing blighted conditions within 133 acres of Barrio Logan area located in the southwestern portion of the City of San Diego, adjacent to the eastern side of San Diego Bay. The project lies within the Barrio Logan/Harbor 101 Community Planning Area. Applicant: City of San Diego Redevelopment Agency.

Project objectives include the development of underutilized property to generate public revenues and to redevelop and upgrade existing land uses. Land uses proposed for the project area include an increase in residential and commercial densities, and public uses. Light industrial uses would be decreased.

CONCLUSIONS:

The adoption of the Barrio Logan Redevelopment Plan would potentially contribute to impacts associated with traffic, aesthetic quality, noise, geology, air quality, population/housing, cultural resources, paleontological resources, and risk of upset.

In addition, the adoption of the Barrio Logan Redevelopment Plan could have significant cumulative impacts on traffic, noise, and air quality. These impacts could occur as a result of related development projects in the vicinity including Centre City redevelopment, the San Diego cargo facility, convention center expansion, and a new homeless shelter taking place over a period of time.

RECOMMENDED ALTERNATIVES FOR SIGNIFICANT UNMITIGATED IMPACTS:

One project alternative, that of the No Project alternative, would fully avoid the project's contribution to potential direct and cumulative impacts. Under this alternative, the Redevelopment Plan would not be adopted, and existing land uses would remain. The project objective, however, to improve blighted conditions and the area's economic situation would not be met.

Another alternative to reduce land use density and intensity by 30 percent would cause similar impacts to those identified for the project, although traffic and air quality impacts would be slightly reduced. Impacts would still remain significant.

Unless mitigation measures or project alternatives are adopted, project approval will require the decisionmaker to make Findings, substantiated in the record, which state that: a) individual mitigation measures or project alternatives are infeasible, and b) the overall project is acceptable despite significant impacts because of specific overriding considerations.

MITIGATION MEASURES INCORPORATED INTO THE PROJECT:

The following mitigation measures have been incorporated into the project in an effort to reduce those impacts to below a level of significance. Due to the nonspecific nature, however, of the Redevelopment Plan regarding individual development projects to occur over time within the redevelopment area, additional environmental assessment may be required as development occurs. Additional mitigation measures with a higher degree of specificity could be required. Moreover, impacts caused by implementation of the Redevelopment Plan are considered significant and not fully mitigated at this time, until these or more specific mitigation measures are developed and carried out through final Mitigation, Monitoring and Reporting Programs for individual, subsequent projects.

Traffic

A revised traffic study was prepared in March of 1991 for the proposed redevelopment plan area. Maximum buildout of the project would add 72,520 average daily traffic (ADT) volumes to the study area street system. The existing street network could not accommodate the projected traffic volumes and maintain acceptable levels of service unless capacity improvements are made.

Mitigation of direct traffic impacts of the project would require the assurance of road improvements to be carried out to the satisfaction of the City Engineer. Mitigation for the existing circulation system would include: the improvement of three intersections; the provision of traffic signalization at nine intersections; the improvement of turning radii for truck turning; and the provision of on-site parking adequate to fully serve project parking demand. Crosby Street would be widened between Harbor Drive and Kearney Avenue to provide two lanes in each direction in accordance with four-lane major roadway specifications.

Full mitigation of traffic impacts to below a level of significance, however, would require additional road widenings or the implementation of one-way couplet systems. These measures would adversely affect the urban character of the project area and discourage pedestrian activity as promoted within the Redevelopment Plan. Impacts to traffic would, therefore, remain unmitigated to below a level of significance.

Aesthetic Quality

The potential exists for impacts to existing visual resources including historic structures, the pedestrian-oriented streetscape and scenic vistas. As mitigation, view corridor stepbacks shall be developed and added to the development controls in the Redevelopment Plan to preserve identified vistas. Mitigation measures to preserve historic structures are addressed under the Cultural Resources section below.

Noise

Future noise levels generated by traffic would continue to exceed 65 dB(A) CNEL at property adjacent to all but three roadway segments. Sensitive land uses adjacent to railroad operations may also be significantly impacted.

1. A site specific acoustical analysis shall be required for all proposed residential residences where the potential exterior sound level is expected to be greater than 60 dB(A) CNEL. Exterior noise may be mitigated to below a level of significance by setbacks or barriers or a combination of both, with reorientation of outdoor living spaces away from noise sources.

2. An interior acoustical analysis shall be required for all proposed multi-family residences where the exterior sound level has been identified to be 60 dB(A) CNEL or greater. The analysis shall ensure that the proposed design will limit the interior noise environment to 45 dB(A) CNEL or below. Mitigation of interior noise may require a closed window condition and mechanical ventilation. In high noise areas, dual glazed windows may be required.

3. Potential noise impacts from industrial and commercial noise sources on sensitive receptors may be mitigated by the creation of noise buffers, and the routing of trucks away from residential areas.

Geology

Potential impacts include damage from seismic activity, including liquefaction within the project area west of Harbor Drive. Project grading would increase the potential for soil erosion. Development proposed west of Harbor Drive would require preparation of geotechnical studies to identify appropriate measures to reduce potential liquefaction impacts to levels of insignificance.

Specific mitigation measures for geological impacts shall be identified as project development occurs. These measures shall be incorporated into to construction plans and specifications and the Mitigation, Monitoring and Reporting Program.

Air Quality

A proposed increase in project development would result in an increasing number of polluters, especially from that of vehicle emissions. Significant increases in carbon monoxide and nitrogen oxides would occur. Mitigation measures developed for identified impacts to air quality shall be incorporated into construction plans and specifications and into the Mitigation, Monitoring and Reporting Program.

1. The use of alternative transportation modes shall be encouraged by project tenants by promoting public transit usage and providing secure bicycle facilities. All major employers would be required to submit an alternative transportation plan to the San Diego APCD.

2. The City of San Diego Transportation Demand Management Program shall be implemented within the Redevelopment Plan Area.

3. Mass transit accommodations shall be provided in project design, including park-and-ride facilities, bus turnout lanes, bus shelters and express transit access.

4. Fugitive dust emissions during construction shall be minimized by watering, excavated soil on-site shall be isolated until it is hauled away, and periodic washing of adjacent streets shall be done to remove accumulated materials.

5. During construction, truck routes shall be planned to preclude truck queuing or idling near sensitive receptors to reduce exhaust impacts.

Population/Housing

Implementation of this project would create a significant impact on housing due to the dislocation of existing residents and businesses. State law has established a number of mitigation measures to reduce relocation impacts of those displaced by public agency projects. These measures include relocation assistance payments, moving allowances, rent differential payments, grievance procedures, and provision of replacement housing.

If low- or moderate-income dwelling units are destroyed or removed from the market, the Agency will provide an equal number of replacement units within four years through new construction, rehabilitation or other means.

Public Service

Significant impacts to both an elementary and junior high school would occur within the San Diego Unified School District due to an increase in pupil generation. The school district is operating near classroom capacity.

The use of AB 2926 school fees shall be imposed on proposed development projects within the Redevelopment Plan area, which provides that a maximum of $1.56 per square foot for new residential development and $0.26 per square foot for new commercial and industrial development projects can be collected for school construction.

Cultural Resources

Project implementation could potentially disrupt archaeological resources, and demolish up to 84 potentially historic structures, including 10 having possible eligibility for inclusion on the National Register of Historic Places. Mitigation measures for impacts to cultural resources shall be incorporated into construction plans and specifications and into the Mitigation, Monitoring and Reporting Program.

1. A qualified SOAP certified archaeologist shall be retained to monitor initial site grading and excavation. The archaeologist would be allowed to temporarily direct, divert or halt grading to allow recovery of cultural materials.

2. If an archaeological site is identified, it shall be assessed for significance. If found to be significant, a data recovery/mitigation program shall be implemented to the satisfaction of the City Environmental Analysis Section (EAS) prior to further disturbance. Materials collected shall be deposited with an appropriate scientific institution.

3. A report of findings shall be filed with EAS within three months of completing the monitoring.

4. An inventory of historic properties has been completed by the City. This inventory will be reviewed by the Historical Site Board. The Board will take action to designate those properties which meet its designation criteria.

Paleontological Resources

Project implementation could impact paleontological resources possibly existing within the Bay Point and San Diego Formations underlying the project area. Mitigation measures to be carried out during project excavation activities shall be incorporated into construction plans and specifications and the Mitigation, Monitoring and Reporting Program.

1. A qualified paleontologist shall be retained by the building developer to carry out a mitigation program. The paleontologist shall be present on-site at all times during the original project cutting of previously undisturbed sediments within formations considered to have a high paleontological resource sensitivity and, at least half-time during cutting of formations with moderate resource sensitivity.

2. The paleontologist shall be allowed to divert or halt excavation work to allow recovery of found fossil remains.

3. Fossil remains collected shall be cleaned, sorted, and cataloged and deposited in a scientific institution.

4. A final summary report shall be prepared and submitted to EAS outlining the methods followed and summarizing the mitigation program results.

Risk of Upset

Significant hazardous substances were identified within the project area which would require removal of potential sources of contamination and other remediation. As development projects occur, the following mitigation measures shall be required and incorporated into construction plans and specifications and the Mitigation, Monitoring and Reporting Program.

1. Prior to property acquisition, a detailed environmental audit shall be undertaken by the project proponent.

2. Prior to site preparation, potential source of contamination shall be removed or treated on-site and disposed of in accordance with applicable governmental regulations.

3. Sampling of the contents of discarded drums/containers shall be undertaken, and analysis shall be conducted of soil/groundwater to determine contamination.

4. Cleanup and remediation activities shall be coordinated by the project applicant/proponent with the San Diego County Hazardous Materials Management Division and the California Regional Water Quality Control Board.

Ann B. Hix, Principal Planner
City Planning Department

January 7, 1991
Date of Draft Report

April 24, 1991
Date of Final Report

Analyst: Lowry

PUBLIC REVIEW

The following individuals, organizations, and agencies received a copy or notice of the draft EIR and were invited to comment on its accuracy and sufficiency:

CALPIRG - The Housing Project
Centre City Development Corporation
Chicano Federation
Citizens Coordinate for Century 3
City Beautiful of San Diego
City of Coronado
    Community Development Department
City of National City
    Planning Department
City of San Diego
    City Attorney's Office
    Councilmember Filner, District 8
    Deputy City Manager Stapleton
    Fire Department
    Historical Site Board
    Mayor's Office
    Office of the City Architect
    Park and Recreation Board
    Planning Department
    Police Research and Analysis
    Property Department
    San Diego Housing Commission
    Social Services Program
    Transportation Planning Division
Community Resources Panel
County of San Diego
    Air Pollution Control District
    Chief Administrative Office, Office of Special Projects
    Environmental Health Services
    Office of Education
    Department of Planning and Land Use
Health Systems Agency
Kane, Ballmer and Burkman
Metropolitan Transit Development Board
Pacific Bell
Project Area Committee Members (PAC)
    Diego Aguilera
    Brad Bittner
    Ana Castaneda
    Carlos Castaneda
    Luis Garcia
    Otto Hirr
    Anthony Mauricio, Jr.
    Rachel Ortiz
    Panfilio Sanchez
    Robert Shapiro
    Ronald Trujillo

SANDAG
San Diego Apartment Association
San Diego Audubon Society
San Diego Chamber of Commerce
San Diego City Schools
San Diego Community College District
San Diego County Water Authority
San Diego Gas and Electric Company
San Diego Transit Corporation
San Diego Unified Port District
San Diego Unified School District
Sierra Club
State of California
    Air Resources Board
    Coastal Commission
    Department of Health Services
    Department of Water Resources
    Housing and Community Development Department
    Office of Historic Preservation
    Solid Waste Management Board
    State Clearinghouse
U.S. Government
    Army Corps of Engineers
    Environmental Protection Agency, Region IX
    Department of Housing and Urban Development

Copies of the draft EIR, the Mitigation Monitoring and Reporting Program and any technical appendices may be reviewed in the office of the Development and Environmental Planning Division, or purchased for the cost of reproduction.

RESULTS OF PUBLIC REVIEW

( ) No comments were received during the public input period.

( ) Comments were received but the comments do not address the accuracy or completeness of the environmental report. No response is necessary and the letters are attached at the end of the EIR.

(X) Comments addressing the accuracy or completeness of the EIR were received during the public input period. The letters and responses follow.

Final Environmental Impact Report for the Barrio Logan Redevelopment Plan

SCH #90010287

City of San Diego Redevelopment Agency (Lead Agency)

April 1991

INTRODUCTION

The following document constitutes the final environmental impact report (EIR) for the Barrio Logan Redevelopment Plan. This document consists of comments received during the public review of the draft EIR, responses to those comments, and the revised draft EIR.

This final EIR has been prepared in accordance with the State of California's guidelines for the implementation of the California Environmental Quality Act (CEQA) as amended. The draft EIR was published and was circulated through the State Clearinghouse, as well as all government agencies and private parties known to have a direct interest in the proposed project . In addition, the availability of the draft EIR was advertised in a local newspaper to notify the public that copies of the EIR were available at the Development and Environmental Planning Division of the City Planning Department. The review period for the draft EIR began January 16, 1991 and ended February 28, 1991.

Written comments on the project received during the public review are presented in the following order:

- State Office of Planning and Research
- State of California Department of Transportation
- County of San Diego, Chief Administration Office
- Metropolitan Transit Development Board
- City of San Diego Fire Department (2)
- City of San Diego Transportation Planning Division
- City of San Diego Engineering and Development Department
- San Diego City Schools
- San Diego County Archaeological Society, Inc.
- Bowie, Arneson, Kadi and Dixon
- David Taussig and Associates, Inc.
- San Diego Apartment Association

The comment letters and responses precede the revised EIR text. Comments are presented on the left side of the page; responses are on the right side.

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RESPONSE TO COMMENTS

STATE OF CALIFORNIA--OFFICE OF THE GOVERNOR

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED
MAR - 8 1991
ENVIRONMENTAL ANALYSIS SECTION

March 1, 1991

Anne Lowry
City of San Diego
202 C street
San Diego, CA 92101

Subject: City of San Diego's Draft Environmental Impact Report for Barrio Logan Redevelopment Plan SCH# 90010287

Dear Anne Lowry:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation.

These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Tom Loftus at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Enclosures

cc: Resources Agency

Notice of Completion

Appendix F

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

SCH # 90010287

Project Title: Barrio Logan Redevelopment Plan

Lead Agency: City of San Diego
Contact Person: Anne Lowry
Street Address: 202 C Street
Phone: (619)236-5571
City: San Diego, CA
Zip: 92101
County: San Diego

Project Location

County: San Diego
City/Nearest Community: San Diego/Barrio Logan
Cross Streets: Logan Ave & Crosby St (Coronado Bridge & I-5)
Total Acres: 133
Assessor's Parcel No.:
Section: Twp.: Range: Base:
Within 2 Miles: State Hwy #: I-5
Waterways: San Diego Bay
Airports: North Island Naval Station
Railways: Santa Fe RR
Schools: Lowell Elementary, Memorial Jr. H.S.

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) ☐ Other
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☒ Community Plan Amendment
☒ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.)
☐ Annexation ☒ Redevelopment Plan ☐ Coastal Permit ☒ Other Amendment to PDO & LCP

Development Type

*Total all (3) = 35.0

☒ Residential: Units ____ Acres ____
☒ Office: Sq.ft. ____ Acres ____ Employees ____
☒ Commercial: Sq.ft. ____ Acres ____ Employees ____
☒ Industrial: Sq.ft. ____ Acres 28.0 Employees ____
☒ Educational
☒ Recreational
Public/Quasi Public 37.0 acres

☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type ____
☐ Mining: Mineral ____
☐ Power: Type ____ Watts ____
☐ Waste Treatment: Type ____
☐ Hazardous Waste: Type ____
☐ Other ____

Project Issues Discussed in Document

☒ Aesthetic/Visual ☐ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☒ Coastal Zone ☐ Drainage/Absorption ☐ Fiscal ☐ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geological/Seismic ☐ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities ☒ Recreation/Parks ☒ Schools/Universities ☐ Septic Systems ☒ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☐ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation ☐ Vegetation ☐ Water Quality ☒ Water Supply/Groundwater ☐ Wetland/Riparian ☐ Wildlife ☒ Growth Inducing ☐ Landuse ☐ Cumulative Effects ☒ Other Cultural Resources, Paleontology

Present Land Use/Zoning/General Plan Use Mixed-Use
Residential/Commercial/Industrial/Public and Quasi-Public

Project Description: Barrio Logan Redevelopment Plan. Project proposes to eliminate existing blighted conditions within 133± acres of Barrio Logan Area located in the southwestern portion of the City of San Diego, adjacent to the eastern side of San Diego Bay. Project objectives include development of underutilized property and to upgrade existing land uses.

CLEARINGHOUSE CONTACT: Tom Lutzow (916) 445-0613

STATE REVIEW BEGAN: 1-16-91
DEPT REV TO AGENCY: 2-23
AGENCY REV TO SCH: 2-28
SCH COMPLIANCE: 3-1

PLEASE RETURN BOC WITH ALL COMMENTS

LOND/APCD 37 (Resources 1/19) SAN DIEGO

CHEY [redacted]
X Resources
X Coastal Comm
X Conservation
X Fish & Game
X Parks & Rec/OHP
X DWR
Bus Transp Hous
X Caltrans # 11
[redacted]

CHEY [redacted]
State/Consumer Svcs
[redacted]
Environmental Affrs
X ARB
[redacted]
X Reg. WQCB # 4
[redacted]
Independent Comm
[redacted]

State of California

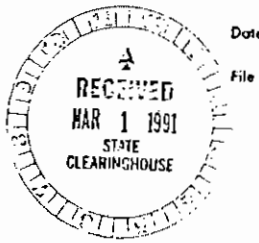
3/1

Business, Transportation and Housing Agency

Memorandum

To : State Clearinghouse

Attention T. Loftus



Date : February 28, 1991

File No.: 11-SD-5/75
(Barrio Logan)

From : DEPARTMENT OF TRANSPORTATION
District 11

Subject : DEIR for the Barrio Logan
Redevelopment Plan - SCH 90010287

Caltrans District 11 comments and questions primarily focus on the analyses for Traffic/Circulation/Parking and are as follows:

1. What are the traffic impacts to the I-5 ramps and main lanes in both the plan area and adjacent I-5 corridor. The traffic data, even before being corrected as described below, shows demand exceeding capacity. What are the resulting safety and operational problems? How will the Redevelopment Plan mitigate them?

1. A. Table 3-3 used 1988 traffic for "Existing Volumes." That analysis needs to be based on 1990 traffic.

2. B. Only the southbound Logan Avenue off-ramp was analyzed. The other three legs of that interchange should also be studied.

3 C. The EIR needs to study the additional traffic and its impacts at I-5 just north of the redevelopment area (from the Coronado Bridge through the downtown "S" curve). That section of I-5 is already severely impacted by morning and afternoon peak-hour traffic.

4. D. Volume to Capacity ratios need to be analyzed from peak-hour volumes, not ADT.

5. E. Table 3-6 does not describe what year the future traffic is calculated for. Also, the referenced future year traffic for I-5 has already been exceeded in 1991.

6. F. Signalizing the southbound I-5 off-ramp at Logan Avenue may be difficult and may back up traffic onto the freeway. Immediate coordination with Caltrans District 11 is highly recommended.

RESPONSE TO COMMENTS

1. These comments address the traffic report contained in the draft EIR. This report was replaced by a revised traffic study prepared by Basmaciyan-Darnell, Inc. The revised report used 1990 or most current data available for the analysis of the roadway links.

2. The revised study addresses peak hour impacts and recommended mitigations involving both the southbound on- and off-ramps of Logan Avenue. For the northbound ramp termini, BDI has compiled the following estimates:

Estimated Increase ADT and
Peak Hour Volumes at I-5
(Over Existing)

	Northbound Ramps		
Ramp	ADT Increase	AM Peak Increase	PM Peak Increase
NB On	7,340	219	842
NB Off	7,950	696	661

It should be noted that the increased volumes presented above represent estimated increases over existing volumes. Buildout of the adopted Community Plan would also result in some increase in traffic over existing.

3. The study area was defined in consultation with City Engineering and Development Department staff and is considered to address the extent of this project's traffic impacts.

4. The revised report examined the volume to capacity of peak-hour volumes.

5. Future volumes presented in the revised report represent buildout traffic, no specific year is attached to these numbers.

6. This recommendation, together with recommended improvements at the Logan Avenue/I-5 southbound entrance ramp, is contained in the mitigation section of

7. 2. What are the impacts to the southbound I-5 off-ramp at Logan Avenue if Beardsley Street is made one-way eastbound and traffic must turn right onto Logan Avenue then left on to Sigsbee Street?

8. 3. The analyses for Acoustic Environment need to examine the impacts from and required mitigations for 2010 freeway noise at any sensitive receptor that may be constructed as a result of the subject redevelopment plan.

9. 4. The Barrio Logan Redevelopment Plan needs to be consistent with Congestion Management Plans. Specifically, the subject redevelopment area needs to be developed in a manner that will encourage the use of mass transit as a way to mitigate transportation impacts.

10. 5. Summary: Our agency is concerned about the extent of the unmitigated traffic impacts at Interstate 5 as described in or as can be estimated from the information in this DEIR.

Our initial contact person for Interstate 5 and State 75 in the vicinity of the Barrio Logan Redevelopment area is Jim Linthicum, Project Manager, Project Studies Branch "B," (619) 688-6952.

JAMES T. CHESHIRE, Chief
Environmental Planning Branch

MO:wkb

RESPONSE TO COMMENTS

the revised report. Required coordination and approval by Caltrans is noted in both cases.

7. The revised traffic study did not analyze a scenario with Beardsley Avenue one-way eastbound. The study analyzed Beardsley Avenue one-way westbound as an alternative roadway configuration.

8. Table 3-16 describes future CNEL noise contours along Interstate 5 Mitigation measure on page 3-66 in the Final EIR is that a site specific acoustical analysis be performed for all propose residential projects.

9. The Redevelopment Plan is transit-oriented in that it proposes urban mixed-use development within a traditional grid street pattern. Specific future projects within the plan area will be examined to ensure conformance with the goals and policies of the Redevelopment Plan, including the following:

> Develop a pedestrian and vehicular transportation network which minimizes and reduces existing circulation conflicts, coordinates with land uses and densities, and provides additional accessibility for transit-dependent population by:
>
> - Developing a street hierarchy that will reinforce the identity of different uses and develops buffers between residential and industrial uses;
> - Encouraging local traffic to utilize commercial corridors and direct industrial traffic to peripheral streets through signage and revised circulation patterns;
> - Providing for appropriate street improvements to allow traffic to operate more efficiently;
> - Providing for safe pedestrian mobility; and
> - Developing a pedestrian-scale open space connection between Chicano Park and Bayfront Park, at the foot of Crosby Street.

10. Please see the responses to the previous comments.

STATE OF CALIFORNIA--OFFICE OF THE GOVERNOR

OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

RECEIVED
MAR - 8 1991
ENVIRONMENTAL ANALYSIS SECTION

March 1, 1991

Anne Lowry
City of San Diego
202 C street
San Diego, CA 92101

Subject: City of San Diego's Draft Environmental Impact Report for Barrio Logan Redevelopment Plan SCH# 90010287

Dear Anne Lowry:

The State Clearinghouse has submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is now closed and the comments from the responding agency(ies) is(are) enclosed. On the enclosed Notice of Completion form you will note that the Clearinghouse has checked the agencies that have commented. Please review the Notice of Completion to ensure that your comment package is complete. If the comment package is not in order, please notify the State Clearinghouse immediately. Remember to refer to the project's eight-digit State Clearinghouse number so that we may respond promptly.

Please note that Section 21104 of the California Public Resources Code required that:

> "a responsible agency or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency."

Commenting agencies are also required by this section to support their comments with specific documentation.

These comments are forwarded for your use in preparing your final EIR. Should you need more information or clarification, we recommend that you contact the commenting agency(ies).

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact Tom Loftus at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Enclosures

cc: Resources Agency

Notice of Completion

Appendix F

Mail to: State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814 916/445-0613

San NOTE Indexer

SCH # 90010287

Project Title: Barrio Logan Redevelopment Plan

Lead Agency: City of San Diego

Contact Person: Anne Lowry

Street Address: 202 C Street

Phone: (619)236-5571

City: San Diego, CA Zip: 92101

County: San Diego

Project Location

County: San Diego City/Nearest Community: San Diego/Barrio Logan

Cross Streets: Logan Ave & Crosby St (Coronado Bridge & I-5) Total Acres: 133

Assessor's Parcel No.: Section: Twp.: Range: Base:

Within 2 Miles: State Hwy & I-5 Waterways: San Diego Bay

Airports: North Island Naval Station Railways: Santa Fe RR Schools: Lowell Elementary Memorial Jr. H.S.

Document Type

CEQA: ☐ NOP ☐ Early Cons ☐ Neg Dec ☒ Draft EIR ☐ Supplement/Subsequent ☐ EIR (Prior SCH No.) ☐ Other

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other

Local Action Type

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☒ Community Plan Amendment ☒ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan ☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, Parcel Map, Tract Map, etc.) ☐ Annexation ☒ Redevelopment Plan ☐ Coastal Permit ☒ Other Amendment to PDD & LCP

Development Type

*Total all (1) = 35.0

☒ Residential: Units ____ Acres ____ *
☒ Office: Sq.ft. ____ Acres ____ * Employees ____
☒ Commercial: Sq.ft. ____ Acres ____ * Employees ____
☒ Industrial: Sq.ft. ____ Acres 28.0 Employees ____
☒ Educational
☒ Recreational
Public/Quasi Public 57.0 acres

☐ Water Facilities: Type ____ MGD
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type ____ Watts
☐ Waste Treatment: Type
☐ Hazardous Waste: Type
☐ Other

Project Issues Discussed in Document

☒ Aesthetic/Visual ☐ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☒ Coastal Zone ☐ Drainage/Absorption ☐ [illegible] ☐ Fiscal ☐ Flood Plain/Flooding ☐ Forest Land/Fire Hazard ☒ Geologic/Seismic ☐ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities ☒ Recreation/Parks ☒ Schools/Universities ☐ Septic Systems ☒ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☐ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation ☐ Vegetation ☐ Water Quality ☒ Water Supply/Groundwater ☐ Wetland/Riparian ☐ Wildlife ☒ Growth Inducing ☒ Landuse ☒ Cumulative Effects ☒ Other Energy, Paleontology

Present Land Use/Zoning/General Plan Use: Mixed-Use Residential/Commercial/Industrial/Public and Quasi-Public

Project Description: Barrio Logan Redevelopment Plan. Project proposes to eliminate existing Blighted conditions within 133± acres of Barrio Logan Area located in the southwestern portion of the City of San Diego, adjacent to the eastern side of San Diego Bay. Project objectives include development of underutilized property and to upgrade existing land uses.

CLEARINGHOUSE CONTACT: Tom Leftus (916) 445-0613

STATE REVIEW BEGAN: 1-16-91

DEPT REV TO AGENCY: 2-23

AGENCY REV TO SCH: 2-28

SCH COMPLIANCE: 3-1

PLEASE RETURN NOC WITH ALL COMMENTS

AQMD/APCD: 37 (Resources: 1, 19)

SAN DIEGO

CHP SWR

X Resources

X Coastal Comm

X Conservation

X Fish & Game

X Parks & Rec/OHP

X OWR

Bus Transp Hous

X Caltrans # 11

CHP SWR

State/Consumer Svcs

Environment Affrs

X ARB

X Reg. WQCB # 4

Independent Comm

RESPONSE TO COMMENTS

State of California

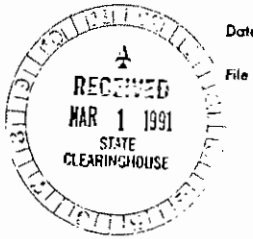
3/1

Business, Transportation and Housing Agency

Memorandum

To : State Clearinghouse

Attention T. Loftus



Date : February 28, 1991

File No.: 11-SD-5/75
(Barrio Logan)

From : DEPARTMENT OF TRANSPORTATION
District 11

Subject : DEIR for the Barrio Logan
Redevelopment Plan - SCH 90010287

Caltrans District 11 comments and questions primarily focus on the analyses for Traffic/Circulation/Parking and are as follows:

1. What are the traffic impacts to the I-5 ramps and main lanes in both the plan area and adjacent I-5 corridor. The traffic data, even before being corrected as described below, shows demand exceeding capacity. What are the resulting safety and operational problems? How will the Redevelopment Plan mitigate them?

1. A. Table 3-3 used 1988 traffic for "Existing Volumes." That analysis needs to be based on 1990 traffic.

2. B. Only the southbound Logan Avenue off-ramp was analyzed. The other three legs of that interchange should also be studied.

3 C. The EIR needs to study the additional traffic and its impacts at I-5 just north of the redevelopment area (from the Coronado Bridge through the downtown "S" curve). That section of I-5 is already severely impacted by morning and afternoon peak-hour traffic.

4. D. Volume to Capacity ratios need to be analyzed from peak-hour volumes, not ADT.

5. E. Table 3-6 does not describe what year the future traffic is calculated for. Also, the referenced future year traffic for I-5 has already been exceeded in 1991.

6. F. Signalizing the southbound I-5 off-ramp at Logan Avenue may be difficult and may back up traffic onto the freeway. Immediate coordination with Caltrans District 11 is highly recommended.

RESPONSE TO COMMENTS

1. These comments address the traffic report contained in the draft EIR. This report was replaced by a revised traffic study prepared by Basmaciyan-Darnell, Inc. The revised report used 1990 or most current data available for the analysis of the roadway links.

2. The revised study addresses peak hour impacts and recommended mitigations involving both the southbound on- and off-ramps of Logan Avenue. For the northbound ramp termini, BDI has compiled the following estimates:

Estimated Increase ADT and
Peak Hour Volumes at I-5
(Over Existing)

	Northbound Ramps		
Ramp	ADT Increase	AM Peak Increase	PM Peak Increase
NB On	7,340	219	842
NB Off	7,950	696	661

It should be noted that the increased volumes presented above represent estimated increases over existing volumes. Buildout of the adopted Community Plan would also result in some increase in traffic over existing.

3. The study area was defined in consultation with City Engineering and Development Department staff and is considered to address the extent of this project's traffic impacts.

4. The revised report examined the volume to capacity of peak-hour volumes.

5. Future volumes presented in the revised report represent buildout traffic, no specific year is attached to these numbers.

6. This recommendation, together with recommended improvements at the Logan Avenue/I-5 southbound entrance ramp, is contained in the mitigation section of

7. 2. What are the impacts to the southbound I-5 off-ramp at Logan Avenue if Beardsley Street is made one-way eastbound and traffic must turn right onto Logan Avenue then left on to Sigsbee Street?

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9. 4. The Barrio Logan Redevelopment Plan needs to be consistent with Congestion Management Plans. Specifically, the subject redevelopment area needs to be developed in a manner that will encourage the use of mass transit as a way to mitigate transportation impacts.

10. 5. Summary: Our agency is concerned about the extent of the unmitigated traffic impacts at Interstate 5 as described in or as can be estimated from the information in this DEIR.

Our initial contact person for Interstate 5 and State 75 in the vicinity of the Barrio Logan Redevelopment area is Jim Linthicum, Project Manager, Project Studies Branch "B," (619) 688-6952.

JAMES T. CHESHIRE, Chief
Environmental Planning Branch

MO:wkb

RESPONSE TO COMMENTS

the revised report. Required coordination and approval by Caltrans is noted in both cases.

7. The revised traffic study did not analyze a scenario with Beardsley Avenue one-way eastbound. The study analyzed Beardsley Avenue one-way westbound as an alternative roadway configuration.

8. TBP

9. The Redevelopment Plan is transit-oriented in that it proposes urban mixed-use development within a traditional grid street pattern. Specific future projects within the plan area will be examined to ensure conformance with the goals and policies of the Redevelopment Plan, including the following:

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- Providing for appropriate street improvements to allow traffic to operate more efficiently;
- Providing for safe pedestrian mobility; and
- Developing a pedestrian-scale open space connection between Chicano Park and Bayfront Park, at the foot of Crosby Street.

10. Please see the responses to the previous comments.

CITY PLANNING DEPT.
FEB 27 1991
RECEIVED

County of San Diego

NORMAN W. HICKEY
CHIEF ADMINISTRATIVE OFFICER
(619) 531-6226
(Location Code 7301)

CHIEF ADMINISTRATIVE OFFICE

1600 PACIFIC HIGHWAY, SAN DIEGO, CALIFORNIA 92101-2472

February 26, 1991

Ann B. Hix, Principal Planner
City of San Diego
Planning Department
Development and Environmental Planning Division
202 "C" Street
San Diego, CA 92101

RE: Comments Regarding Barrio Logan Redevelopment Plan Draft Environmental Impact Report

Dear Ms. Hix:

Thank you for the opportunity to review the draft Environmental Impact Report (EIR) for the Barrio Logan Redevelopment Plan. The Office of Special Projects has reviewed the draft EIR with respect to its discussion of blight and potential fiscal impacts. We have the following comments:

1. The draft EIR does not identify the County as an affected taxing agency within the Project Area. The final EIR should note that implementation of the Redevelopment Plan will result in a loss of future property tax revenues to the County. This loss can be mitigated by payment of tax increment to the County pursuant to Section 33401(b) of the California Community Redevelopment Law.

2. Although a copy of the County's April 20, 1990 response to the Notice of Preparation is included in the draft EIR, the EIR does not include the requested description of the regional services provided by the County, including social services, public health, welfare, courts, criminal justice and other services provided within the Project Area and throughout San Diego County.

   The final EIR should include a description of the regional services provided by the County. In addition to those specified above, the County provides the following direct regional services: Air Pollution Control, Assessor, Auditor and Controller, Coroner, Farm and Home Advisor, Recorder, Regional Parks and Treasurer-Tax Collector. Also, a number of County departments, including County Counsel, General Services, Human Resources, Information Services and Purchasing and Contracting, support departments that provide direct regional services.

RESPONSE TO COMMENTS

The Agency has been in consultations with the County for a number of months to discuss the possible impacts of the project on them. The Agency also participated in hearings of the Fiscal Review Committee regarding the proposed project. In connection with the fiscal review process, the Agency prepared a "Response of the Redevelopment Agency of the City of San Diego to the Final Report of the Fiscal Review Committee for the Barrio Logan Redevelopment Project" dated April 22, 1991. The response includes an analysis of the possible impacts of redevelopment in the project area on all of the taxing agencies, including the County, and is available in the office of Secretary of the Redevelopment Agency, and is incorporated herein by this reference. In addition, the Agency's economic consultant, Keyser Marston Associates, prepared an analysis on the possible effects on the County itself which responds to the concerns raised in the County's comments on the draft EIR. A copy of that analysis is attached to this response to comment as Exhibit A.

3. The draft EIR does not analyze the extent to which implementation of the Redevelopment Plan would place additional service demands on the County, nor does it discuss how the Project would affect the County's ability to provide services within and outside the Project Area. These issues should be addressed in the final EIR.

   The draft EIR forecasts an increase of 881 dwelling units within the Project Area, from 317 to 1,198. Assuming an average household size of 3.0, as per page 3-92 of the draft EIR, the Project Area population would increase by 2,643 persons from a current level of 951 to a total of 3,594.

   This increase of 278 percent to the existing residential population would cause a significant adverse impact on the County. The County of San Diego is facing severe fiscal constraints and presently lacks adequate funds to provide necessary regional and unincorporated area services.

   A major conclusion of the June 1987 study entitled Regional Governmental Responsibilities and Revenues, prepared by the San Diego Association of Governments, was that "the County's revenue base is less adequate than that of cities, making it relatively more difficult for the County to pay for local services in the unincorporated area while maintaining its regional services responsibilities."

   In a report issued on January 10, 1990, the State Legislative Analyst found that "relative to other counties, San Diego County has less revenue remaining to address local needs after paying the costs of state-required programs....[San Diego County] has less fiscal capacity to deal with local service demands and changing state requirements than most other counties."

   Regional services account for approximately 90 percent of the County's budget. The County's ability to provide these services, as well as local services in the unincorporated area, is already limited and will be further impaired unless the County is compensated for the loss of property tax revenues which will result from the use of tax increment financing for redevelopment activities in the Project Area.

4. On page 5-1, the draft EIR states:

   > "An estimated 5,991 direct, new, long-term employment opportunities would be created after project construction is completed. The new employment is expected to generate a secondary impact on the demand for consumer goods and services, thus creating additional indirect employment opportunities."

The final EIR should analyze the extent to which creation of new direct and indirect jobs would cause a net increase in regional population growth, and the impact of such growth on the demand for County regional services.

If you have any questions, please contact Carol Landsman at 531-5279.

Sincerely,

RICH ROBINSON, Director
Office of Special Projects

RR:CL:me

cc: Robert Griego, Deputy Chief Administrative Officer
Lari Sheehan, Deputy Chief Administrative Officer
Rod Calvao, Auditor and Controller
Lauren Wasserman, Director, Department of Planning and Land Use

Exhibit A

KeyserMarstonAssociatesInc.

Richard L. Botti
Calvin E. Hollis, II
Kathleen H. Head

SAN DIEGO 619/942-0380
Heinz A. Schilling

SAN FRANCISCO 415/398-3050
Timothy C. Kelly
A. Jerry Keyser
Kate Earle Funk
Robert J. Wetmore
Michael Conlon
Denise E. Conley

500 South Grand Avenue, Suite 1480
Los Angeles, California 90071
213/622-8095 Fax 213/622-5204

April 19, 1991

San Diego Redevelopment Agency
Security Pacific Plaza
1200 Third Avenue, Suite 1620
San Diego, California 92101-4199

Attn: Ms. Sara Isgur

Pursuant to your request, Keyser Marston Associates has reviewed the San Diego County analysis of the regional service costs experienced by the County.

San Diego County submitted, in April, 1990, an analysis of the per capita costs for regional services provided by the County. The analysis, based upon the 1989-90 County budget identifies each regional service and makes allocations of certain costs which are both regional and local, i.e., provided solely to unincorporated areas of the County.

The analysis is prepared on an average, per capita cost basis. No attempt is made to gauge the applicability of average costs to the services resulting from the proposed project and its objectives. No analysis is made as to marginal costs, or differential costs among varying land uses. Neither is there any analysis of the impact the Agency's program would have if successful in reducing residential overcrowding, providing local employment opportunities to the areas unemployed and underemployed, or increasing educational services through the proposed cooperative program with the San Diego Community College District.

The analysis concludes that the per capita costs of regional services total $185 in 1990-91. Of that amount "property taxes make up over half of general purpose revenues." Assuming property taxes represented 75% of total general purpose revenues, the regional costs funded by such taxes would be ±$139 per capita.

The following shortcomings in the County analysis were identified.

Marginal Costs

In reviewing the services shown as regional costs, nearly $49 per capita represent administrative costs, i.e., General Government Departments and Support Departments and Programs. Given the relatively small change to population within the Project area as compared with the county-wide population (2,700[1] versus 2,500,000[2] or one tenth of one percent), it is not clear how the administrative burden of the County would be increased. This example points to the need for such analysis by the County to be prepared on a marginal cost basis, rather than per capita average basis.

Program Impacts

Nearly 17% or $31 per capita of the County Regional Cost estimate represents the costs of Health and Social services. The Agency's primary objectives for the Project include providing enhanced living conditions for Project area residents and employment opportunities for the unemployed and underemployed of the greater Barrio Logan area. To the extent the program is successful, the reliance upon County Health and Social Services by area residents should decrease. To the extent employment and area residents' income are increased, certain county public protection costs, especially court-related costs incurred by the County will likely be reduced as well.

The County analysis fails to recognize these programmatic positive impacts to the costs of County services.

Program not Regional Growth Inducing

While the successful implementation of the Project is expected to attract housing and commercial development within the Project area, this development is local serving and will either create services currently lacking in the area (such as convenience retailing) for which residents must currently go outside the area, or it will redirect development and housing opportunities which otherwise would be developed elsewhere in the County. As a result, increased employment and residents within the Project area are not expected to represent significant net new employment and residents within the greater San Diego County area. Therefore, the demand for and natural growth of County services is not expected to be materially affected.

---

1. EIR

2. County of San Diego April 23, 1990

Insignificant Impact

Notwithstanding the above, even if the County methodology is employed, that is, merely taking the growth in project area residents (2,700) and multiplying it by the average cost of services ($185) results in a service cost of $499,500 at full build-out, or $20,000 per year average annual increase over a 25-year period. The $499,500 represents less than 2 tenths of 1% of the County property tax revenues in 1989 and significantly less than that of total County general fund revenues.

The average annual increase of $20,000 is of no impact. We would conclude that the project will not result in a significant detriment to the County of San Diego.

We are available to discuss this analysis at your convenience.

Sincerely,

KEYSER MARSTON ASSOCIATES, INC.

Heinz Schilling

Calvin E. Hollis

HS:CEH:lp

91191.CCD
19050.0053

Sara

MTDB
Metropolitan Transit Development Board

1255 Imperial Avenue, Suite 1000
San Diego, CA 92101-7490
(619) 231-1466
FAX (619) 234-3407

RECEIVED
FEB 28 1991
RDV. DEV./PROP. DEPT

MEMORANDUM

DATE: February 26, 1991 T 461.1

TO: Ann Hix, Principal Planner, City of San Diego

FROM: Jim Bryant, MTDB Liaison

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE BARRIO LOGAN REDEVELOPMENT PLAN

Thank you for the opportunity to review the Draft Environmental Impact Report (DEIR). The Metropolitan Transit Development Board (MTDB) recognizes the importance of public transit to the successful implementation of the redevelopment plan. The significant unmitigated impacts to air quality, traffic, and population/housing from implementation of the plan militate for an increased reliance on public transit.

1. The DEIR should include a project alternative that reflects the crucial role of transit in achieving the project objectives. The DEIR assumes a 20 percent reduction in vehicular trips because of transit and pedestrian trips. This mode split is more likely to be achieved with a transit-oriented project alternative. A transit-oriented alternative would be consistent with the project objective of promoting a vibrant mixed-use community, and would also specifically address the adverse impacts related to air quality, traffic, and housing.

A transit-oriented project alternative would focus on creating a pedestrian environment within walking distance of the Barrio Logan Trolley Station, with a mix of uses that promotes pedestrian trips rather than vehicular trips. This transit-focused concept has been incorporated in the General Plan of the County of Sacramento, and is the basis for private development projects in Sacramento, Seattle, and Los Angeles.

The Redevelopment Plan currently includes many of the principles of a transit-oriented alternative, particularly its emphasis on mixed-uses. The primary distinction of a transit-oriented alternative would be the strong orientation of a pedestrian network to the Trolley Station, and a land-use plan which directs the most intensive land uses and activity centers to areas within walking distance of the station.

2. The Mercado District, a proposed mixed-use project with commercial and residential uses, could be an exemplary transit-oriented development if it maintains a fidelity to the original Plaza del Mercado concept. The Plaza del

Member Agencies
City of Chula Vista, City of Coronado, City of El Cajon, City of Imperial Beach, City of La Mesa, City of Lemon Grove, City of National City, City of Poway, City of San Diego, City of Santee, County of San Diego, State of California
Metropolitan Transit Development Board is Coordinator of the Metropolitan Transit System and is Regulatory Authority for Paratransit Administration

RESPONSE TO COMMENTS

1. The Redevelopment Plan is transit-oriented in that it proposes urban mixed-use development within a traditional grid street pattern. Specific future projects within the plan area will be examined to ensure conformance with the goals and policies of the Redevelopment Plan, including the following:

   Develop a pedestrian and vehicular transportation network which minimizes and reduces existing circulation conflicts, coordinates with land uses and densities, and provides additional accessibility for transit-dependent population by:

   - Developing a street hierarchy that will reinforce the identity of different uses and develops buffers between residential and industrial uses;
   - Encouraging local traffic to utilize commercial corridors and direct industrial traffic to peripheral streets through signage and revised circulation patterns;
   - Providing for appropriate street improvements to allow traffic to operate more efficiently;
   - Providing for safe pedestrian mobility; and
   - Developing a pedestrian-scale open space connection between Chicano Park and Bayfront Park, at the foot of Crosby Street.

2. The proposed Mercado del Barrio is a specific project proposed under the Redevelopment Plan requiring federal funding. It will be examined in a future environmental impact report/environmental impact statement (EIR/EIS). This EIR/EIS will address the Mercado's conformance to the goals and policies of the Redevelopment Plan.

Mercado design incorporated a network of courtyards and paseos to create a diverse pedestrian environment. This pedestrian network would link the Mercado to surrounding uses, including Chicano Park to the east, the school/cultural center to the north, and the Barrio Logan Trolley Station and Bay Park to the west.

In light of the importance of public transit in achieving the community goals embodied in the plan, the plan should seek to maximize the opportunities presented by the Barrio Logan Trolley Station. Irrespective of the ultimate alternative selected for implementation, the Redevelopment Plan should capitalize on the access and mobility afforded by light rail transit (LRT). The role of LRT as a regional transportation system will increase in importance as measures are adopted to improve air quality and reduce traffic congestion.

The Air Pollution Control Board must submit a plan to the Air Resources Board (ARB) by June of this year to reduce air pollutant emissions in compliance with the California Clean Air Act. The City of San Diego has adopted a Transportation Demand Management (TDM) program to reduce vehicular trips as a means of reducing traffic congestion. Additionally, SANDAG is also developing a regional TDM program, as well as a Congestion Management Program as mandated by State law. The primary thrust of these programs is to get people out of their cars and into alternative forms of transportation.

3. The plan should specifically identify how the project and alternatives will comply with and/or support the TDM program, Congestion Management Plan, and the California Clean Air Act.

If you have any questions related to these comments, please contact me at (619) 557-4533.

JRB:jrb:paw
M-BARRIO.JRB

cc: Sara Isgur, Property Department
Ella Paris, City Architect's Office

RESPONSE TO COMMENTS

3. Mitigation measures identified in the air quality section of the draft EIR include implementation of the City's Transportation Demand Management (TDM) program within the plan area, requirements for future projects to accommodate mass transit in project design, and requirements for all major employers to submit plans to the San Diego AQMD which detail proposed mechanisms to promote alternative modes of transportation. As noted in the final EIR, the Redevelopment Plan does not include proposals for specific development projects. As individual projects are proposed in the future, analysis will be prepared to identify project-related impacts and specific mitigation measures with regard to the California Clean Air Act and related implementation measures (TDM and Congestion Plan)

CITY of SAN DIEGO

MEMORANDUM

FILE NO.:

DATE : January 24, 1991

TO : Ann B. Hix, Principal Planner, Planning Department

FROM : Sam R. White, Deputy Fire Marshal, Fire Department

SUBJECT: **DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE BARRIO LOGAN REDEVELOPMENT PLAN**

---

1. After reviewing the above referenced draft environmental impact report, I have determined that there will be no adverse affects in regards to the Fire Department.

The streets will be widened, the fire hydrants will be relocated from 600 feet to 300 feet, and the water supply will be unchanged. However, there will be CEDMAT (Combustible, Explosive, and Dangerous Materials) inspections which will need to be conducted by Hazardous Materials Management.

If you have questions regarding this review, I can be contacted at 533-4472.

Sam R White

Sam White, Deputy Fire Marshal
Fire Department

SW:cc

RECEIVED
FEB 04 1991
PLANNING

FORM CD-160

RESPONSE TO COMMENTS

1. Thank you for reviewing the draft EIR. Comment noted.

City of San Diego
MEMORANDUM

File No.: mobu

Date: January 31, 1991

To: Gary Easton, Director of Operations

From: N. L. Brewer, Division Chief

SUBJECT: Barrio Logan Redevelopment Plan

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1. The Fire Department will not be adversely affected by anything outlined in the Barrio Logan Redevelopment Plan. Although traffic will increase in the area, measures are being taken to widen a number of streets in the area. Conditions should improve as a result, especially for Engine 7, as both Crosby Street and National Avenue will be widened. Other streets in the area will be widened as well.

The water supply will be enhanced by providing hydrants 360 feet apart instead of the current 600 feet separation (pg. 3-91).

Fire station location is adequate to provide fire protection for the proposed project (pg. 3-88).

Norval Brewer

RESPONSE TO COMMENTS

1. Thank you for reviewing the draft EIR.

CITY OF SAN DIEGO
MEMORANDUM

RECEIVED
FEB 0 4 1991
CLEAN WATER PROGRAM

FILE NO: BL.8/802,760

DATE: January 30, 1991

TO: Anne Lowry, Environmental Analysis Section (EAS), Development and Environmental Planning Division

FROM: Senior Traffic Engineer, Transportation Development Section, Transportation Planning Division

SUBJECT: BARRIO LOGAN REDEVELOPMENT PLAN, JOB ORDER NO. 900133

We have reviewed the draft Environmental Impact Report for Barrio Logan Redevelopment Plan, and we have the same concerns as per our previous memorandum dated October 1, 1990 (copy attached).

Walt Huffman
Senior Traffic Engineer

LMQ:bjl
b:bl8.lmq

Attachment:
October 1, 1990, Memorandum to Development & Environmental Planning Division, Planning Department

cc: Jeff Strohminger
Dave Sorenson
Craig Tennesen
Gary Halbert
Julio Fuentes

RESPONSE TO COMMENTS

1. The traffic report (and traffic section of the EIR) was revised after publication of the draft EIR. The revised analysis, which appears in the final EIR, addresses the concerns of the City Transportation Planning Division, including those expressed in this memorandum.

CITY OF SAN DIEGO
MEMORANDUM

FILE NO: 802,760/B1.8

DATE: October 1, 1990

TO: Development and Environmental Planning Division, Planning Department

FROM: Senior Traffic Engineer, Transportation Development Section, Engineering and Development Department

SUBJECT: REVIEW OF TRAFFIC INFORMATION/ANALYSIS FOR BARRIO LOGAN REDEVELOPMENT PLAN

DEPD: Please review and comment on the traffic study.

TP: We have reviewed the traffic study for the above project, and we have the following comments:

1. Provide all available information on how the traffic volume forecast was obtained. Include a paragraph explaining the method or software that was used to distribute the trips.

2. The buildout levels of service at each intersection must be shown for the a.m. and p.m. peak hours, using the ICU method for signalized intersections and the HCM method for unsignalized intersections. This information was previously requested in our memorandum dated June 29, 1990 (see attachment). This data is necessary to analyze the traffic impacts at intersections and propose mitigation measures. Detailed traffic studies will not be necessary for all future projects within Barrio Logan, provided that such projects conform to this redevelopment plan. This information will also be used to determine where left-turn and right-turn lanes are needed at the intersections.

3. On page 8, the table labeled "Roadway Capacity Assumptions" should be modified to "Recommended Maximum ADT's," and the City of San Diego's "Street Design Manual" (July, 1987) should be the only source used for this purpose. It should be noted that there are no streets in the design manual designated specifically for diagonal parking, without on-street parking, or 52 feet wide. Please review this data for consistency with the manual. "Table 2" should be modified to be consistent with the above changes. Please note that the "Recommended Maximum ADT" column is related to the actual design of a particular street and not the current operational characteristics. Most of the streets in this area have been designed as two-lane industrial collectors with fronting property. In addition, "Table 2" should have a column indicating the curb-to-curb width of the street and the street classification.

RESPONSE TO COMMENTS

RESPONSE TO COMMENTS

4. The parking impacts of this redevelopment project must be further evaluated. Parking is heavily utilized throughout the area, and redevelopment will increase the demand for both on-street and off-street parking. It should be noted that some of the mitigating measures recommended in this report include temporary and permanent parking removal on several streets in the area.

5. The table labeled "Recommended Street Improvements" should be modified to reflect improvements consistent with the City's Street Design Manual. Deviations from the manual may be considered on a case-by-case basis, provided that the reasons for the changes are stated in the report. Please note that any deviations from the design manual must be supported by ICU or HCM calculations. Also, a column should be added to this table showing the future traffic volumes and future classification of the roadway. It should be noted that restriping a 52-foot street for four lanes would still require widening at intersections for left-turn and/or right-turn lanes. Furthermore, the peak hour parking restriction concept is new to our City and has not yet been tested in commercial areas. Given the current parking demand in this area, and considering that redevelopment will likely increase the parking demand, we cannot recommend peak hour parking restrictions as a means to adequately handle future traffic volumes on the subject streets. Other mitigating measures should be considered.

6. The conversion of streets from two-way to one-way flow and the permanent closure of a street require not only the support of abutting property owners, but also specific action by the City Council. Dedication of private property may be required on every street closure in order to provide adequate vehicular turnaround. A field inspection revealed that all of the proposed street closures and the one-way conversions are feasible. However, the above-mentioned issues need to be addressed. In addition, the impact of the closures on the street network should be analyzed for circulation and capacity changes on adjacent streets.

7. A map of the future street configuration showing future traffic volumes should be attached.

8. All of the above comments apply to the Alternative A and B projects.

9. Our records indicate that most streets showing a 56-foot right-of-way on Page 6 of the report have a 60-foot right-of-way. The table needs to be corrected.

10. The traffic volumes on Table 2 for Crosby Street northeast of Logan Avenue and for the section between National Avenue and Main Street should be exchanged. On the same table, the traffic volume for I-5 does not appear to be current. Please revise this data.

SAN DIEGO CITY SCHOOLS
EDUCATION CENTER • 4100 Normal Street, San Diego, CA 92103-2682 •
BUSINESS SERVICES DIVISION

RESPONSE TO COMMENTS

February 13, 1991

CERTIFIED MAIL

PLANNING DEPT.
FEB 19 1991
RECEIVED

Ms. Anne Lowry
City of San Diego
Planning Department
Development and Environmental Planning Division
202 "C" Street, Mail Station 4C
San Diego, CA 92101

Dear Ms. Lowery:

Re: Draft Environmental Impact Report for the Barrio Logan Redevelopment Plan, SCH #90010287

The subject document has been reviewed by the San Diego Unified School District with respect to potential significant impacts on the district as required by CEQA.

The following comments are offered for your consideration:

1. The DEIR acknowledges that there will be significant impacts to elementary and junior high schools (p. ES-4). In evaluating the impact, the DEIR examines the capacities of Perkins Elementary (within the Project boundary), Memorial Junior High and San Diego Senior High and the number of existing students residing in the Project Area who attend these schools.

   The evaluation of future impact, however, does not include all students from the Project Area. District policy allows students to attend any school within the district, regardless of its location. Therefore, by not including students from the Project Area who attend school other than the three referenced above, the EIR does not fully capture the impact to the district.

2. On page 3-88 the DEIR reports that "the project would allow for construction of approximately 881 dwelling units." The Redevelopment Agency's Preliminary Report states that 1,083 new units are anticipated. However, the Agency does not assume any additional growth beyond the first 17 years of the project. It seems reasonable to anticipate that additional units will be constructed throughout the life of the Project, given the impetus of the Agency, through continued conversion of industrial land to residential uses and more efficient use of existing residential land.

1. Since Perkins Elementary School and San Diego High School are both magnet schools, students from other areas that are part of the San Diego Unified School District have the option of attending these schools, while students from the Barrio Logan community can choose to attend schools outside of their neighborhood. The final EIR evaluates the impacts to these magnet schools because of the redevelopment project and references the fact that these schools both have planned expansions that will increase their capacity beginning in calendar year 1991, thus negating any possible significant adverse impact that the redevelopment project may cause to the District. To fully address the impacts to other schools besides the neighborhood schools for the Barrio Logan community, one would have to receive information as to the enrollment at these schools of students from other areas of the District. This analysis is beyond the scope of the EIR.

3. The analysis of the impact on the district in the DEIR does not include discussion of new households as a result of new non-residential development. While some of these households may be accommodated in the Project Area itself, and their impact thus reflected in the students from new residences, many of them will be located outside of the Project Area and represent additional demand for district services.

4. The DEIR states that impact fee revenues collected by the district will mitigate the impacts of the Project Area (p. 3-93). Impact fee revenues, however, are (1) limited by law and (2) may only be used to pay for capital facilities to serve new development and cannot be used to pay for rehabilitation costs or increased maintenance costs and operating expenses.

   Our estimates show that the district can expect to collect approximately $7.5 million in impact fee revenue, assuming the district increases its fees to the State maximum. However, the capital costs to serve students as result of new residential and non-residential development are about $84 million, resulting in a unfunded cost of $76.5 million. Additionally, rehabilitation costs total $4 million.

5. The DEIR does not address the additional operational costs that the district will incur from students from new development and existing development. We estimate that these costs will total $717 million. Property tax revenues represent 36.5 percent of the district's general fund budget which covers these costs, or $260 million. With redevelopment, these revenues will be transferred from the district to the Redevelopment Agency.

   The loss of property tax revenues as a consequence of redevelopment plans increases a district's need for State funds. Districts currently rely on the State to make up the difference between the State-selected revenue limit and the amount of property tax revenue a district receives. Due to the fact that state laws change, the funding levels that districts currently budget for are not assured. Additionally, as the number of redevelopment projects increase across the state, school districts must rely even more on the State for funding. The amount of State funding is fixed, however, thereby potentially lowering the State's ability to fully offset decreases in tax revenues. If the State has monies to offset the difference, less funds are available for other school programs.

Thank you for the opportunity to review and comment on this report.

Sincerely,

J.V. Ward

J.V. Ward
Business Services Administrator

JVW:ds
L L021391A/B

RESPONSE TO COMMENTS

1,2,3,4,and 5. The Agency has been in consultation with the Sa Diego Unified School District for a number of months to discuss th possible impacts of the project on them. The Agency als participated in hearings of the Fiscal review Committee regardin the proposed project. In connection with the fiscal revie process, the Agency prepared a "Response of the Redevelopmen Agency of the City of San Diego to the Final Report of the Fisca Review Committee for the Barrio Logan Redevelopment Project" date April 22, 1991. The response includes an analysis of the possibl impacts of redevelopment in the project area on all of the taxin agencies, including the San Diego Unified School District, and i available in the office of the Secretary of the Redevelopmen Agency , and is incorporated herein by this reference. A copy o the analysis pertaining to the San diego Unified School District i attached to this response to comment as Exhibit B.

Exhibit B

III. ANALYSIS OF TAXING ENTITY REPORTS

Appendix C of the Report of the Fiscal Review Committee contains analyses of the fiscal impacts implementation of the proposed project would have on the committee members. The following discusses the findings of each of these analyses, as proposed by Keyser Marston Associates, Inc. consultant to the Agency.

SAN DIEGO UNIFIED SCHOOL DISTRICT (SDUSD)

In the analysis prepared for the SDUSD, the District's consultants concluded as follows "Through creation of the Barrio Logan Redevelopment Project, the District will be directly deprived of $160 million in the form of lost revenues, almost all of which it would otherwise receive. Alternatively, the proposed plan would increase net district costs by an estimated $277 million."

The analysis proposed for SDUSD is believed to significantly overstate the impact the proposed Project will have both in terms of the net new students the District will serve solely as a result of the proposed Project, and the availability of financial resources to meet operating and capital requirements. The major shortcomings of the analysis are addressed below.

1. Nature of the Project Area and Program

   The analysis fails to consider the specific redevelopment program proposed for the Barrio Logan Project. As described above, the Project is meant to address the needs of residents in the southwest portion of San Diego, provide employment opportunities for existing residents, and upgrade existing housing stock. New residential development will either replace existing substandard housing or provide housing opportunities which, absent the Project, would be met through additional overcrowding or through housing resources elsewhere in the San Diego area, most of which would likely be within the SDUSD jurisdictions. The end result is that the Project's implementation should not result in significant increases to District-wide student population beyond that currently projected by the District.

2. Scope of Development

   The scope of residential and commercial development utilized by the SDUSD in estimating Project impact is in part based upon Agency provided data and in part by assumptions of additional residential development created by the SDUSD analysis. The actual amount of employment generating development likely to occur will be substantially less than that indicated by the SDUSD.

   The scope of development expressed in terms of square footage of commercial building area is generally consistent with that used by the Agency in the Project EIR.

However, to achieve the square footage of building area assumed would require the new commercial development to be served by subterranean parking exclusively. Neither the EIR nor the District's analysis comments upon the physical or economic feasibility of such parking. If in the alternative, structured, above grade parking were utilized, the employment generating square footage would be reduced to 1,346,000 or 44% of the EIR and District assumed square footage.

Further analysis assumes residential development in the project area from Years 25 to 40 of the plan proportionate to that in Years 1 to 24 as projected by the Agency (a total of 881 units). This development assumption (an additional 305 units) is speculative at best. The Redevelopment Plan provides that these will be approximately 1,200 residential units upon completion of the project. Inasmuch as the analysis concludes that the impact of new students on operating costs is an unfunded $154.0 million over the life of the plan, the additional 305 units alone adds $23.0 million, i.e., increases the "unfunded" amount from $131.0 million to $154.0 million.

Similarly, this one assumption increases the unfunded capital facilities costs from new students by $9.0 million, from $51.0 million to $60.0 million.

It is also to be noted that both operating and capital costs generated by new students are average costs. A more meaningful, and likely lower number, would result if marginal cost were used.

3. Inclusion of Students in Existing Housing

The analysis concludes that serving students in existing housing (presently 370, estimated to increase to 485 over the life of the plan) will result in $59.0 million of unfunded net costs. Inasmuch as these students would need to be served absent any redevelopment plan, their inclusion is inappropriate as the increase is not as a result of the proposed project.

4. Operation Costs Paid by State

The "unfunded" operating costs for existing and new students are detrimental to the District only in those years when the State of California does not fully fund the District's revenue limits. The assumption that this would occur in all years in the future is purely speculative and contrary to past District experiences. Past history would suggest a total or near total funding from the State in most years.

5. Capital Costs Funding Resources

Because the project is not expected to generate substantial students District-wide beyond that which would occur absent

the project, the available funding for future District facilities should be considered. The SDUSD analysis fails to consider the resources identified in the District's Long Range Facilities Master Plan (LRFP). The SDUSD analysis concludes that net unfunded capital costs resulting from the project's implementation is $60.0 million. When the LRFP is taken into account, as shown on Table 1 below, the net impact is ±$4.50 million over the initial 20 years or ±$225,000 per year.

In summary, the fiscal impact of the proposed project is significantly less than the estimate in the SDUSD analysis. Specifically:

1. Implementation of the project will not materially increase District enrollment, but will direct the location of District growth occurring otherwise.

2. The "unfunded" operating costs for new students will occur only if: a) the marginal operating costs are greater than the ADA revenue limit, and b) the State fails to fund to the revenue limit. The SDUSD analysis fails to address either marginal costs or the historic availability of State funds adequately.

3. Much of the capital cost required to be funded are accommodated in the District's long-term facilities plan. Availability of Proposition Y and other sources is not addressed in the SDUSD report.

San Diego County Archaeological Society, Inc.
Environmental Review Committee
P.O. Box A-81106 San Diego, CA 92138

February 23, 1991

RECEIVED
FEB 26 1991
PLANNING

To: Ms. Anne Lowry
Development and Environmental Planning Division
Planning Department
City of San Diego
202 C Street, Mail Station 4C
San Diego, California 92101

Subject: Draft Environmental Impact Report
Barrio Logan Redevelopment Plan
DEP No. 90-0133

Dear Ms. Lowry:

I have reviewed the cultural resources aspects of the subject DEIR on behalf of this committee of the San Diego County Archaeological Society.

Based on the comments of the DEIR and its Appendix E (Archaeological Records Search), we have the following comments:

(1) Appendix E addresses only the records searches obtained from the San Diego Museum of Man and the South Coastal Information Center at San Diego State University. The historic structures survey, prepared by the City Architect, should have also been included as an appendix. It appears to not even be listed among the references at the end of the DEIR. As it presently stands, the reviewer has no easy way to confirm the conclusions presented for historic resources.

(2) Page 3-102 discuses four potential historic districts, which agrees with Figure 9. However, page 3-103 refers to five potential historic districts. Was there earlier a fifth potential district, or is this a simple typographical error?

(3) We concur with the impact analysis and mitigation program presented for archaeological resources.

(4) If this plan is to remain in effect essentially in perpetuity, provision should be made for periodic or case-by-case review for potential additional historic resources. Perceptions of historic values can change over time, and the passage of time also adds eligibility to existing resources. As a simple example, at some point in time, Chicano Park may be felt to be historic, based on its association with the 1970 period of Mexican-American cultural identity and development in San Diego. Other, less obvious cases may well also develop.

RESPONSE TO COMMENTS

1. The historic structures survey prepared by the City Architect is available for review at that office. This preliminary survey is a point of departure for future actions by the historical site board in determining which properties should be designated as historic or potentially historic.

2. We apologize for the typographical error that has resulted in this lack of clarity. The text has been corrected to consistently read "four potential historic districts."

3. Thank you for your comment.

4. An Environmental Impact Statement is under preparation for the Barrio Logan Redevelopment Plan. As part of the EIS process, a Memorandum of Agreement (MOA) will be prepared pursuant to Section 106 of the National Historic Preservation Act. The MOA will address the concerns you have pointed out and any other concerns and issues identified by the signatories to the MOA.

(5) The last sentence of the second paragraph on page 3-104 of the DEIR states that "Impacts to cultural resources must be considered significant and not mitigated until implementation of the final Mitigatioo aod Monitoring Program." As the very next paragraph indicates, this statement is not true, as HABS documentation of a historic structure prior to its demolition does not fully mitigate the loss of that resource.

(6) The third paragraph on page 3-104 implies that HABS documentation of historic structures which are not eligible for the National Register fully mitigates the impacts of their destruction. What is the basis for this assertion? Why wouldn't loss of any structure eligible for the San Diego Historical Landmarks List also be significant and not mitigated by HABS documentation?

SDCAS appreciates having the opportunity to provide comment on the DEIR for this project.

Sincerely,

James W. Royle, Jr., Chairperson
Environmental Review Committee

cc: The Keith Companies Archaeology Division
file

RESPONSE TO COMMENTS

5. Please see the revised Mitigation Measures section in the final EIR. The MOA that will be developed for the federally-assisted Barrio Logan project will further address this issue.

6. The MOA will also address the issue of appropriate mitigation of structures eligible as San Diego Historical Landmarks.

BOWIE, ARNESON, KADI & DIXON
A PARTNERSHIP INCLUDING A PROFESSIONAL CORPORATION

ALEXANDER BOWIE*
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REF. OUR FILE

RECEIVED
FEB 27 1991
PLANNING

February 26, 1991

City of San Diego
Planning Department
Development and Environmental Planning Division
202 "C" Street, Mail Station 4C
San Diego, California 92101

Re: Draft Environmental Impact Report, Barrio Logan Redevelopment Project

Gentlemen:

This firm represents the San Diego County Office of Education ("SDCOE"). The following is an evaluation of the draft Environmental Impact Report ("dEIR") for the Barrio Logan Redevelopment Plan (the "Project"), which is submitted on behalf of SDCOE at the request of SDCOE's Director of Facility Planning, Mr. Thomas Robinson.

ANALYSIS

A. THE PROJECT DESCRIPTION DOES NOT PROVIDE AN ADEQUATE DESCRIPTION OF BLIGHT.

1. At the onset, it must be emphasized that the dEIR does not provide an adequate description or showing of blight to support approval for the Project. Community redevelopment, such as the type contemplated by the Project, cannot be justified absent evidence of blight. Regus v. City of Baldwin Park (1977) 70 Cal.App.3d 971, 982, 139 Cal.Rptr. 196, 204. The necessary characteristics of blight may include:

1) economic dislocation, deterioration, or disuse resulting from faulty planning,

2) a growing or total lack of proper utilization of areas, resulting in a stagnant and unproductive condition of land potentially useful and valuable for contributing to the public health, safety, and welfare,

RESPONSE TO COMMENTS

1. It is not the purpose of the EIR to justify the need for redevelopment. A blight study was prepared for the proposed redevelopment area; it is contained in the Preliminary Report and Final Report of the Council of the Redevelopment Agency for the Barrio Logan Redevelopment Project. The project description in the EIR has been modified to reference these reports, which are on file in the office of the Secretary of the Redevelopment Agency.

3) a loss of population and reduction of proper utilization of the area,

4) a prevalence of depreciated values, impaired investments, and

5) social and economic maladjustment to such an extent that the capacity to pay taxes is reduced and tax receipts are inadequate for the costs of public services rendered. See Sweetwater Valley Civic Association v. City of National City (1976) 18 Cal.3d 270, 274-275, 133 Cal.Rptr. 859, 861-82; Regus, supra, 70 Cal.App.3d 971, at 978, 139 Cal.Rptr. 196, 204.

Beyond a cursory statement contained in the "No Project Alternative" which suggests that there is a "current pattern of dilapidation, deterioration and economic decline existing in the Project area," the dEIR contains no description of the blighted conditions which would necessitate community redevelopment in Barrio Logan. As such, this description is insufficient to justify support for the Project. Absent a definite showing of blight, a project may be deemed ineligible for redevelopment. For example, the court in Regus stated that a "project cannot stand unless there is a showing that . . . conditions predominate and injuriously affect the entire area." 70 Cal.App.3d at 981.

The Regus court went on to offer examples of true blight, noting such factors as disproportionate percentages of extremely substandard housing, dangerous building conditions, and social and economic maladjustment as evidenced by a disproportionately high crime rate. Even if, arguendo, these conditions are characteristic of the Project area, the dEIR fails to suggest that Barrio Logan is blighted. Evidence of blight in Barrio Logan must be more specific and be more sufficiently and adequately characterized in the dEIR before the Project may be justified.

BOWIE, ARNESON, KADI & DIXON
A PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

B. THE DRAFT EIR OMITS SDCOE AS A SERVICE PROVIDER.

2. The dEIR describes the environmental setting for schools as follows: "Significant impacts to both an elementary and junior high school would occur within the San Diego Unified School District due to an increase in pupil generation. The school district is operating near classroom capacity." The dEIR also provides in Table 3-24 a breakdown of the constituent schools within the Project area, noting statistics for present capacity, as-built capacity, and unused available capacity. However, nowhere in the dEIR is SDCOE referenced or accounted for.

Given that substantial impacts are anticipated for the regional service providers (i.e. a 278% increase in the number of dwelling units, page 3-82, and a 152% increase in density from existing dwelling units, page 3-11), the omission of a major service provider to the Project area prevents the redevelopment agency from accurately assessing the environmental impacts and effects of the proposed mitigation measures. Although acknowledging significant impacts to the school districts, the inadequacy of the dEIR is clearly evident from the dEIR's conclusory statement in its "Environmental Consequences" section (Page 3-82), which suggests that "significant adverse impacts involving population are not anticipated to result from implementation of the redevelopment plan." Having omitted a major regional service provider, and despite statistics stated elsewhere in the dEIR revealing major increases in population growth and density anticipated as a direct result of implementation of the redevelopment plan, the conclusions are incongruous. Such inconsistencies and shortcomings in the dEIR demand that any final environmental impact report must account for all service providers to the area, including SDCOE.

2,6, 7. The Agency has been in consultation with the County Office of Education for a number of months to discuss the possible impacts of the project on them. the Agency also participated in hearings of the Fiscal Review Committee regarding the proposed project. In connection with the fiscal review process, the Agency prepared a "Response of the Redevelopment Agency of the City of San Diego to the Final Report of the Fiscal Review Committee for the Barrio Logan Redevelopment Project" dated April 22, 1991. The response includes an analysis of the possible impacts of redevelopment in the project area on all of the taxing agencies, including the County Office of Education itself which responds to the concerns raised in the County Office of Education's comments on the draft EIR. A copy of that analysis is attached to this repone to comment as Exhibit C.

C. THE DRAFT EIR DOES NOT SPECIFICALLY IDENTIFY THE EXTENT TO WHICH SCHOOLS LOCATED WITHIN THE PROJECT AREA WILL BE IMPACTED.

3. The dEIR identifies and concedes that Project area schools will be significantly impacted by the Project. (See, e.g., dEIR pp. ES-4, and 3-117). However, the degree of "significant impact" is stated by the dEIR as being "difficult to estimate due to the uncertainty of the size and type of dwelling units to be developed." This statement comes after numerous specific projections of increases in the numbers of multifamily and mixed use commercial/residential development resulting from implementation of the redevelopment plan. In fact, the dEIR anticipates with remarkable certainty a 152% increase in the density of residential units, and a 278% increase in the number of dwelling units (pps. 3-11, 3-82).

The paradoxical way by which the dEIR attempts to make specific projections regarding housing increases, while attempting to suggest that population impacts resulting from such increases are difficult to estimate places in question the reliability of the dEIR's conclusions regarding mitigation. Therefore, in order to address the qualitative and quantitative efficacy of the mitigation measures identified in the dEIR, the level of impacts must be more precisely adduced.

1. Given the Relationship between Population Density Increases and Impacts on Schools, Population Projections must be Accounted for Consistently.

4. There are numerous inconsistencies in the dEIR with respect to population impact projections. Section 2.41, ("Residential"), indicates that residential development will increase by approximately by 742 multiple family dwelling units. Page 3-11 indicates that 1,198 multifamily dwelling units would be developed as a result of developing the mixed

RESPONSE TO COMMENTS

3. Comment noted. The EIR examined the full 40-year buildout of the Redevelopment Plan, which would allow 1,198 units if the entire area was redeveloped. Assuming a maximum buildout of 1,198 units and a 1989 average household population size of 3.1 persons in Barrio Logan (City of San Diego Planning Department 1989), the maximum buildout population for the redevelopment project area can be estimated to be approximately 3,700 persons. The text has been revised to include this buildout population estimate.

4. There is not an inconsistency between Section 2.4.1, which refers to the amount of dwelling units to be developed under the residential designation, and page 3-11, which discusses the total number of dwelling units to be developed in the project area, including the units allowed under the Mixed Use and Mercado designations. Refer to Table 2-1, Land Use Summary, for a breakdown of dwelling units by designation.

use and "Mercado" designations with residential development, representing an increase of 278% above an existing 317 dwelling units.

5. Furthermore, on p. 3-80 (under the "Population" subsection), statistics indicate that the Project area's population has grown at a slower rate than in the rest of San Diego, although the Project area represents a higher proportion of children. Moreover, the statistics for Table 3-22, which indicate Census Tracts 50.00 and 51.00 as representative of the Project area, reveal that a portion of the Project area (Census Tract 51.00) grew by 2.7% per year, despite having a smaller population base than Census Tract 49.00 which grew at less than 1% per year. The Population statement also indicates that the City grew by 2.6% per year between 1970 and 1980.

Statistics provided by the San Diego City Planning Department suggest that growth in Census Tract 51.00 actually accelerated to 3.7% per year. Despite this it is still suggested that the existing population has in fact grown "at a slower rate than experienced in the City." The fact that a significant portion of the Project area exceeds population growth rates for the rest of the City is incompatible with a statement that this Project area has grown at a slower rate. The need for consistency in order to provide for the adequacy of mitigation measures is directly linked to the need for reliability of population statistics, when impacts on schools are directly and not secondarily the result of population density increases. The need for clearer and more consistent population data is most evident and must be amended if the dEIR is to have any value with respect to accounting for significant impacts.

5. The redevelopment project area is located within two census tracts: CT 50.00 and CT 51.00. As noted in the draft EIR, CT 51.00 contains portions of downtown San Diego. The growth rate for CT 51.00 is not applicable to the specific Barrio Logan Redevelopment Area.

For analysis purposes, the City has divided some census tracts into subtracts. Census tract 51.00 has been divided into CT 51.0001 and CT 51.0002. Census tract 51.0001 covers portions of southeast downtown San Diego. Census Tract 51.0002 covers Barrio Logan south of Commercial Street and northwest of the Coronado Bay Bridge; it contains a portion of the Barrio Logan Redevelopment Area. The population in CT 51.0001 (which does not contain the Barrio Logan Redevelopment Area) grew from 1,065 persons in 1980 to 1,459 persons in 1989, an increase of approximately 4.1 percent per year. The population of CT 51.0002 (which contains a portion of the Barrio Logan Redevelopment Area) declined from 262 persons in 1980 to 248 persons in 1989, a decline of approximately 0.6 percent per year. In summary, the portion of CT 51.00 containing part of the Barrio Logan Redevelopment area has actually declined in population, while the portion of CT 51.00 in downtown San Diego has grown at a faster rate than experienced by the City as a whole.

2. Although the dEIR Identifies and Proposes the Collection of AB 2926 Funding and a Minor Expansion of a Single School Servicing the Project Area, a Direct Relationship Between Such Activities and the Mitigation of Impacts Resulting from Enrollment Predictions Beyond Current School Capacities is Not Stated.

Having already established that population projections for the Project area are not consistent or clear, the simple recitation that imposing the collection of school fees to alléviate impacts on local schools resulting from the addition of students to the Project area merely assumes that such will sufficiently address and mitigate significant impacts to Project area service providers. No current plans by the San Diego Unified School District or the San Diego City Schools to change existing school facilities serving the Project area are put forth to further mitigate any impacts, beyond a two acre expansion of Lowell Elementary School (Section 2.4.6, page 2-11).

The CEQA Guidelines define mitigation as "avoiding the impact, minimizing the impact by limiting the degree or magnitude of the project itself, rectifying the impact by repair, rehabilitation or restoration, reduction or elimination of the impact by preservation and maintenance operations, and compensatory actions by replacing or providing substitute resources or environments." 14 Cal. Code of Regs. § 15370. With respect to schools, however, the dEIR's "mitigation measures" merely state that "potential significant impacts" resulting from the generation of an estimated 396 additional students are "expected to be mitigated with the required AB 2926 funding to the school districts." Under AB 2926, chaptered in the California statutes as Gov. Code § 65995, a maximum of $1.58 per square foot for new residential development and $0.26 per square foot for commercial and industrial development projects can be collected for school

construction. (Of note, the dEIR also misstates the maximum figures established by the State Allocation Board for residential school impact fees as $1.56/sq.ft.).

Even though the population of the Project area and adjacent communities is expected to increase (revealing that regional service providers will be significantly impacted), the inconsistencies of the dEIR cannot support a conclusion that potential significant impacts can be mitigated merely by requiring AB 2926 funding to school directs. As the Project's effect on schools is identified as being the result of residential and employment-related population increases to the area, this mitigation measure is evidently intended as a compensatory mechanism for impacte resulting from such increased population densities which are attendant to the Project. Absent precise projections as to the level of impacts, however, it is impossible to determine with any level of confidence whether or not AB 2926 fees, in addition to an expansion of a single local elementary school can effectively mitigate substantlal impacts which the dEIR declines to estimate, especially when a component of the mitigation is misstated. The mitigation discussion is further flawed because it fails to distinguish between impacts arising from redevelopment proposals and those arising from legislative applications, as set forth in Mira Development Corporation v. City of San Diego (1988) 205 Cal. App.3d 1201, 252 Cal.Rptr. 825. Identifying the degree of impacts with greater specificity in addition to a clear determination of what mitigation measures will meet such impacts is required.

3. The Project Fails to Focus or Address Alternatives Capable of Eliminating Significant, Adverse Environmental Effects or Reducing Them to a Level of Insignificance.

Although an EIR need not consider alternatives having effects not reasonably ascertainable and whose implementation is remote and speculative (see Residents ad hoc Stadium Committee v. Board of Trustees (1979) 89 Cal.App.3d 274), this

"rule of reason" does not go on to dispense with the requirement under the State Guidelines that a range of reasonable alternatives be included in an EIR.

The dEIR for the proposed Barrio Logan Redevelopment Plan merely has two Project alternatives, of which one would simply decrease land use density and intensities by 30% while involving similar land uses to the proposed Project, the other being a "No Project" alternative which merely states that the proposed redevelopment plan would not be adopted.

The dEIR fails to identify and discuss any alternatives which would eliminate or reduce significant adverse impacts, even if such alternatives would impede the attainment of the Project objective or would be more costly, as required by the State CEQA Guidelines, 14 Cal. Code of Regs. § 15126(d)(3). The absence of any discussion of such alternatives fails to permit a reasoned choice among alternatives as required by the State CEQA Guidelines.

CONCLUSION

On behalf of SDCOE we would request that the Barrio Logan Redevelopment Agency evaluate the above comments in order to facilitate analysis of the impacts of the Project on regional schools. This is required if the redevelopment plan is expected to adequately address significant impacts and arrive at measures which may result in mitigation. If the redevelopment agency for Barrio Logan has any further

questions or comments on this matter, they should be directed to either myself or Wendy Wiles of this firm.

Very truly yours,

BOWIE, ARNESON, KADI & DIXON

By
Arto J. Nuutinen

AJN/lr
cc: Tom Robinson
Dante Gumucio
Wendy Wiles

Exhibit C

County Office of Education (COE)

The COE's analysis of the fiscal impact of the proposed project concludes that the project will generate a demand for:

1) Additional facilities with total costs at project build-out of $2.425 million (1990 dollars) and

2) Additional services not offset by State funds which have a present value of $2,453,200.

Specifically, the analysis asserts the following facilities impacts over the life of the plan on four COE programs and staff development and administrative costs:

	Facilities Impact
Regional Occupational Program	$1,018,000
HOPE Inland Program	72,000
Migrant Education Program	238,000
Out-door Education Program	148,000
Staff Development	464,000
+ Administrative Staff	485,000
Total Facilities Impact	$2,425,000

A review of the COE analysis and various documents related thereto leads to the conclusion that the fiscal impacts related to the adoption of the project are seriously overstated. This conclusion is based upon the following major findings:

1. The premise of the analysis is that the redevelopment effort proposed in Barrio Logan will increase demand for COE services and facilities on a County-wide basis, beyond that which would occur absent the redevelopment project adoption. However, there is no evidence that overall County residential development, and thus student population, will be greater with the project then without.

2. The analysis fails to differentiate the level of demand for COE services experienced among the school districts. There is evidence that students and faculty of the San Diego City School District do not utilize COE service and facilities to the same extent as do smaller districts in the County.

3. The COE analysis projects that there will be no revenue loss, as a result of the project area adoption, under the current State funding programs for at least 10 years. As such, the COE analysis does not present a claim of detriment due to the loss of service funds on a current basis. The projection of revenue losses beyond a 10-year time horizon is highly speculative.

4. Certain COE programs, including the Regional Occupational Program, are currently housed in schools and community facilities owned and operated by other entities. The COE analysis does not recognize the joint use of such facilities, and the resulting reduction in capital cost related to such joint-use opportunities. Additionally, if the COE premise is correct that the project adoption will result in increased student population County-wide, these students will require additional local district facilities, which should also be available for COE programs. Moreover, the Barrio Logan program itself incudes an expansion to the community college facilities and programs, and the development of multi-use cultural center. This will increase the overall community supply of adult education and meeting facilities.

Even if the COE projections accurately reflect the impacts created by the project, the projected financial impacts do not represent a significant detriment to COE. Moreover, KMA has serious questions related to the study methodology, particularly related to the use of simplifying assumptions without careful consideration of the specific characteristics of the Barrio Logan area and its redevelopment program. These factors ar discussed more fully below.

Lack of Impact Due to Growth

The analysis utilized by COE computes the service demand created by new development by estimating the increase in residential development and increases in population related to employment growth within the project. Additionally, a "multiplier" is applied to account for increased spin-off employment (and thus households) created outside of the project. The conclusion is drawn by COE that this new development and the spin-off would not occur anywhere in the County absent the formation of the project. This implies that the project formation creates the demand for 100% of the net new development, and that job creation in San Diego County is the sole determinant of housing demand.

In actuality, the scope of development planned for Barrio Logan should not materially affect the County-wide population or employment on a net basis. A portion of the housing being created is designed to alleviate existing overcrowding, and to replace substandard existing units. Only new family housing units that are provided at a below market rate could be construed to be directly related to the formation of the project area. The addition of market rate units will merely provide the Barrio Logan area with

the necessary supply to fulfill this area's share of County-wide demand for housing. Additionally, the housing program includes senior housing and SRO housing, which will not create demand for COE services and facilities. The special nature of such housing is not taken into account by COE.

The focus of the commercial and retail development planned for the project area is largely local serving. A primary purpose of the redevelopment effort is to provide modern retail for existing southeast San Diego residents through the Mercado project. These uses are not of a scope or type that is likely to significantly impact the overall County-wide supply or demand for such facilities. Moreover, the area is currently characterized by relatively high unemployment. To the extent new employment opportunities are filled by existing residents, increases in the population base will not occur. The local serving nature of the planned commercial, retail, and industrial space is not of the type to attract businesses which otherwise would not locate within the County. As such, there is no basis to assume that the development of these uses will create any significant net new demand for additional housing, or resulting increases in the student population.

Finally, as discussed in greater detail elsewhere, the amount of commercial/industrial space which can reasonably be expected to be built in the project is likely to be only a fraction of the maximums planned, due to economic and physical planning reasons.

In summary, there is no evidence to suggest that the scope and type of development being encouraged to locate within Barrio Logan, as a result of project adoption, will materially affect the overall County-wide population growth rate, and thus facilities demand for COE. County-wide growth will in all likelihood occur without regard to the project information. The objective of the redevelopment project is to eliminate the blighting influences in the Barrio Logan area so that it can receive its share of County-wide growth.

Differential Service Demand

The COE analysis identifies four program areas it believes would be impacted by adoption of the Barrio Logan project area. Based upon "County-wide student generation factors, the analysis allocates the impact generated by Barrio Logan. However, the analysis fails to consider the type of development proposed in the project area or the fact that the students residing in the new development will likely be provided educational services by the San Diego City School District (SDCS). According to the SDCS staff development office, the district generally relies less upon COE than do smaller districts in the County.

Of the five program areas identified by COE: HOPE Infant Programs, Outdoor Education, Staff Development, Migrant Education, and ROP, SDCS does not utilize the Outdoor Education program, and it provides nearly all of its own staff

development services. Given the project area characteristics, there is no basis to conclude that the proposed residential and commercial program envisioned for Barrio Logan would impact service or space requirements for the Migrant Education Program. This would only leave the Infant Program and ROP as programs potentially affected by the net development occurring as a result of the redevelopment project adoption. The ROP facilities requirement does not consider the planned Multi-Cultural Center and the cooperative expansion programs envisioned with the San Diego Community College.

Speculative Impact on Services Due to Tax Increment Provision

The COE analysis concludes that the impact on services (as contrasted with facilities is ± $4.7 million over the life of the plan. However, the COE analysis concludes that there will be no impact for the first 13 years of the plan. Impacts will only occur if the COE payments from supplemental funds beyond Basic Aid funds from the State of California are eliminated. Inasmuch as there is no anticipated loss in funds over the foreseeable future, and there are no other demonstrated operational impacts, the COE cannot demonstrate an actual detriment at this time. The COE cannot be eligible for detriment payments due to service impacts unless and until such detriment is actually experienced.

FAILURE TO ACKNOWLEDGE NEW COMMUNITY FACILITIES

The COE material acknowledges that certain COE programs are carried out in facilities not owned by the COE. This is particularly true of the adult ROP program. Opportunities exist for joint use of the other educational facilities developed by school and community college districts over time in response to District wide growth projected over the life of the plan. The COE fails to acknowledge such opportunities. Additionally, the program for the Barrio Logan Redevelopment Project includes the development of a multi-use cultural center in the community and a cooperative program with the community college to increase their services to residents of Barrio Logan.

FAILURE TO PROVE SIGNIFICANCE

The analysis prepared for COE does not indicate the extent or degree of impact the project will have relative to the total impact experienced by COE during the same period. The analysis indicates the cost in 1990 dollars of the new facilities to serve Barrio Logan, which are required incrementally over the 40-year life of the project, as well as the cost of these facilities in inflated dollars. These costs are not compared with the current or projected operating budgets for the COE, such that conclusions as to the significance of the impact can be determined by the San Diego Redevelopment Agency.

Utilizing the information provided in the COE analysis and the 1990-91 recommended budget portrays the relative significance of the impact estimated by COE. It should be noted that for purposes of this analysis, the dollar impacts estimated by COE are used,

notwithstanding the fact that these estimates appear to be overstated for the reasons discussed previously.

Table 1 shows the total program budget (1990-91) for each of the programs identified by COE as being impacted by the Barrio Logan project. The table then indicates the average annual facilities cost impact estimated by COE in 1990 dollars. Using the program budget as a measure of the significance of the facilities impact, the table computes the percentage the "impact" is of the program budget. The relative impact ranges from .20% of the Staff services budget to .09% HOPE Infant Education programs. These relative impact measures assume the COE budget remains at its current level, without experiencing any real growth. However, according to COE "Facts", public school student population is projected to grow from 352,000 to 515,000 by the year 2000, a 46% growth. If the COE budgets were to grow at a similar rate, the percentage impacts on the above mentioned program would be reduced by one-third. Barrio Logan student generation, from both direct and indirect causes, is projected by COE to be 1,754 students over the 40-year life of the redevelopment plan. Through year 2000, this represents a population increase of 395 students, or less than 0.8% of the projected public school population.

Based upon these relatively insignificant impacts, the COE analysis, even as overstated, fails to provide evidence that the Barrio Logan Redevelopment Project will result in a significant financial burden or detriment to the San Diego Office of Education.

TABLE 1

BARRIO LOGAN REDEVELOPMENT PROJECT
RELATIVE IMPACT ON COUNTY OFFICE OF EDUCATION

	ROP	HOPE INFANT	MEP	OEP	STAFF	TOTAL
1990-1991 PROGRAM BUDGET (MILLIONS)	$22.0	$1.9	$4.0	$2.8	$12.16	$42.86
TOTAL FACILITY COST	$1,019,762	$72,180	$237,929	$147,742	$948,863	$2,426,476
AVERAGE ANNUAL COE ESTIMATED FACILITIES IMPACT	$25,494	$1,805	$5,948	$3,694	$23,722	$60,662
% OF OVERALL IMPACT	0.12%	0.09%	0.15%	0.13%	0.20%	0.14%

DAVID TAUSSIG AND ASSOCIATES, INC.

PUBLIC FINANCE • DEVELOPMENT ECONOMICS • PLANNING

CITY OF SAN DIEGO BARRIO LOGAN REDEVELOPMENT PROJECT
DRAFT ENVIRONMENTAL IMPACT REPORT

EVALUATION BY DAVID TAUSSIG AND ASSOCIATES, INC.

Growth Orientation of the Redevelopment Plan

According to the draft EIR, a primary objective of the Barrio Logan Redevelopment Project is "to develop land uses to their fullest potential" and "to generate public revenues" (page 2-2). In particular, the Redevelopment Plan (RDA Plan) proposes to "create 1,198 multi-family dwelling units, an increase of 278 percent above the existing 317 dwelliug units... create 30.4 acres of commercial development... a 463 percent increase in commercial land uses", supporting 1,833,876 square feet of new floor space. While iudustrial land uses, "would be reduced by 46 percent to 28 acres, as a result of the Redevelopment Plan, development intensities permitted for industrial land uses (1.0 FAR) would allow for almost as much building area as currently exists". (page 3-11,12).

The draft EIR expressly recognizes as "environmentally inferior" the alternative to the RDA Plan involving "No Project," because under this alternative:

- "the project objectives would not be met (page 4-12)
- "Changes in development standards which would allow for increased building intensities and densities, as specified in the RDA Plan, would not occur (page 4-14)
- The project area would maintain the status quo and would not improve the overall land use situation in the Barrio Logan community. (page 4-14)

Phasing of Redevelopment Plan

Without redevelopment, the draft EIR notes that "development [may] occur within the project area under existing land use and zoning designations." (page 4-14). The draft EIR further states that "Implementation of the project....would increase the intensity of use of the redevelopment plan area in terms of land efficiency and greater economic return." page(6-1).
1. However, the draft EIR does not identify any particular phasing schedule or scenario.

Projected New Development

According to the draft EIR, with buildout of the RDA Plan, non-residential building space is projected to increase by 1.7 million square feet. "An estimated 5,991 direct, new, long-

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RESPONSE TO COMMENTS

1. The Redevelopment Plan is a planning document rather than a specific development project. The EIR examined the full 40-year buildout of the plan to ensure that the "worst-case" scenario was considered. Future development projects, unknown at this time, would implement the Redevelopment Plan and would be analyzed for their potential environmental impacts on a project-by-project basis.

Response is the same as the response referenced in the response to comment to the letter from Bowie, Arneson, Kadi, and Dixon.

term employment opportunities would be created after project construction is completed." (page 5-1) This number of new employees implies approximately 4 employees per 1,000 square feet of new non-residential space. While the draft EIR notes that, "New employment is expected to generate a secondary impact on the demand for consumer goods and services, thus creating additional indirect employment opportunities" (page 5-1), no quantification of their indirect impacts is provided.

Adequacy of Draft EIR

As noted below, proposed new development within the project area will have significant impacts on the San Diego County Office of Education ("COE" or "the County Office") which are not included in the draft EIR.

New commercial/industrial development creates new jobs, which in turn lead to new residential development, higher population, and increased student generation. Increases in adult and student-aged populations create a need for both more educational facilities and larger operating budgets for COE. The draft EIR fails to recognize either the facilities or potential operating impacts of the proposed RDA Plan on the County Office. As a result, the draft EIR is inadequate since it neither identifies these impacts nor proposes appropriate mitigation measures.

Projected County Office Impacts

The RDA Plan is projected to have major facilities impacts on the County Office. While COE does not currently have "basic aid" status, such status projected to be attained by 2001-2002. Potential impacts of the Project on COE's operating budget status in this same year are shown in Exhibit A. These impacts estimates are based on the assumption that operating impacts, equal 100 percent of forgone tax increment once basic aid status is attained.

An analysis of the facilities impacts of the Project on the County Office is attached. As shown in Exhibit A of the analysis, these impacts are projected to total about $4.6 million over the 40 year life of the Project.

In projecting that employment growth within the project will total 5,991 jobs, the draft EIR implicitly assumes that off-site multiplier and local feedback impacts are zero. In doing this, the draft EIR is at odds with the San Diego Association of Governments (SANDAG)--see "Causes of Growth and Possible Control Measures in the San Diego Region" (Agenda Report No. R-83, September 11, 1987).

In contrast, the attached analysis accounts for the off-site multiplier effects of the RDA Plan, all of which will affect COE since its boundaries are contiguous with those of the County of San Diego. The employment multipliers and household migration factors used in the attached analysis are consistent with various analyses performed by SANDAG (e.g., Agenda Report No. R-83).

Mitigation Measures

Given the magnitude of projected RDA impacts on the County Office, appropriate mitigation is justified and required. The form and timing of such mitigation should be addressed in mitigation agreements between the City of San Diego Redevelopment Agency and the County Office.

Anne

RECEIVED

JAN 31 1991

PLANNING

SAN DIEGO APARTMENT ASSOCIATION

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January 28, 1991

Ann B. Hix, Principal Planner
City Planning Department
Development and Environmental Planning Division
202 "C" Street, Mail Station 4C
San Diego, CA 92101

Re: Draft EIRs for Redevelopment Projects

Dear Ann:

1. We have received copies of the draft EIRs for the Barrio Logan Redevelopment Project and the City Heights Redevelopment Project. Thanks for remembering to include us on your list of organizations from whom input is sought.

Sincerely,

R. Alan Smith
Director of Government Affairs

P.S. Yes, I'm the same Alan Smith that was a part of the ill-fated 1983 or 1984 coup attempt against the North Park Community Planning Committee.

RESPONSE TO COMMENTS

1. Thank you for reviewing the draft EIR.

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EXECUTIVE SUMMARY

Project Description

This environmental impact report evaluates the proposed Barrio Logan Redevelopment Plan. The purpose of the Plan is to eliminate existing blighted conditions within the Barrio Logan area and to provide an official document to guide future development. Barrio Logan includes approximately 133 acres located in the southwestern portion of the City of San Diego, adjacent to the eastern side of San Diego Bay.

Project objectives include the development of underutilized property to generate public revenues and to redevelop and upgrade existing land uses. Proposed land uses include an increase in residential and commercial densities and public uses, and a decrease in industrial land area.

Environmental Analysis

The analysis of impacts has been based on a "worst case" or full buildout scenario by assuming that all parcels will develop to the maximum floor area ratio and/or residential density allowed by the draft redevelopment plan. In actuality, many parcels may develop at a lower intensity because of parking requirements, the high cost of placing required parking underground or in structures, height restrictions, and preservation of historic or significant structures. It is anticipated that lesser intensities will most likely occur in the early phases of redevelopment. As a result, the EIR may overstate impacts, particularly in regards to traffic, air quality, noise, public services and utilities, and growth inducement. The "worst case" or full buildout scenario was chosen for the analysis because of the absence of provisions to ensure lower intensities or the availability of a market analysis prior to initiating the environmental review process.

Land Use

Impacts: Implementation of the proposed project would increase the amount of land devoted to residential and commercial land uses. Industrially-designated land would decrease. The plan would allow up to 1,198 residential units, approximately 1.8 million square feet of commercial space, and 1.2 million square feet of light industrial space. The project would require an amendment to the Barrio Logan/Harbor 101 Community Plan.

Development guidelines pertinent to the approved project would replace those contained in the Emergency Interim Zoning Ordinance. The development guidelines would also replace the Planned District Ordinance guidelines that pertain to the project boundaries. No significant impacts are identified; relocation of existing uses is discussed under Population/Housing.

Mitigation Measures: None are required.

Traffic

Impacts: The existing street network could not accommodate the projected future traffic volumes and maintain acceptable levels of service unless capacity improvements are made.

The need for off-street parking will also increase. Traffic impacts are determined to be significant.

Mitigation Measures: Parking restrictions and road widening would mitigate the identified impacts; however, road widening would adversely affect the urban character of the project area and discourage pedestrian activity. Therefore, the impacts would remain unmitigated.

Aesthetic Quality

Impacts: The proposed plan would remove or rehabilitate deteriorated structures. The potential exists for impacts to existing visual resources including historic structures, the pedestrian-oriented streetscape and scenic vistas. Design standards incorporated into the plan would reduce impacts to the area's visual resources to below a level of significance. Historic impacts are discussed under Cultural Resources.

Mitigation Measures: The design standards should be expanded to require view corridor stepbacks to preserve scenic vistas.

Noise

Impacts: Future noise levels generated by traffic would continue to exceed 65 dBA CNEL at property adjacent to all but three roadway segments, potentially causing significant impacts to sensitive land uses. Sensitive land uses adjacent to the Santa Fe and San Diego-

Imperial Valley railroad operations may also be significantly impacted. The potential for noise generated by future industrial sources is varied and is a function of the type of industrial operation.

Mitigation Measures: When site-specific plans are determined, the City shall require site-specific acoustical analyses to identify appropriate mitigation measures. The City shall require mitigation for all residential units exposed to an exterior noise level of 65 dBA CNEL or greater. The City shall require an interior acoustical analysis for all residential units exposed to an exterior noise level of 60 dBA CNEL or greater, and shall require mitigation to ensure that the interior noise is limited to 45 dBA CNEL or less.

Geology

Impacts: Potential impacts include damage from seismic activity, including liquefaction within the area west of Harbor Drive. Project grading would increase the potential for soil erosion. Seismic and liquefaction impacts are considered significant.

Mitigation Measures: Preparation of geotechnical reports for subsequential development projects and approval by City Engineer are required to reduce impacts from individual development projects in areas susceptible to liquefaction.

Air Quality

Impacts: The proposed project encourages more development in the project area, therefore increasing the number of polluters, especially automobiles. Significant increases in carbon monoxide and nitrogen oxides would occur. Unavoidable, adverse impacts would result.

Mitigation Measures: Encourage alternative modes of transportation, implement transportation demand management. Control dust during construction of subsequent development projects. Impacts would remain significant even after mitigation, due to the increased deterioration of air quality.

Population/Housing

Impacts: Population and housing opportunities would increase. No significant impacts are identified. Implementation of the redevelopment plan could cause a significant impact, however, due to the dislocation of existing residents and businesses.

Mitigation Measures: Provision of replacement low and moderate income housing and relocation assistance according to the California Redevelopment Law will reduce any such impact to an insignificant level.

Public Service

Impacts: Significant impacts to elementary and junior high schools due to an increase in pupil generation in a neighborhood where the schools are operating near classroom capacity. Increased demand for water, sewer, fire and police services; no significant impact identified for these services.

Mitigation Measures: School fees shall be collected for school construction. In addition, the Agency is authorized under Sections 33445 and 33401 of the Community Redevelopment Law and the Redevelopment Plan, to assist the school entities to provide facilities to accommodate growth during the redevelopment period. With the co-operation of the school entities, any impact will be insignificant.

Energy

Impacts: Increased demand for electricity and natural gas; no significant impacts identified.

Mitigation Measures: None required.

Cultural Resources

Impacts: Potential to disrupt archaeological resources. The pressure to redevelop sites at higher intensities could affect properties which were analyzed for possible historic designation, including some properties which appear to be eligible for the National Register of Historic Places. Potential historic districts including one which may be eligible for the National Register could also be disturbed or destroyed. Significant impacts to archaeological resources and historic resources (except those structures of potential National Register Status) are mitigable.

Mitigation Measures: Monitoring of archaeological resources by a qualified archaeologist during construction. Management of historic structures and/or districts will be undertaken pursuant to required procedures under the Municipal Code.

Paleontological Resources

Impacts: Potential to disrupt paleontological resources.

Mitigation Measures: Monitoring during construction activity by a qualified paleontologist and recovery of fossil specimens.

Risk of Upset

Impacts: Significant hazardous substances were identified within the project area which would require removal of potential sources of contamination and other remediation.

Mitigation Measures: Remediation activity for property development including audits prior to purchasing and contaminant removal on a site-by-site basis.

Cumulative Impacts

Related projects in the project vicinity include Centre City redevelopment, the San Diego cargo facility, convention center expansion, and a new homeless shelter. Significant cumulative impacts include traffic impacts, increase in noise generation and air quality impacts. Significant impacts are largely unmitigable.

Project Alternatives

Alternative A: 30 Percent Density/Intensity Reduction

Alternative A would involve land uses similar to those under the proposed project, however, land use densities and intensities would be decreased from the proposed project by 30 percent. As proposed, Alternative A would allow for development of 677 multi-family dwelling units (for Residential and Mixed-Use categories), 885,792 square feet of Commercial/Retail/Office uses, 397,920 square feet of Mercado District uses, and 853,776 square feet of Light Industrial uses. Public/Quasi-Public uses would remain at the same levels and types of uses as identified under the proposed project.

Impacts associated with Alternative A would be similar to those identified for the project, although traffic and air quality impacts would be slightly reduced. Impacts would still remain significant.

Alternative B: "No Project" Alternative

Under this alternative, the proposed Redevelopment Plan would not be adopted, and the existing land uses would remain. It is unlikely that the character of existing land uses would change. Impacts discussed in this EIR as a result of the proposed project would not occur. The project objectives to improve the blighted conditions and economic situation of the project area would not be met with this alternative.

SECTION 1
INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

This Environmental Impact Report (EIR) has been prepared in compliance with the California Environmental Quality Act (CEQA), and the City of San Diego Redevelopment Agency Guidelines. This document addresses issues that were determined to be potentially significant in the Notice of Preparation (NOP) prepared by the City of San Diego and published on March 16, 1990. The NOP is included in this document in Appendix A.

This document has been compiled from a variety of sources including published and unpublished studies, applicable maps, aerial photographs and independent field investigations. The information in this report is subject to review by the City, responsible agencies and the public. The draft version of this report may be amended in the Final EIR to consider significant impacts or concerns raised during the public review process.

This EIR was initially published as a Draft EIR, subject to review and comment by the public, responsible agencies and other interested jurisdictions, agencies and organizations during a period of 45 days. A public hearing was held by San Diego City Planning Commission to receive comments on this document. After the public hearing, written responses to all oral and written comments on the Draft EIR was prepared, and the responses to comments have specified changes to the draft document. The responses to comments and any changes to the Draft EIR therein specified were incorporated into the draft document, and as such, has become the Final EIR. The Final EIR will be presented to the San Diego City Redevelopment Agency for certification as to its adequacy under CEQA before the Redevelopment Agency acts on the Redevelopment Plan. There is a 30 day appeal period which would take place prior to implementation of the Redevelopment Plan.

1.2 ENVIRONMENTAL SCOPING

On March 16, 1990, a Notice of Preparation (NOP) for the Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) was published and circulated. The NOP briefly described the proposed action, the scoping process, and

provided the name and address of a contact person. The comment period ended on April 14, 1990. Copies of the NOP are presented in Appendix B.

The purpose of the NOP was to: 1) notify responsible agencies and the general public about the proposed project; 2) solicit comments on issues that should be addressed in the environmental document; and 3) foster coordination and cooperation.

The following agencies submitted responses to the NOP:

- United States Environmental Protection Agency
- California Department of Conservation
- California Department of Transportation – District 11
- California Department of Water Resources
- County of San Diego, Chief Administrative Office
- City of San Diego, Water Utilities Department
- San Diego Community College District

Copies of the specific NOP responses are available at the City of San Diego, Planning Department.

1.3 INTENDED USES OF THIS EIR

This EIR is part of the project review process for the approval of the Barrio Logan Redevelopment Plan by the City of San Diego Redevelopment Agency. It is the intent of the EIR to enable the City of San Diego and other responsible agencies and interested parties to evaluate the environmental impacts associated with the proposed Redevelopment Plan.

In accordance with Section 15180 of the State of California Environmental Quality Act (CEQA) Guidelines, this environmental document shall serve as a program EIR for the Redevelopment Plan and all individual projects that are undertaken pursuant to, and in conformance with, the Redevelopment Plan. As specified in Section 15168 of CEQA, a program EIR is appropriate when a series of actions taken over a period of time, will result in what will ultimately be perceived as a single project. In this case, development occurring as a result of implementation of the Redevelopment Plan over a period of approximately 40 years will result in what will be perceived as a single project. To the extent that future,

more detailed project specific plans for development are found to be in conformance with the standards and guidelines contained in the Redevelopment Plan and also conform with the project described and evaluated in the EIR, no further environmental documentation will be required. Individual projects shall be reviewed by City staff, and may proceed with site plan and building design review and/or other discretionary approvals subsequent to determination of conformance with the Plan. However, if later activities involve new significant effects, subsequent environmental study would be required for CEQA compliance.

The EIR also identifies mitigation measures to reduce the significance of potential environmental impacts of the proposed project (refer to each section for relevant mitigation measures). The project proponent shall incorporate mitigation measures and alternatives developed in the program EIR into subsequent actions taken in the program. In addition, the EIR analyzes project consistency with relevant planning tools, (General Plan, Community Plan, Local Coastal Program, and Zoning Ordinances) within each Environmental Setting and Impact Section where appropriate.

1.4 MITIGATION MONITORING REQUIREMENTS

In accordance with the California mitigation monitoring statute, Public Resources Code, Section 21081.6, public agencies are required to adopt a Mitigation Monitoring and Reporting Program for project approvals subject to the mitigation measures required in project EIRs or negative declarations. Such programs are designed to ensure compliance with adopted mitigation measures and to verify that required measures effectively reduce identified impacts to below levels of significance. For the proposed project, a Mitigation Monitoring and Reporting Program has been prepared and is attached to this document.

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SECTION 2
PROJECT DESCRIPTION

2.1 BACKGROUND

This Environmental Impact Report (EIR) addresses the City of San Diego's proposal to adopt and implement the Barrio Logan Redevelopment Plan. The purpose of the Barrio Logan Redevelopment Plan is to eliminate existing blighted conditions within the Barrio Logan area, including substandard lots, incompatible land uses, obsolete and dilapidated buildings, substandard and deteriorated public improvements, rehabilitate buildings and preserve any significant historic properties, plan and redesign for the development of areas which are stagnant or underutilized; include participation of owners and tenants in the revitalization of their properties, provide low and moderate income housing, and provide new commercial and office opportunities. It is also the purpose of this Plan to provide an official document to guide future development of this portion of the City of San Diego, for use by the City Council, Redevelopment Agency, Planning Commission, related government agencies, property owners, developers, residents, businesses within this community, and private organizations concerned with planning and civic improvement.

Two City-initiated studies, Barrio Educational Cultural Activity (BECA) and Mercado del Barrio Planning and Feasibility Study, served as the genesis of the development of the Barrio Logan Redevelopment Plan.

2.2 PROJECT LOCATION

The project area of the Barrio Logan Redevelopment Plan includes approximately 133.0+ acres in the southwestern portion of the City of San Diego and adjacent to the eastern side of San Diego Bay. The project area is bounded on the northeast by the Interstate 5 Freeway (I-5), on the southeast by the Coronado Bay Bridge, Evans Street and Logan Avenue to 26th Street (including both sides of the alley), on the southwest by Port District Boundary and Harbor Drive, and on the northwest by 16th and Sigsbee Streets.

Regional access is provided by the San Diego Freeway (I-5) to the northeast, Route 94 Freeway to the east, and the Coronado Bay Bridge (Route 75) to the west. Local access is provided via several roadways, including Logan Avenue, Main Street and bordered to the

south by Crosby Road. The project area is depicted in its regional and local contexts on Figure 1 and Figure 2.

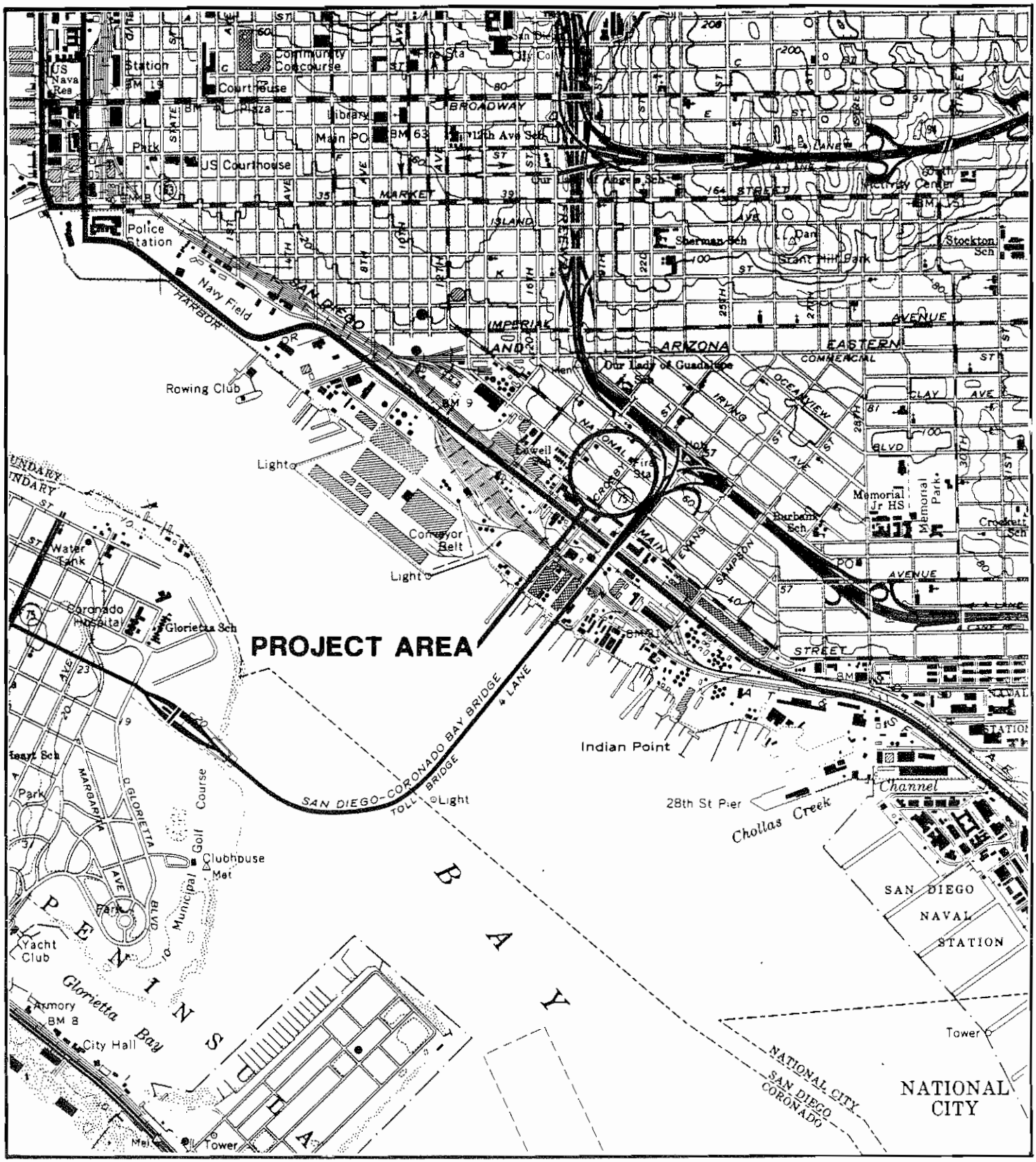
2.3 PURPOSE, SCOPE AND OBJECTIVES

The Redevelopment Plan for the Barrio Logan Urban Renewal Project (hereinafter, the "Redevelopment Plan") was developed in accordance with California Community Redevelopment Law (California Health and Safety Code, Section 33000 et seq.), which states "...it is in the public interest to remove urban blight by redeveloping deteriorating areas."

At the time it was first designated as a planning area (in 1978, titled Barrio Logan/Harbor 101 Community Plan) by the City of San Diego, nearly all of Barrio Logan was found to be blighted. This state of decay has continued throughout most of the redevelopment area. No sign of revitalization in the future is foreseen without the proposed Redevelopment Plan. The Preliminary Report for the Redevelopment Agency for the Barrio Logan Redevelopment Project (December 1990) contains a description of blight in the project area.

The purpose of the proposed project, under the California Community Redevelopment Law, is to develop the underutilized property to generate public revenues and to redevelop and upgrade existing on-site uses with mixed uses, including residential, educational and public/quasi-public uses.

The objective of the project applicant (City of San Diego Redevelopment Agency) is to provide entitlement for a mixed use community in which an arrangement of land uses, circulation and services would eliminate blight, provide affordable housing for persons and families of low and moderate income, and encourage and contribute to the economic, social and physical health, safety, welfare, and convenience of the community. This objective also provides for development to be built which reinforces its Latino culture, resources and lifestyle, to develop land uses to their fullest potential and to receive public revenue resources. This is consistent with the findings of the California Community Redevelopment Plan Law.



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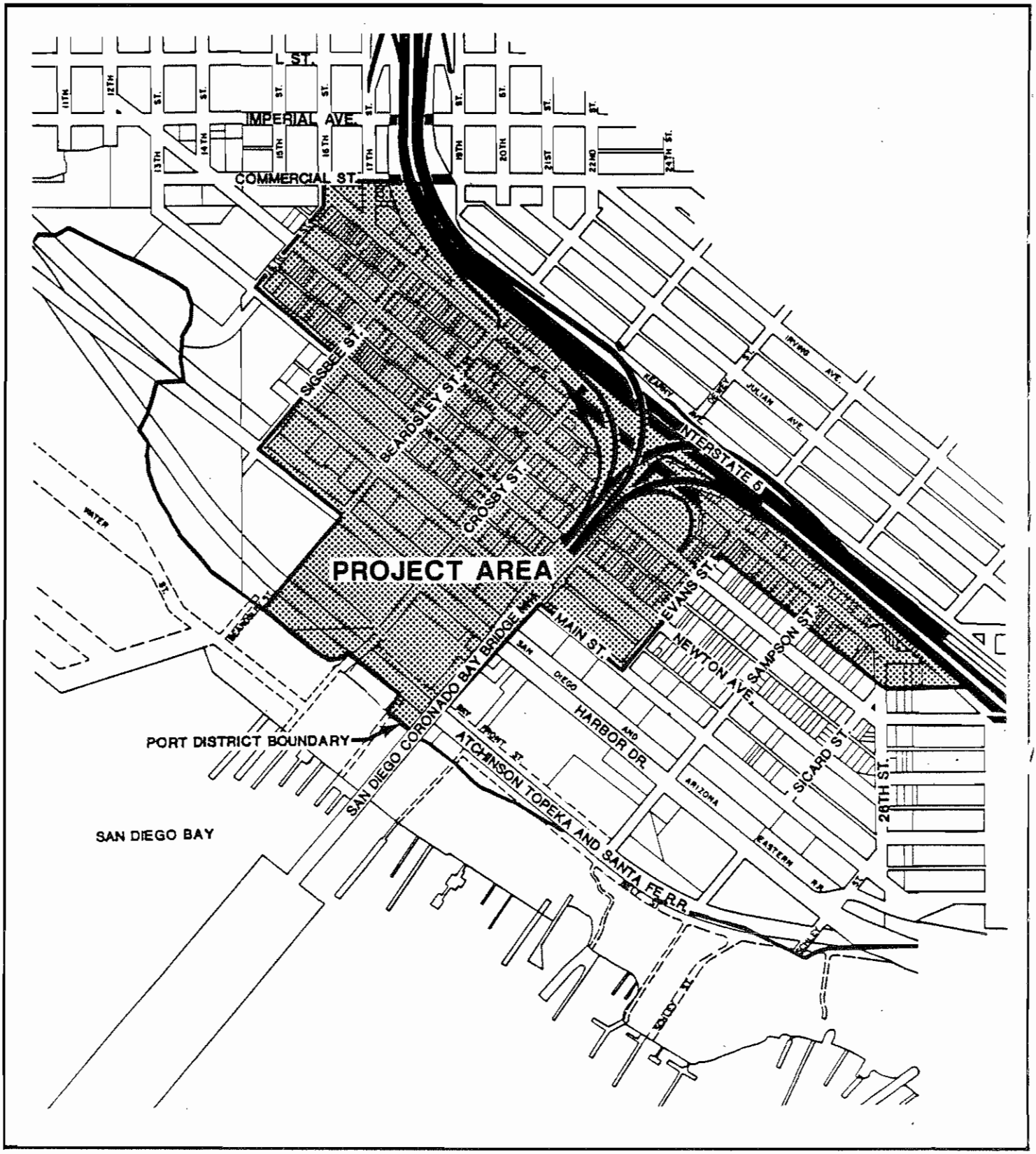
REGIONAL LOCATION MAP

BARRIO LOGAN
REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO

FIGURE 1



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LOCAL VICINITY/PROJECT BOUNDARIES MAP

BARRIO LOGAN
REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO

FIGURE 2

2.4 PROPOSED REDEVELOPMENT PLAN

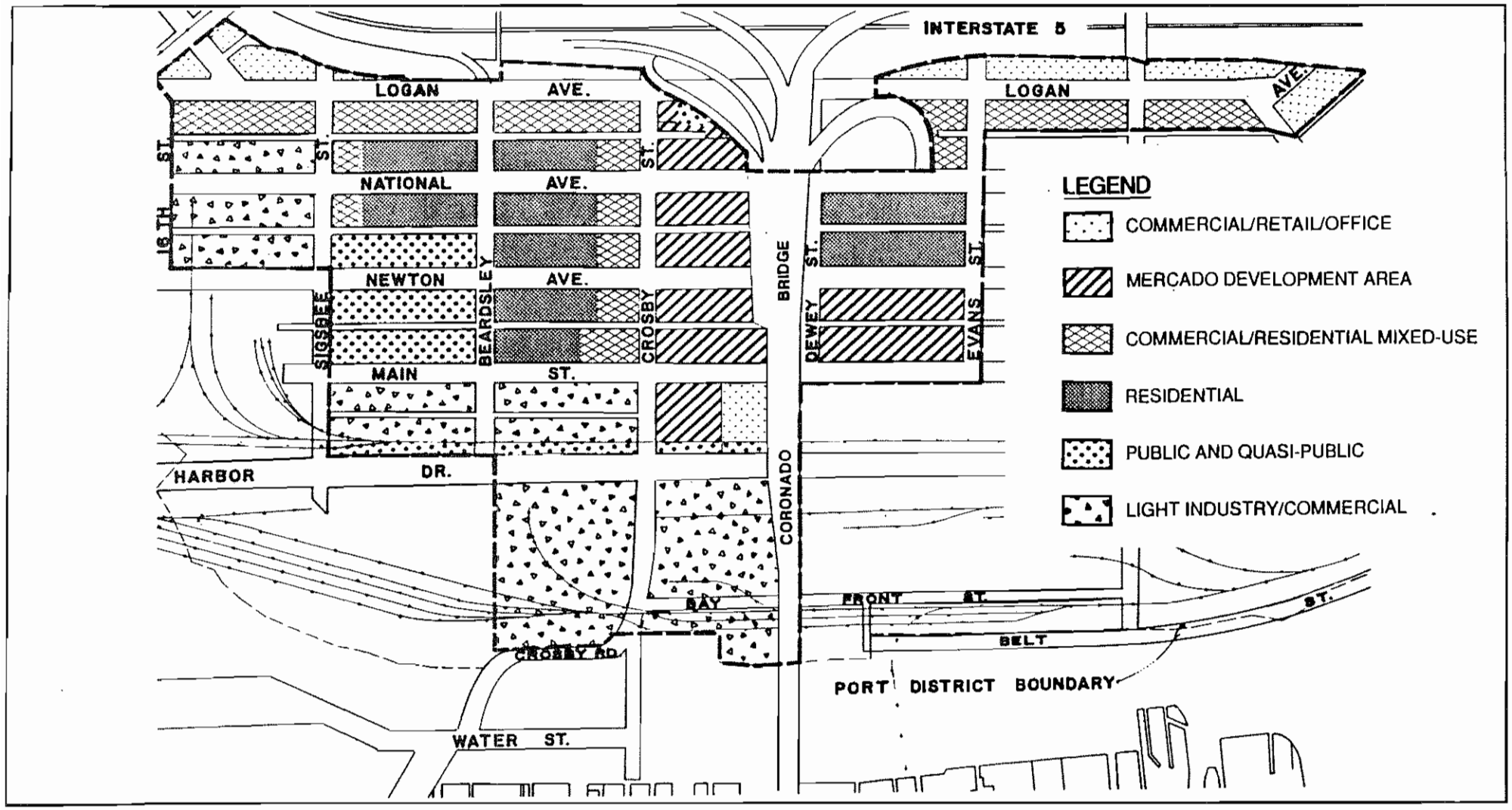
As proposed, the Redevelopment Plan establishes permitted land uses, density allotments, and basic development standards. Additionally, the Redevelopment Plan provides the City of San Diego Redevelopment Agency with the power to implement these specified programs and policies. As provided by Community Redevelopment Law of the State of California (Health and Safety Code, Section 33000 et seq.), the Redevelopment Agency is enabled to acquire real property, provide relocation assistance to displaced residences and businesses, demolish or remove substandard buildings and improvements, improve public streets and/or other public facilities and improvements, rehabilitate and improve existing structures, and rehabilitate and/or construct low and moderate income housing.

The Redevelopment Plan would serve to amend the Barrio Logan/Harbor 101 Community Plan, and supersede the City's Emergency Interim Zoning Ordinance for Barrio Logan. If approved, the City will update and revise City codes and ordinances as required to comply with the adopted Redevelopment Plan. The Community Plan would be amended concurrently with adoption of the Redevelopment Plan to ensure consistency.

Major land uses designations permitted within the Project Area shall include: Residential, Commercial/Retail/Office, Mercado District, Commercial/Residential Mixed Use, Light Industrial and Public. The areas shown on the Proposed Land Use Plan (Figure 3) for the foregoing uses may be used for any of the various kinds of uses specified for or permitted within such areas by the Community Plan and local codes and ordinances (as amended). Table 2-1 is a land use summary of the project.

2.4.1 Residential

Areas shown on the Proposed Land Use Plan (Figure 3) as residential would be developed with approximately 742 multiple family dwelling units. Other uses allowed include public serving facilities, institutions, religious establishments, parks and open space amenities. Emphasis is the rehabilitation and reconstruction of existing dwelling units in the area and to consolidate residential uses to create a neighborhood identity. New housing and reconstructed housing would be developed according to City standards.



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PROPOSED LAND USE PLAN

BARRIO LOGAN REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 3

Table 2-1

LAND USE SUMMARY – PROPOSED PROJECT

Land Use	Acreage	DU/AC	FAR	Dwelling Units/ Building Square Footage
Residential	14.0	53[2]	NA	742 Dwelling Units
Mixed Use[1] (Commercial/ Residential)	13.0	53[2]	1.5	568,458 sq. ft. 228 DUs
Commercial/ Retail/Office	8.0		2.0	696,960 sq. ft.
Mercado District[1]	13.0	53[2]	1.5	568,458 sq. ft. 228 DUs
Light Industrial	28.0		1.0	1,219,680 sq. ft.
Public/Quasi-Public	57.0		NA	NA
Vacant	--		--	--
Total	133			3,035,556 sq. ft. 1,198 DUs

DU/AC = Dwelling Units per acre
FAR = Floor Area Ratio

Source: City of San Diego, Planning Department, Development and Environmental Planning Division

[1]Assumes 2/3 of total acres develop as commercial uses and 1/3 develop as residential

[2]Includes density bonus for low- and moderate-income housing.

Density

One dwelling unit per 1,000 square feet (43 dwelling units per acre), plus 25 percent bonus density for low- and moderate-income dwelling units up to 53 dwelling units per gross acre.

Height

Fifty (50) feet of habitable space, or four (4) story height limit. Roof may extend above the fifty foot height limitation.

2.4.2 Commercial/Residential Mixed-Use

The Commercial/Residential Mixed-Use designation would provide for a variety of land uses, either singly, or as a mixed-use project. Commercial/residential mixed uses are encouraged to develop as customer-intensive ground floor commercial, retail and consumer service oriented uses with upper floors of office, service, and/or residential. The Commercial/Residential Mixed-Use designation would include approximately 13.0 acres, and allow for approximately 568,458 square feet of commercial building area and 228 dwelling units, assuming two-thirds of the 13.0 acres develop as commercial uses and one-third develop as residential at 53 DUs per acre.

Commercial/retail uses encouraged and permitted in this designation are local community serving uses including customer intensive uses, such as: comparison retail; restaurants; food sales; local markets and specialty goods; drug stores; entertainment; consumer repairs; cultural uses; public serving institutions; personal, health and beauty services; business and communication services; banking and savings and loan establishments. Also permitted are specialty office/professional uses, including: lawyers, health services, financial services (tax preparation and accounting related uses), career and consulting services, non-profit organizations and real estate/property related services.

Permitted second floor and above uses would allow for general and specialty office/professional and consumer services, art studio uses, and residential units.

Parking is a permitted use throughout this designation. Parking lots must meet all applicable City standards and screening requirements.

Density

One and one-half (1.5) Floor Area Ratio (FAR), for commercial/residential mixed-use projects. Residential density is established at one dwelling unit per 1,000 square feet of land, or 43 dwelling units per acre, plus a bonus density of 25 percent for low- and moderate-income dwelling units.

Height

Generally 45 feet or three (3) story height limit. Logan Avenue will receive a special corridor treatment bonus of 60 feet or four (4) stories for properties on the intersection corners of Logan Avenue and 16th Street; Sigsbee Street; Beardsley Street; Crosby Street; Dewey Street; Evans Street; Sampson Street; and 26th Street.

2.4.3 Commercial/Retail/Office

Figure 3 shows areas designated for primarily commercial/retail/office use, which incorporates some light industrial wholesale and packaging with retail frontage. As proposed, the Redevelopment Plan would designate approximately 8.0 acres of commercial/retail/office use, and would allow approximately 696,960 square feet of development.

Commercial/retail/office uses are established on the north side of Logan Avenue to facilitate higher intensity uses and provide a land use buffer from the I-5 freeway. Commercial facilities permitted would include retail sales and services, general and specialty office, on-site craft making, eating, drinking, and entertainment establishments, food sales, convenience sales, banking services, administrative commercial activities, consulting and financial services, business and communication services, public uses, private clubs, fraternal organizations and lodges. Some light industrial, wholesale, trade, warehouse, and distribution facilities associated with retail and commercial uses and some consumer repair services (excluding auto and heavy machinery) would also be located in this area.

Density

Two (2.0) FAR.

Height

Seventy-five (75) foot or five (5) story maximum height limit.

2.4.4 Mercado District

The Mercado District is proposed for a mixed-use area consisting of: commercial; retail; office; entertainment; cultural; public areas; public serving institutions; open space; food establishments; and may include residential uses. The Mercado District is intended to serve the neighborhood community as well as the greater regional area and tourists. The district is approximately 13.0 acres in area, allowing 568,458 square feet of commercial building area and 228 dwelling units, assuming two-thirds of the 13.0 acres build-out for commercial uses and one-third develop as residential uses at 53 DUs per acre.

Density

One and one-half (1.5) FAR. Housing shall be permitted at one (1) dwelling unit per 1,000 square feet of land, plus 25 percent bonus density for low- and moderate-income dwelling units or 53 dwelling units per acre.

Height

Forty-five (45) foot or three (3) story maximum height limit.

2.4.5 Light Industrial

The Redevelopment Plan would permit light industrial, heavy commercial and associated commercial service uses in selected areas. Uses permitted in areas designated as Industrial/Commercial include, but are not limited to: industrial services; manufacturing; processing; assembly; treatment and packaging of finished parts or products primarily from previously prepared materials but excluding basic industrial processing from raw materials and food processing; commercial related uses such as vehicle/equipment sales and services; automobile repair, auto rentals and storage, and warehousing. The Redevelopment Plan will result in a build-out of approximately 1.2 million square feet of industrial building area.

Heavier industrial use will be oriented toward the southwest periphery of the project area. A landscaped buffer is proposed along Harbor Drive in the trolley right-of-way.

The Redevelopment Plan would allow for consolidation of industrial and heavy commercial land for uses such as industrial parks and auto related services.

Density

Approximately one (1.0) FAR.

Height

Thirty-five (35) foot height limit.

2.4.6 Public and Quasi-Public

Within the Redevelopment Plan area the Redevelopment Agency would be authorized to permit the maintenance, establishment or enlargement of public, semi-public, institutional or nonprofit uses, including park and recreational facilities, parking facilities, libraries, educational, fraternal, employee, philanthropic, religious and charitable institutions, utilities, railroad rights-of-way, multi-modal transit facilities, and facilities of other similar purposes, associations or organizations. All such uses shall conform so far as possible to the provisions of this Plan applicable to the uses in the specific area involved. The Agency could impose such other reasonable restrictions as are necessary to protect development and uses in the project area.

This designation would include approximately 57.0 acres, and would provide for a 2.1+ acre expansion of the Lowell/Perkins Elementary School.

Additional public streets, alleys, paseos and easements would be created in the project area as required for proper use and/or development. Existing streets and alleys may be widened, abandoned, closed or modified as necessary for proper use and/or development.

The Atchison-Topeka and the Santa Fe Railroad rights-of-way would be maintained. The public rights-of-way may be used for vehicular and/or pedestrian traffic, as well as for

public improvements, public and private utilities, and activities typically found in public rights-of-way. In addition, all necessary easements for public uses, public facilities, and public utilities would be retained.

2.5 ANTICIPATED PERMITS AND APPROVALS REQUIRED

Implementation of the project as proposed will require the following actions:

- Approval and certification of EIR and the Barrio Logan Redevelopment Plan by the City of San Diego Redevelopment Agency and City Council;

- Adoption of amendment to the Barrio Logan/Harbor 101 Community Plan by the City Council;

- Adoption of amendment to the City's Local Coastal Plan (Barrio Logan/Harbor 101 Community Plan) by the City Council and California Coastal Commission;

- Adoption of amendment to the City's Planned District Ordinance for Barrio Logan by the City Council; and

- Adoption of Barrio Logan Redevelopment Implementation Ordinance by the City Council.

Subsequent development activity may require additional environmental review and may require permits such as a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of groundwater pumped during dewatering activity, and/or various other permits.

SECTION 3
AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, MITIGATION MEASURES AND UNAVOIDABLE ADVERSE IMPACTS

The analysis of impacts has been based on a "worst case" or full buildout scenario by assuming that all parcels will develop to the maximum floor area ratio and/or residential density assuming all subterranean parking. In actuality, many parcels may develop at a lower intensity of actual usable non parking space because of the high cost of placing required parking underground and thus, the necessity of using a substantial portion of the FAR permitted under the Redevelopment Plan for abovegrade structured parking. It is anticipated that lesser intensities will most likely occur in the early phases of redevelopment. As a result, the EIR may overstate impacts, particularly in regards to traffic, air quality, noise, public services and utilities, and growth inducement. The "worst case" or full buildout scenario was chosen for the analysis to cover the technical legal maximum, as opposed to the economically and physically feasible.

3.1 LAND USE

Affected Environment

The 133-acre Barrio Logan Redevelopment Plan area is a physically isolated community with older housing stock (c. 1880-1920). Clusters of commercial uses are located on Logan Avenue and National Avenue; many commercial structures have residential uses on the second floor or at the rear of the property. Salvage yards are often adjacent to or included on residential property. Industrial activity occurs throughout Barrio Logan and is primarily concentrated along the southwest portion of the redevelopment area. The water front is nearly inaccessible, dominated by the Navy and industry. Interstate 5 forms the northwestern boundary of the redevelopment area and divides it from the rest of Logan Heights. The San Diego-Coronado Bridge bisects the community. Chicano Park, developed in 1970 under the bridge, serves as an important community gathering place (City of San Diego, Planning Department 1990).

Parking lots are scarce and most parking is located on the streets or on vacant lots. The multi-modal transportation services provided for the project area include the San Diego trolley line and bus transit operating along Logan Avenue, National Avenue and Main Street, all of which provide access to the south and to the Centre City area of San Diego.

Currently, two redevelopment project areas abut the Barrio Logan Redevelopment Plan area. To the northwest is the Centre City Redevelopment Project area which is currently under review by City staff, and the Gateway Center West Redevelopment Project area which has been adopted by the Redevelopment Agency.

The southwestern boundary of the Barrio Logan Redevelopment Project area borders on the Unified Port District; the Port District land is under the jurisdiction of the Port of San Diego.

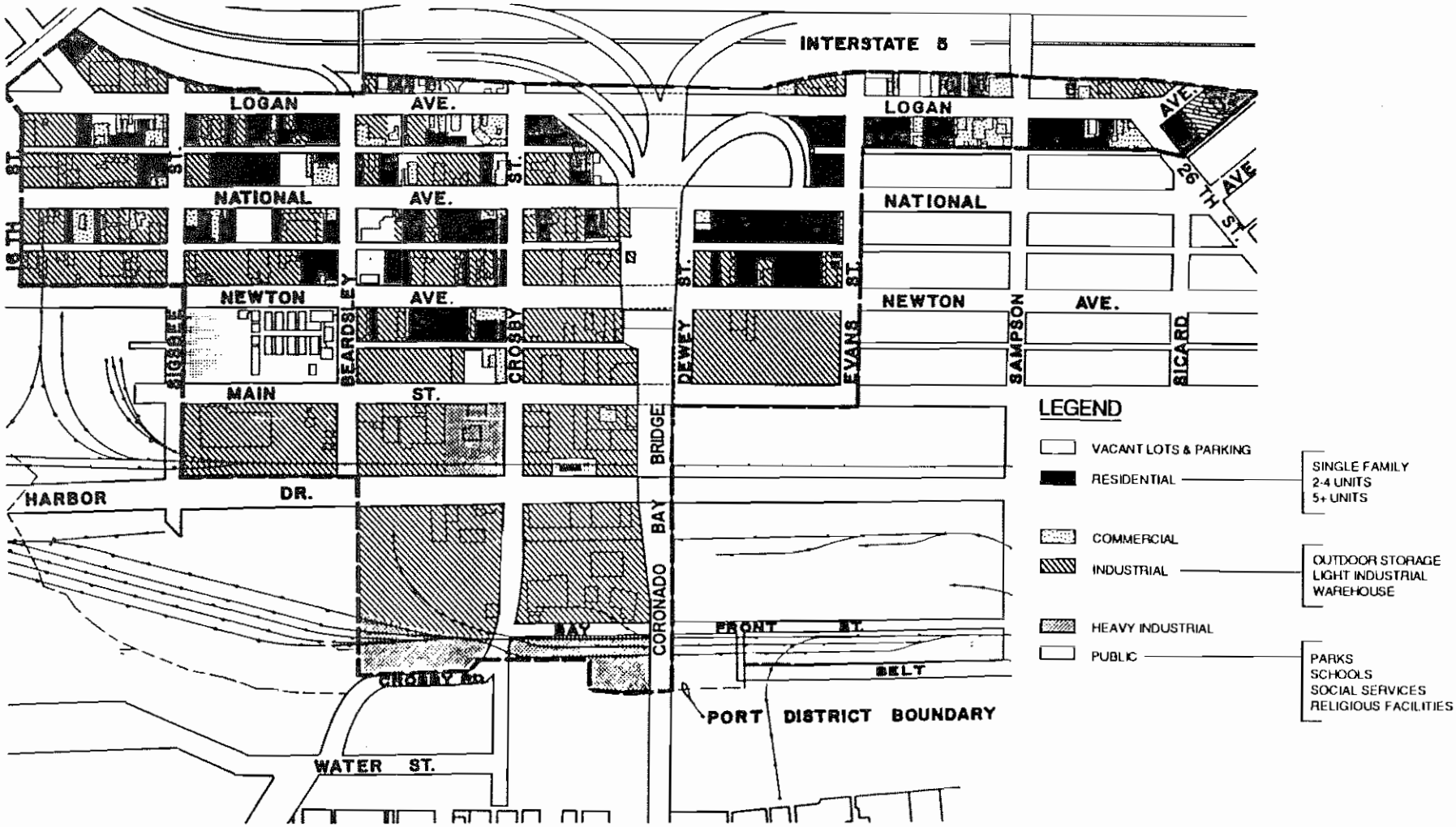
Existing Land Uses

Of the 133-acre project area, approximately 48.9 acres are devoted to roads, alleys, railroads and freeway rights-of-way; 41 acres are devoted to industrial uses; 20.5 acres are devoted to public or quasi- public uses; 15.3 acres are devoted to residential uses; and 5.4 acres are devoted to limited commercial uses. Vacant land accounts for 1.9 acres; outdoor industrial storage comprises 7.7 acres. The spatial distribution of these land uses is depicted on Figure 4.

Residential: Residential uses account for 15.3 acres, or 12 percent of the total project areas, excluding the amount of land dedicated for street purposes. The residential character is a mixture of single family, duplex and multi-family homes. There are 317 dwelling units within the project area. The amount of land developed with various residential categories in the Redevelopment Plan area is as follows:

Single Family	3.1 acres/20%
Two to Four Units	8.9 acres/58%
Five or more Units	3.3 acres/22%

Commercial: Commercial uses occupy 5.4 acres of the land, or four percent of the Plan area, excluding streets. The two largest commercial parcels (.9 acres) include a vacated gas station and a recently constructed motel, both located on Logan Avenue. Other commercial uses include restaurants, community-oriented markets, pawn shops, convenience stores and a bakery, for a total of 1.7 acres. The balance of commercial uses includes such businesses as retail auto parts, car sales and service station equipment, as well as some office-related uses, for a total of 2.8 acres. The commercial uses are scattered throughout



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EXISTING LAND USES

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 4

the Plan area, but most are located along Logan Avenue or at street intersections. Currently, there are approximately 120,000 square feet of commercial development within the project area.

Industrial: Industrial uses account for 41 acres, or 31 percent of the total project area, excluding streets. Industrial uses are present on almost every block in the Redevelopment Plan area. The distribution of various industrial uses are as follows:

Outdoor Storage	7.7 acres/19%
Light Industrial	16.1 acres/39%
Warehouse	8.2 acres/20%
Heavy Industrial	9.0 acres/22%

Industrial uses are dispersed throughout the Plan area. Industrial uses exist on 17 of the 21 blocks in the Plan area. There are eight blocks in which industrial uses occupy 50 to 70 percent of the total land area; the highest concentration of industrial uses are on the blocks adjacent to Harbor Drive, and between Crosby Street and Coronado Bay Bridge. Additional industrial uses are located on National Avenue and Harbor Drive.

Public/Social Service: Public lands account for 69.4 acres, or 52 percent of the total project area. Over half of this acreage (35.8 acres) is public streets. The balance of 33.6 acres is alleys, freeway ramps and railroads, or for a variety of public, social service facilities as indicated in Table 3-1. The largest publicly owned parcels are those developed as Chicano Park (7.4 acres) and Lowell/Perkins Elementary School (4.1 acres).

Vacant Parcels: For purposes of this report, vacant parcels were identified as those parcels which are totally devoid of any structure and are not used for outdoor storage. Approximately 1.9 acres, or one percent of the project area, are categorized as vacant. The project area gives the appearance of more vacant parcels because an additional 7.7 acres are utilized for some form of outdoor storage. Additionally, there is a vacated gas station of approximately 0.5 acres on Logan Avenue at Crosby Street.

Barrio Logan/Harbor 101 Community Plan

In December of 1978, the City of San Diego City Council adopted the Barrio Logan/Harbor 101 Community Plan. This Community Plan provides guidelines for the expansion of

Table 3-1

EXISTING PUBLIC AND QUASI-PUBLIC LAND

Public Streets	35.8 acres
Alleys	3.5 acres
Freeways	1.3 acres
Railroads	8.3 acres
SCHOOL Lowell Elementary	4.1 acres
PARK Chicano Park	7.4 acres
QUASI-PUBLIC San Diego Gas & Electric Family Health Center	5.5 acres
RELIGIOUS Churches	0.7 acres
OTHER Fire Station No. 7 Harbor View Education Center	0.5 acres
Total	69.4 Acres

residential uses with appurtenant commercial and public facilities. Additionally, the Community Plan functions as a component of the San Diego Bay Local Coastal Plan.

The Community Plan covers over 1,000 acres located along the eastern side of San Diego Bay. The Plan area is bounded by Commercial Street to the north, Interstate 5 to the east, National City to the south, and San Diego Bay to the west. The Redevelopment Plan area is located in the northwestern portion of the Community Plan area. The primary goals of the Community Plan include the following:

- Conserve and reinforce the existing living and working community through residential/industrial coexistence and rehabilitation.

- Develop and maintain a high quality environment, and take all action necessary to protect, rehabilitate and enhance the environmental quality of the community.

- Avoid new developments which will require the removal of major building investments.

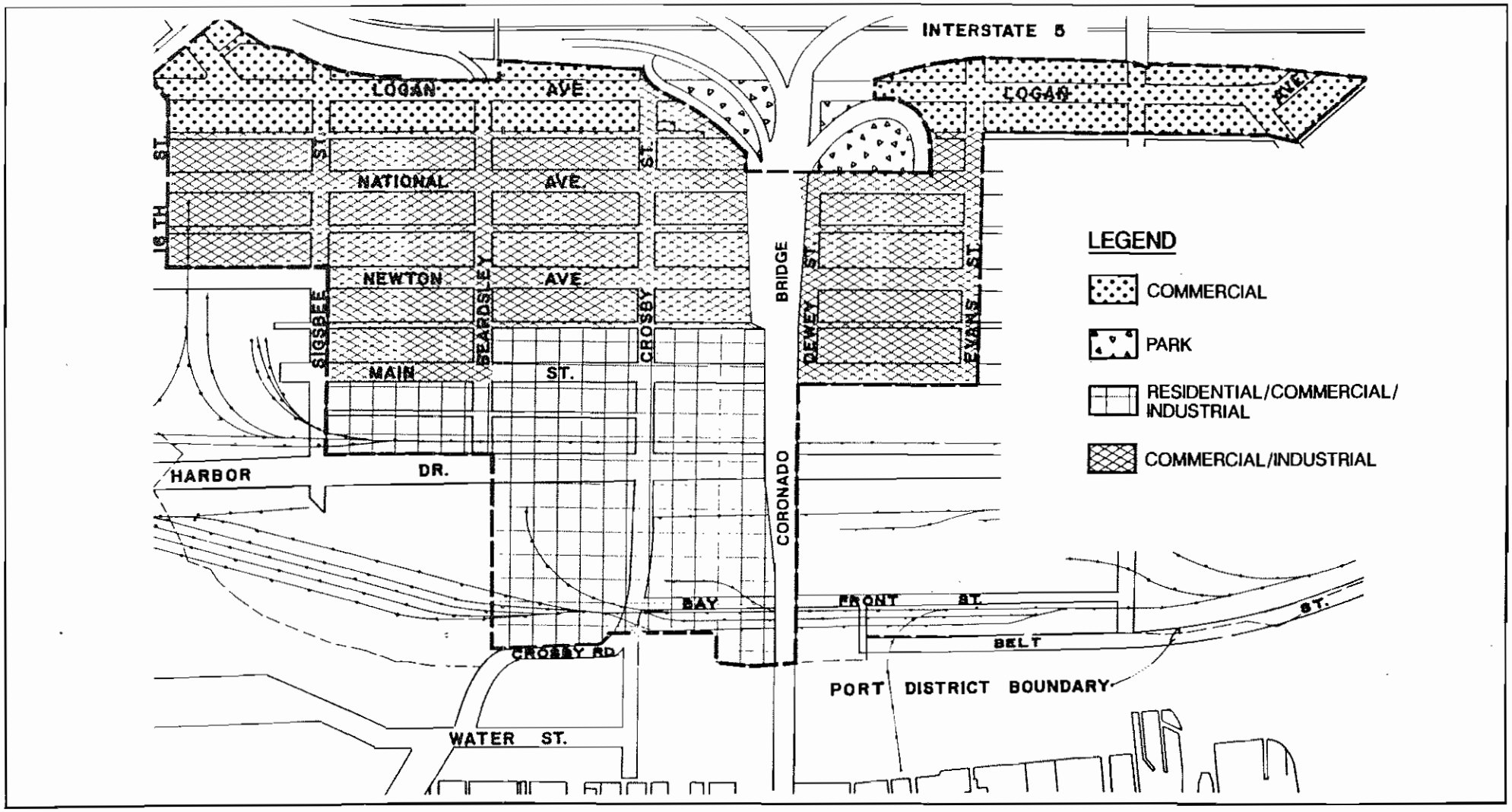
- Provide open space links to the waterfront for public access whenever possible.

- Strengthen the community social and cultural base.

- Develop a circulation/transportation network in the community, organizing automobile circulation patterns and parking, and encouraging the development of other modes of transportation.

Community Plan land use designations for parcels within the Redevelopment Plan area are shown in Figure 5. Commercial uses are designated along Logan Avenue, adjacent to Interstate 5; commercial/industrial uses are designated between National Avenue and Main Street; and residential/commercial/industrial uses are designated between Main Street and Crosby Road.

Development standards are not included as part of the Community Plan. Guidelines regulating building densities and intensities are specified in the City's emergency interim zoning ordinance for Barrio Logan. Building densities and intensities are governed by



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BARRIO LOGAN/HARBOR 101 COMMUNITY PLAN - LAND USE PLAN

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

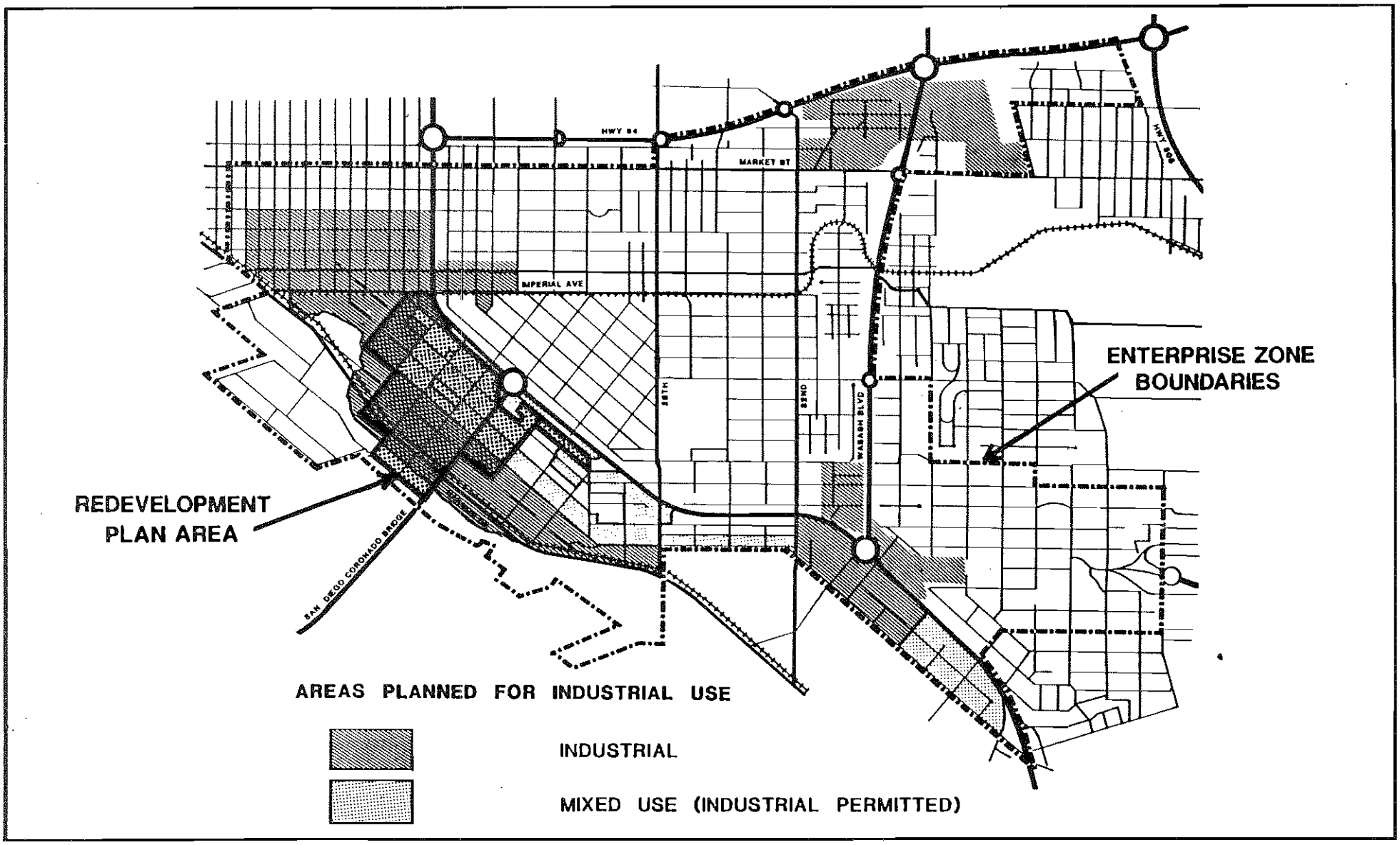
FIGURE 5

building setbacks and height limits (maximum 50 feet, 35 foot average). The ordinance is discussed on page 3-10.

Southeast Enterprise Zone

In October of 1986, the State of California designated approximately 6.5 square miles in the area south and east of downtown as the Southeast/Barrio Logan Enterprise Zone (Figure 6). An enterprise zone is a geographic location within which businesses may claim a variety of California income tax incentives. In order to obtain the State designation, the City was required to provide local administration and its own package of incentives. A total of ten enterprise zones have been designed by the State pursuant to authorizing legislation, with nine similar "employment and economic incentive areas" also designated. A 1989 law authorizes the designation of fifteen additional enterprise zones. Eligibility for designation is based on certain demographic characteristics which demonstrate economic distress.

The Southwest/Barrio Logan Enterprise Zone consists of Barrio Logan and parts of Centre City East and Southeast San Diego. This area contains some of the oldest development in the City. Barrio Logan contains a mixture of industrial, warehouse, commercial, residential, and public uses. Many of the industrial uses are interspersed among the residential. Land uses are controlled by the Barrio Logan Planned District Ordinance. In Centre City East, most of the development consists of manufacturing and warehousing uses. While previously zoned for heavy industrial, the land uses are now controlled by an interim ordinance in anticipation of adoption of a redevelopment plan covering the entire Centre City. Currently, warehouse and manufacturing uses are permitted only with a conditional use permit. The portion of the Enterprise Zone located in Southeast San Diego contains several concentrated residential areas, three major strip business areas (Market Street, primarily commercial; Imperial Avenue, mixed commercial and industrial; and Commercial Street, primarily industrial), and four redevelopment plan areas (Gateway Centers East and West, both adopted, for industrial and some commercial uses; Southcrest, adopted, for residential and some commercial uses; and Dells/Imperial, in planning). The proposed Barrio Logan Redevelopment Plan area is in the south and western portion of the Enterprise Zone.



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SOUTHEAST ENTERPRISE ZONE - LAND USE PLAN

BARRIO LOGAN REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 6

The Southeast/Barrio Logan Enterprise Zone does not affect underlying land use restrictions, nor otherwise stipulate development guidelines. It does, however, seek to stimulate business investment primarily geared to job creation through the use of incentives.

Emergency Interim Zoning Ordinance

On April 24, 1990, the City of San Diego City Council approved and adopted an emergency interim zoning ordinance for the Redevelopment Plan area. This interim zoning ordinance will be in effect for one year from the date of its adoption, or until the Barrio Logan Redevelopment Plan is adopted and executed. The purpose of this ordinance is to prohibit development from occurring which may be in conflict with plans or legislation which the Planning Department, Planning Commission or City Council is considering or studying.

In order to accommodate the Redevelopment Plan, existing zoning designations for the Plan area were amended by adding Subdistrict "E." The purpose of the Subdistrict "E" designation is to establish uses and development standards which will be supportive of the objectives of the Redevelopment Plan. Subdistrict "E" is intended to be a pedestrian-oriented mixed-use area, with commercial, cultural, educational, recreational and residential uses. Light industrial uses are permitted within Subdistrict "E" to enhance employment opportunities for community residents.

Development standards contained in the emergency interim zoning ordinance address both residential and non-residential uses. The maximum density for residential uses is one (1) dwelling unit per 1,500 square feet (29 units/acre), with a 25 percent increase in density as permitted through the City's Affordable Housing Density Bonus Program (Municipal Code Section 101.0307.1). Use of this program would result in a total density of 36 units per acre.

Development of non-residential structures is regulated by a maximum building height of 50 feet, with an overall average of 35 feet, and standard parking and setback requirements. If underground parking is utilized, a maximum intensity of 2.0 FAR would be permitted.

Environmental Consequences

As proposed, the Redevelopment Land Use Plan (Figure 3) designates approximately 14 acres for residential use, 13 acres for mixed-use (commercial/residential), 8 acres for commercial use, 13 acres for the Mercado, 28 acres for industrial use, and 57 acres for public/quasi-public uses.

Residential land uses would include multi-family dwelling units, with a minimum of 1,000 square feet per unit and a maximum density of 43 units per acre. Maximum permitted buildout of residential areas would allow for development of 602 multi-family dwelling units. The City's Affordable Housing Density Bonus Program (Municipal Code Sections 101.0307.1 through 101.0307.6) would allow for a 25 percent increase, or a total of 742 multi- family dwelling units.

The mixed-use designation would allow for commercial/residential uses to be developed at 1.5 FAR, and multi-family residential uses at 43 units per acre, or 53 units per acre, assuming the Affordable Housing Density Bonus Program. For analysis purposes, this EIR assumes that two-thirds of the 13 acres would be developed as commercial and one-third as residential, resulting in 568,458 square feet of commercial/retail use and 228 dwelling units under the Affordable Housing Density Bonus Program.

Mercado uses would permit commercial/retail/cultural and service types of land uses at a 1.5 FAR, and multi-family residential uses at 43 dwelling units per acre or 53 units per acre assuming the Affordable Housing Density Bonus Program. For analysis purposes, this EIR assumes that two-thirds of the 13 acres would be developed as commercial and one-third as residential, resulting in 568,458 square feet of commercial/retail/ cultural uses and 228 units under the City's Affordable Housing Density Bonus Program.

Commercial /retail/office uses would allow for development at 2.0 FAR, with a maximum height of 75 feet. Buildout of this land use would result in 696,960 square feet of commercial /retail/office development.

Parcels designated for industrial uses could be developed at a 1.0 FAR, allowing 1,219,680 square feet of industrial development.

The Redevelopment Plan does not specify any development standards for public/quasi-public land uses. With the exception of expansion of Lowell/Perkins Elementary School, Chicano Park, and Harbor View Center and the construction of a multi-cultural center, no changes are expected as a result of implementation of the Redevelopment Plan.

Existing Land Uses

Assuming that one-third of the mixed use and Mercado designations would be developed as residential, implementation of the Redevelopment Plan would create 1,198 multi-family dwelling units, an increase of 278 percent above the existing 317 dwelling units. Many of the existing dwelling units would be removed to allow for the construction of the units specified by the Redevelopment Plan. Approximately 602 of the dwelling units would be developed on parcels designated for residential uses, with a density of 53 units per acre, which would represent a 152 percent increase in density above existing conditions (21 units per acre).

While the number of dwelling units would increase, the acreage designated for residential uses would decrease from 15 acres to 13.6 acres (15 percent decrease).

Development of residential units at the proposed densities would significantly limit the opportunities for construction of owner occupied types of residences. High density, apartment-type construction is typical of densities of 53 units per acre.

Currently, there are approximately 5.4 acres of commercial development in the project area. Assuming that two-thirds of the mixed use and Mercado designations would be developed into commercial uses, implementation of the Redevelopment Plan would create 30.4 acres of commercial development. This represents a 463 percent increase in commercial land uses. Development intensities would range from 1.5 FAR (mixed use and Mercado) to 2.0 FAR (Retail). Assuming that two-thirds of the mixed use and Mercado designations would be developed into commercial uses, implementation of the Redevelopment Plan would create approximately 1,833,876 square feet of commercial land uses. This would represent a 1,428 percent increase above the existing 120,000 square feet of commercial development. Development of proposed commercial types of land uses, to the intensities proposed, would require the removal of most existing structures and replacement of approximately 25 acres of residential and industrial land uses with commercial land uses.

Industrial land uses currently include approximately 41 acres in the project area, and would be reduced by 46 percent to 28 acres as a result of the Redevelopment Plan. Development intensities permitted for industrial uses (1.0 FAR) would allow for more building area than what currently exists, as much of the acreage currently identified as industrial is utilized for outdoor storage.

Currently, public/quasi-public uses and vacant parcels involve approximately 56.2 acres. As proposed, the Redevelopment Plan would not change these designations other than to add two acres for Lowell/Perkins Elementary School and two acres under the Coronado Bridge for Chicano Park.

Generally, implementation of the project would allow for significant increases in commercial and residential development. This change in land uses is not adversely significant and no mitigation is required. Proposed increases in intensity and density would significantly impact existing land uses, resulting in either relocation or dislocation of businesses and residences. Mitigation measures which reduce potential impacts associated with relocation or dislocation, to acceptable levels are identified in Section 3.7, Population/Housing.

Barrio Logan/Harbor 101 Community Plan

Although both the Barrio Logan/Harbor 101 Community Plan and the Barrio Logan Redevelopment Plan seek to reduce or eliminate incompatible land uses and provide for the protection and expansion of residential and commercial land uses, the land use plans do not reflect the same spatial distribution of land uses throughout the project area. The Community Plan would be amended to be consistent with the Redevelopment Plan.

The Community Plan designates commercial uses along Logan Avenue (Figure 5). Similarly, the Redevelopment Plan designates commercial/retail and commercial/residential uses along Logan Avenue (Figure 3). The Community Plan designates the area between Logan Avenue and Main Street for commercial/industrial uses. The Redevelopment Plan, however, emphasizes residential and commercial/ residential uses, with some industrial use adjacent to 16th Street. Areas between Main Street and Crosby Road have been designated for commercial/residential/industrial uses by the Community Plan. The Redevelopment Plan, however, designates this area as industrial/commercial, with no residential uses.

The Community Plan specified residential densities ranging from 14 to 29 units per acre. The Redevelopment Plan would allow a higher residential density in the project area, a maximum of 43 units per acre for residential, Mercado and mixed-use areas.

The Redevelopment Plan represents a change in proposed land uses and residential densities. The change in land uses represents a redistribution of similar land uses and modifies the current land use plan. Additionally, the increase in residential densities would also require modification of the Community Plan Land Use Plan and appropriate zoning ordinances.

Although these changes do not represent a significant shift in land use policies in the project area, the Redevelopment Plan would represent an amendment to the Community Plan and the Local Coastal Plan. As such, appropriate hearings before the City of San Diego Planning Commission, City Council and California Coastal Commission would be required.

As proposed, the project would allow for increased commercial intensities and residential densities above those currently permitted, requiring amendments to the Barrio Logan/Harbor 101 Community Plan which serves as the Local Coastal Plan for the project area. These amendments would be processed through the City of San Diego. This action is not adversely significant; no mitigation is required.

Southeast/Barrio Logan Enterprise Zone

As previously indicated, the intent of the Enterprise Zone is to enhance economic growth by stimulating business investment through various state and local economic incentives. As proposed, the Redevelopment Plan would reduce industrial acreage by 46 percent, from 41 acres to 28 acres. Although the proposed reduction in industrial acreage would conflict with the general purpose of the Enterprise Zone, it would reduce potential land use conflicts with existing and proposed uses. Additionally, the plan would increase commercial activity, which is within the purpose of the Enterprise Zone. Finally, increased commercial and residential uses could serve to strengthen the local economy through private development. Implementation of the project would be compatible with the goals identified in the Southeast Enterprise Zone and would not require modification to this plan. Thus, no significant adverse impacts to the Enterprise Zone program are anticipated. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

3.2 TRAFFIC/CIRCULATION/PARKING

The following traffic section is summarized from the Traffic Study for the Barrio Logan Redevelopment Plan prepared by Basmaciyan-Darnell, Inc., on March 25, 1991. It replaces the traffic section contained in the draft EIR. The revised traffic report is contained in Appendix C.

Affected Environment

Roadway Network

Regional access to the Barrio Logan Redevelopment Area is provided by the Interstate 5 Freeway (I-5) and the Coronado Bay Bridge. The I-5 Freeway is a major north-south route which passes through downtown San Diego and extends north to the Canadian border and south to the Mexican border. Direct access to the project area street network is provided via off-ramps at Beardsley Street/Crosby Street and an on-ramp at Logan Avenue near Dewey Street. The Coronado Bay Bridge is a four-lane toll bridge across the San Diego Bay which provides a connection between the City of San Diego and the City of Coronado. A westbound on-ramp to the bridge begins at the intersection of Crosby Street and Logan Avenue.

The street network in the project area is primarily a grid system, with Logan Avenue, National Avenue, Newton Avenue, Main Street, Harbor Drive, and Bay Front Street running northwest to southeast and 16th Street, Sigsbee Street, Beardsley Street, Crosby Street, Dewey Street, Evans Street, and Sampson Street running southwest to northeast. At the east end of the Redevelopment Plan area, 26th Street intersects with Logan Avenue and extends south toward Main Street. Crosby Street and Sampson Street cross the I-5 Freeway to the northeast, and Crosby Street extends southwesterly beyond Harbor Drive to the San Diego Unified Port District facilities. Table 3-2 provides a summary of existing street curb-to-curb and right-of-way widths. Additional description of the study area roadways is located in the traffic study in Appendix C.

Table 3-2

SUMMARY OF EXISTING STREET
CURB-TO-CURB AND RIGHT-OF-WAY WIDTHS

ROADWAY SEGMENT	EXISTING STREET WIDTH	EXIST. RIGHT-OF-WAY WIDTH
Beardsley Street: Logan Ave./Harbor Dr.	40 feet	60 feet
Crosby Street: S/O Harbor Dr./E/O Kearny Ave.	40 feet	60 feet
Dewey Street: Harbor Dr./National Ave.	40 feet	60 feet
Evans Street: Logan Ave./Main St.	40 feet	60 feet
Harbor Drive: Sigsbee St./Sicard St.	80 feet	100 feet
Logan Avenue: 16th St./26th St.	52 feet	80 feet
Main Street: Sigsbee St./26th St.	52 feet	80 feet
National Avenue: 16th St./S/O 26th St.	52 feet	80 feet
Newton Avenue: Sigsbee St./26th St.	52 feet	80 feet
Sampson Street: N/O Logan Ave./Harbor Dr.	40 feet	60 feet
Sicard Street: National Ave./Main St.	40 feet	60 feet
Sigsbee Street: Logan Ave./Harbor Dr.	40 feet	60 feet
16th Street: Logan Ave./Newton Ave.	40 feet	60 feet
26th Street: Logan Ave./Main St.	40 feet	60 feet

Source: Basmaciyan-Darnell, Inc. 1991.

Existing Traffic Volumes. Table 3-3 compares existing average daily traffic (ADT) volumes to the recommended maximum daily volumes listed in the City of San Diego Street Design Manual. Some roadways in the study area do not correspond to City classifications, particularly the 52-foot sections of Logan Avenue and National Avenue that are striped for four travel lanes. In these cases, the recommended maximum was estimated to be 7,500 ADT. Existing volumes exceed City recommended maximums at the following locations:

Beardsley Street:
- from National Avenue to Logan Avenue

Crosby Street:
- from west of Harbor Drive to east of Kearney Avenue

Logan Avenue:
- from Beardsley Street to south of Crosby Street

National Avenue:
- from Crosby Street to Evans Street
- from Sampson Street to south of 26th Street

Sampson Street:
- from Harbor Drive to Main Street.

Existing Intersection Volumes. There are six signalized intersections within and around the Redevelopment Plan area; they are: National Avenue at Sigsbee Street,Crosby Street at Logan Avenue, Crosby Street at Main Street, Crosby Street at Harbor Drive, Sampson Street at National Avenue, and Sampson Street at Harbor Drive. The remaining intersections in the study area are controlled with stop signs and/or yield signs or no signage. Figure 7 depicts the existing lane configurations and traffic control.

Existing peak hour traffic operations were analyzed at 15 intersections in and around the Barrio Logan Redevelopment Plan area. Summaries of all counts and the methodologies used to analyzed the intersections are contained in Appendix C. Peak hour operations at all intersections were satisfactory, except at Crosby Street/Kearney Avenue, where the level of service was found to be worse than C.

Table 3-3

COMPARISON OF EXISTING AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC

ROADWAY SEGMENT	EXIST. STREET CLASS(a)	REC. MAX. ADT(b)	EXIST. ADT	EXIST. V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	1,500	0.30
Main St./Newton Ave.	2C	5,000	2,700	0.54
Newton Ave./National Ave.	2C	5,000	4,000	0.80
National Ave./Logan Ave.	2C	5,000	5,000	1.00
Crosby Street:				
W/o Harbor Dr.	2C	5,000	2,000	0.40
Harbor Dr./Main St.	2C	5,000	6,400	1.28
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	8,000	1.60
National Ave./Logan Ave.	2C	5,000	9,000	1.80
Logan Ave./Kearny Ave.	2C	5,000	10,800	2.16
Kearny Ave./E/O	2C	5,000	6,900	1.38
Harbor Drive:				
N/o Crosby Street	4M	30,000	12,800	0.43
Crosby St./Sampson St.	4M	30,000	10,900	0.36
S/o Sampson St.	4M	30,000	14,400	0.48
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	4,600	0.92
Sigsbee St./Beardsley St.	2C	5,000	4,500	0.90
Beardsley St./Crosby St.	2C	5,000	6,600	1.32
Crosby St./S/O Crosby St.	2C	5,000	8,800	1.76
Evans St./Sampson St.	4C(d)	7,500	3,800	0.51
Sampson St./26th St.	4C(d)	7,500	2,400	0.32
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	2,700	0.54
Beardsley St./Crosby St.	2C	5,000	2,700	0.54
Crosby St./Dewey St.	2C	5,000	2,600	0.52
Dewey St./Evans St.	2C	5,000	2,400	0.48
National Avenue:				
16th St./Sigsbee St.	4C(d)	7,500	2,700	0.36
Sigsbee St./Beardsley St.	4C(d)	7,500	3,900	0.52
Beardsley St./Crosby St.	4C(d)	7,500	3,900	0.52
Crosby St./Dewey St.	2C	5,000	5,200	1.04
Dewey St./Evans St.	2C	5,000	5,200	1.04
Evans St./Sampson St.	2C	5,000	4,100	0.82
Sampson St./26th St.	2C	5,000	10,300	2.06
26th St./S/O 26th St.	2C	5,000	10,300	2.06

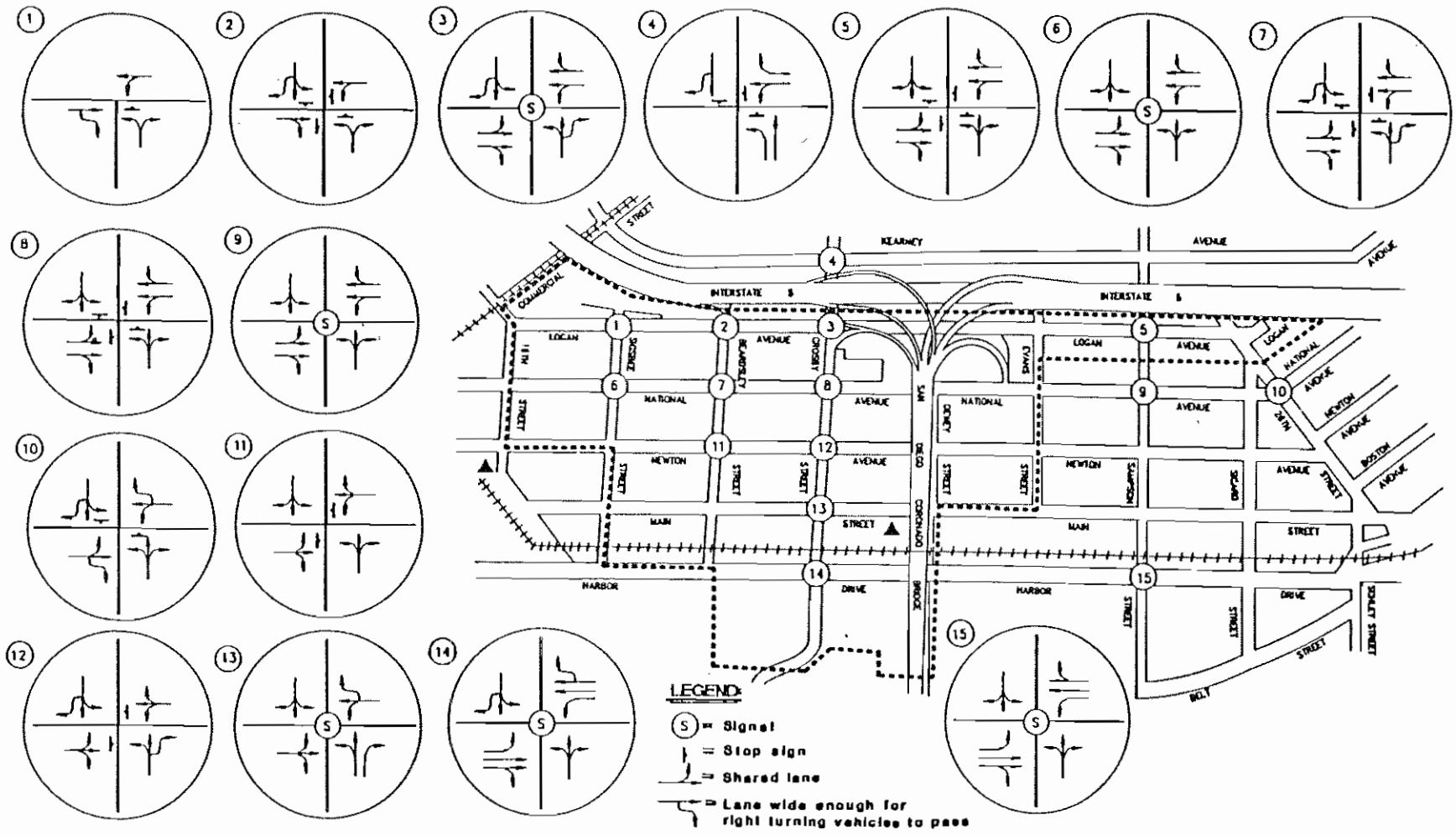
Table 3-3 (Continued)

COMPARISON OF EXISTING AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC

ROADWAY SEGMENT	EXIST. STREET CLASS(a)	REC. MAX. ADT(b)	EXIST. ADT	EXIST. V/C(c)
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	1,200	0.24
Beardsley St./Crosby St.	2C	5,000	1,100	0.22
Crosby St./Dewey St.	2C	5,000	1,100	0.22
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	5,200	1.04
Main St./Newton Ave.	2C	5,000	3,900	0.78
Newton Ave./National Ave.	2C	5,000	3,600	0.72
National Ave./Logan Ave.	2C	5,000	3,900	0.78
Logan Ave./E/O Logan Ave.	2C	5,000	4,300	0.86
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	1,300	0.26
Newton Ave./National Ave.	2C	5,000	2,300	0.46
National Ave./Logan Ave.	2C	5,000	1,600	0.32
16th Street:				
National Ave./Logan Ave.	2C	5,000	1,900	0.38
26th Street:				
Newton Ave./National Ave.	2C	5,000	2,100	0.42
National Ave./Logan Ave.	2C	5,000	3,700	0.74

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Existing ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

Source: Basmaciyan-Darnell, Inc. 1991.



SOURCE: Basmaciyan-Darnell, Inc., 1991

FIGURE 7

Existing Lane Configurations and Traffic Control

The nine unsignalized intersections in the study area were analyzed using Caltrans' daily warrants to determine if existing volumes justified traffic signal installation. None of the nine unsignalized intersections meet signal warrants under existing conditions.

On-Street Parking

On-street parking is provided along every street in the project area except Harbor Drive. Most of the streets have parallel parking, while Newton Avenue between 16th Street and Crosby Street, Newton Avenue between Dewey Street and Sampson Street, and Main Street between Dewey Street and Evans Street are marked with diagonal parking spaces.

The existing parking supply within the project area is insufficient. A field survey on parking conditions in the project area indicates that the on-street parking supply is heavily utilized throughout the day.

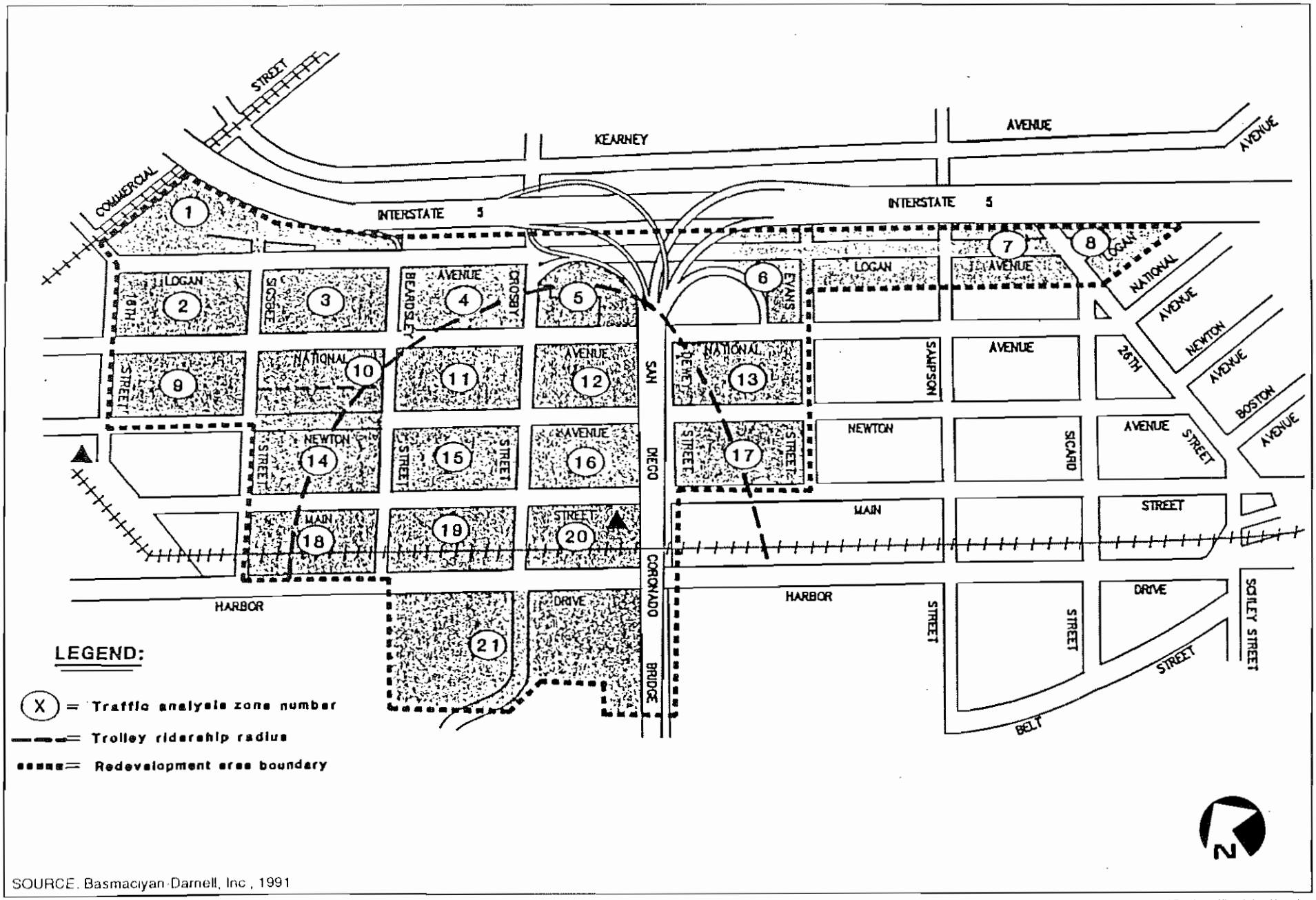
Public Transit

The Barrio Logan Redevelopment Plan area is served by several bus routes and light rail transit. The south line of the San Diego Trolley, which extends from Centre City to San Ysidro (the Mexican border), has a station located near the Harbor Drive/Crosby Street intersection in Barrio Logan (Figure 8). The trolley operates daily from approximately 4:30 a.m. till 1:30 a.m. Average trolley ridership at this station is 1,184 persons per day.

San Diego Transit operates several bus routes through the project area including Routes 11 (Logan Avenue), 29 (Logan Avenue, Sigsbee Street, and Main Street), 901/902/903 (National Avenue and Crosby Street), and 932 (Logan Avenue). Additional information on bus routes is provided in the traffic study in Appendix C.

Environmental Impacts

To assess future conditions, the study area was divided into twenty-one traffic analysis zones (Figure 8). Existing trip generation was estimated by zone using trip generation rates for each land use developed in consultation with the City.



SOURCE: Basmaciyan-Darnell, Inc., 1991

FIGURE

8

Traffic Analysis Zones

In order to determine the impacts of the proposed Redevelopment Plan, future land uses were assigned to each of the twenty-one traffic analysis zones. The proposed land use plan was used to estimate the distribution of future development among zones.

Trip generation rates for each land use type were developed in consultation with City staff and are based on City of San Diego published trip generation rates. In some cases, it was necessary to estimate trip generation rates, particularly for mixed-use land use categories. A daily trip rate of 40 trips per 1,000 square feet was developed for the "commercial/retail/office" category. Trip generation rates for the "mixed-use" category were developed assuming a 75 percent strip commercial/25 percent office mix. The trip generation rates used for Mercado Development corresponds to the City's recommended rates for regional shopping. All residential was assumed to be high-density, multi-family for the purpose of estimating trip generation.

Table 3-4 shows the difference between the proposed trip generation and existing trip generation. In developing Table 3-4, a 5 percent reduction was applied to estimated proposed project trips for those zones located within a quarter-mile radius of the Barrio Logan Trolley Station. A five percent reduction most likely understates the transit mode split which would be achieved in Barrio Logan. As shown in Table 3-4, the daily net increase in traffic resulting from the maximum buildout of the Redevelopment Plan is 72,520 ADT. These trips were distributed to the surrounding roadway network in order to determine future traffic conditions.

The distribution was done on a zone-by-zone basis, based on the likely travel routes between the TAZ and transportation facilities, commercial areas, and other attractors. To determine the regional distribution of project trips, a select zone assignment was performed using the SANDAG Series VII regional traffic model. The distribution percentages were applied to the expected project-related increase in trips to determine the daily and peak hour volume increases expected as a result of buildout of the Barrio Logan Redevelopment Plan.

Two sources of information were reviewed to quantify the increase in through trips on Harbor Drive attributable to regional growth (growth not associated with Barrio Logan Redevelopment). Based on the Navy Broadway Complex traffic study and the SANDAG 2010 regional traffic model existing daily volumes and peak hour through volumes on Harbor Drive adjacent to the study area were increased by 40 percent to reflect

Table 3-4

BARRIO LOGAN REDEVELOPMENT AREA ESTIMATED NET INCREASE IN TRIP GENERATION DUE TO PROPOSED LAND USES

Traffic Zone	Peak Hour Trips (a) AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	Proposed-Existing ADT (a)
Zone 1:	252	84	279	371	6,461
Zone 2:	189	42	114	217	3,114
Zone 3:	125	52	127	166	2,924
Zone 4:	125	66	132	160	2,863
Zone 5:	19	21	95	82	1,991
Zone 6:	453	132	424	613	10,185
Zone 7:	269	81	257	368	6,162
Zone 8:	138	42	151	204	3,531
Zone 9:	170	12	23	153	1,363
Zone 10:	12	25	33	20	547
Zone 11:	61	62	102	90	1,946
Zone 12:	32	33	170	146	3,566
Zone 13:	3	43	41	8	475
Zone 14:	36	24	4	8	234
Zone 15:	59	61	95	84	1,795
Zone 16:	33	40	191	158	3,935
Zone 17:	37	50	237	195	4,881
Zone 18:	140	16	34	135	1,411
Zone 19:	156	17	38	151	1,574
Zone 20:	171	70	260	301	5,752
Zone 21:	773	85	188	749	7,810
Total=	3,254	1,058	2,994	4,379	72,520

(a) Total estimated future ("proposed") trip generation was reduced by 5% for zones located within one quarter mile of the trolley station. Net trip increases were then calculated by subtracting existing trip totals from these "adjusted" proposed trip totals.

Source: Basmaciyan-Darnell, Inc. 1991.

expected regional growth. These factored, existing volumes were then added to increased project traffic volumes to obtain total future volume projections.

Future (existing-plus-project) average weekday traffic volumes are shown on Figure 6. Figure 7 shows future morning/afternoon peak hour turning movement volumes throughout the study area. The impact to Crosby Street, the Barrio's freeway access, is expected to be significant.

Table 3-5 presents a comparison of projected future ADT volumes and recommended maximum daily traffic. As shown in this table, substantial future traffic will be added to the local street system, particularly on Crosby Street. Between Logan Avenue and Kearney Avenue, Crosby Street would have a future ADT volume of 32,600, more than six times the recommended maximum. Throughout the study area, 31 of the 46 street segments analyzed would have ADT volumes in excess of the recommended maximum with full buildout of the Redevelopment Plan.

Unsignalized intersections throughout the study area were analyzed using Caltrans daily signal warrant worksheets to determine whether future volumes justified installation of traffic signals. Seven of the nine unsignalized intersections would warrant signalization based on future conditions (Table 3-6). All intersections in the community should be monitored as growth occurs and traffic patterns and demand change to determine actual future signal needs.

Assuming signalization of intersections satisfying daily warrants, all study area intersections were reanalyzed (Table 3-7). Six study area intersections would experience an unacceptable level of service during one of the peak hours under future traffic conditions. Crosby Street in particular would have operational problems, with LOS E or LOS F at the intersections at Logan Avenue, National Avenue, Harbor Drive, Newton Avenue, and Main Street. The Logan Avenue/Beardsley Street intersection, a four-way, stop-controlled intersection, would experience worse than LOS C conditions during both morning and afternoon peak hours.

Alternative Roadway Configurations

In addition to the current roadway configuration, two different roadway configurations were studied to determine whether improvements would help the study area roadways and

Table 3-5

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC
(Without Mitigation)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	4,300	0.86
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	9,700	1.94
National Ave./Logan Ave.	2C	5,000	11,700	2.34
Crosby Street:				
W/o Harbor Dr.	2C	5,000	9,800	1.96
Harbor Dr./Main St.	2C	5,000	14,200	2.84
Main St./Newton Ave.	2C	5,000	18,900	3.78
Newton Ave./National Ave.	2C	5,000	22,900	4.58
National Ave./Logan Ave.	2C	5,000	26,600	5.32
Logan Ave./Kearny Ave.	2C	5,000	32,600	6.52
Kearny Ave./E/O	2C	5,000	12,700	2.54
Harbor Drive:				
N/O Crosby Street	4M	30,000	30,200	1.01
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	11,500	2.32
Sigsbee St./Beardsley St.	2C	5,000	9,600	1.92
Beardsley St./Crosby St.	2C	5,000	14,000	2.82
Crosby St./S/O Crosby St.	2C	5,000	22,300	4.46
Evans St./Sampson St.	4C(d)	7,500	11,300	1.51
Sampson St./26th St.	4C(d)	7,500	6,200	0.82
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	2C	5,000	6,200	1.24
Crosby St./Dewey St.	2C	5,000	11,500	2.32
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(d)	7,500	5,900	0.79
Sigsbee St./Beardsley St.	4C(d)	7,500	5,900	0.79
Beardsley St./Crosby St.	4C(d)	7,500	6,300	0.84
Crosby St./Dewey St.	2C	5,000	8,400	1.68
Dewey St./Evans St.	2C	5,000	5,500	1.14
Evans St./Sampson St.	2C	5,000	4,200	0.84
Sampson St./26th St.	2C	5,000	10,400	2.08
26th St./S/O 26th St.	2C	5,000	14,400	2.88

Table 3-5 (Continued)

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC
(Without Mitigation)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,300	0.46
Beardsley St./Crosby St.	2C	5,000	4,100	0.82
Crosby St./Dewey St.	2C	5,000	6,400	1.28
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.06
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,500	0.90
Newton Ave./National Ave.	2C	5,000	6,700	1.34
National Ave./Logan Ave.	2C	5,000	5,200	1.04
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	2C	5,000	8,000	1.60

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

Source: Basmaciyan-Darnell, Inc. 1991.

Table 3-6

SUMMARY OF FUTURE TRAFFIC
SIGNAL WARRANT ANALYSIS

UNSIGNALIZED INTERSECTION	SIGNAL WARRANTED(a)
Logan Avenue at:	
Sigsbee Street	Yes
Sampson Street	No
Beardsley Street	Yes
National Avenue at:	
Beardsley Street	Yes
Crosby Street	Yes
26th Street	Yes
Newton Avenue at:	
Beardsley Street	No
Crosby Street	Yes
Kearney Avenue at:	
Crosby Street	Yes

(a) Based on Caltrans' Daily Volume Traffic Signal Warrants

Source: Basmaciyan-Darnell, Inc. 1991.

Table 3-7

SUMMARY OF FUTURE INTERSECTION LEVELS OF SERVICE

Intersection Capacity Utilization Analysis

INTERSECTION	AM PEAK HR. ICU	AM PEAK HR. LOS	PM PEAK HR. ICU	PM PEAK HR. LOS
Kearney Avenue at:				
Crosby Street	0.82	D	1.32	F
Logan Avenue at:				
Sigsbee Street	0.42	A	0.58	A
Beardsley Street	0.95	E	1.04	F
Crosby Street	0.87	D	1.51	F
National Avenue at:				
Sigsbee Street	0.45	A	0.54	A
Beardsley Street	0.74	C	0.67	B
Crosby Street	0.73	C	1.27	F
Sampson Street	0.45	A	0.58	A
26th Street	0.63	B	0.72	C
Newton Avenue at:				
Crosby Street	0.71	C	1.17	F
Main Street at:				
Crosby Street	0.61	B	0.90	D
Harbor Drive at:				
Crosby Street	0.73	C	1.12	F
Sampson Street	0.54	A	0.73	C

Highway Capacity Manual Unsignalized Intersection Analysis

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:			
Sampson Street	ALL	<C(a)	<C(a)
Newton Avenue at:			
Beardsley Street	NB (Newton Ave.)	C	C
	SB (Newton Ave.)	C	C
	WB to SB left-turn	A	A
	EB to NB left-turn	A	A

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

Source: Basmaciyan-Darnell, Inc. 1991.

intersections accommodate future volumes more efficiently. Both involve the use of one-way couplets. The first (Alternative 1) roadway configuration involved making National Avenue one-way northbound and Newton Avenue one-way southbound between Sigsbee Street and Sampson Street; the second (Alternative 2) involved a one-way couplet on Crosby Street and Beardsley Street, with Crosby Street one-way eastbound and Beardsley Street one-way westbound between Harbor Drive and Logan Avenue.

For both alternatives, future volumes were adjusted manually to reflect the new constraints or opportunities provided by the couplet.

Under Alternative 1, daily operations along Newton Avenue and National Avenue would be significantly improved, but other roadways, including the heavily-traveled Crosby Street, would remain severely congested. Unsignalized intersections impacted by Alternative 1 were reanalyzed to determine if signal warrants were met. Two of the four signalized intersections (National Avenue/Crosby Street and National Avenue/Beardsley Street) would warrant signalization. Under Alternative 1 peak hour conditions, several of the impacted intersections would continue to experience LOS E or LOS F conditions. Crosby Street intersections with Newton Avenue, National Avenue, Kearney Avenue and Harbor Drive would be characterized by LOS F during the afternoon peak hour.

Under Alternative 2 conditions, operations along most of the study area roadway segments would continue to have volumes in excess of the City-recommended maximums. Traffic congestion would be alleviated by increased capacity along Crosby Street and Beardsley Street, but volumes would still exceed recommended maximums. All five unsignalized intersections affected by Alternative 2 conditions would warrant signalization. Under Alternative 2, there would be unsatisfactory peak hour conditions at the Crosby Street intersections with Harbor Drive, Kearney Avenue, and Logan Avenue and at the intersection of Logan Avenue/Beardsley Street. However, the level of service at Crosby Street/National Avenue and Crosby Street/Newton Avenue would improve to LOS D or better.

Project Parking Requirements

Field observations revealed that the existing on-street parking supply in the study area is heavily utilized throughout the day. The traffic consultant estimated future parking demand using parking standards recommended by the City in accordance with the City's

Multi-Family Parking Ordinance (Table 3-8). A total of 13,687 onsite parking spaces are expected to be needed to serve the Barrio Logan Redevelopment Plan area at buildout. Individual projects would need to be evaluated at the time of plan submittal for adequacy of proposed parking facilities on a site-by-site basis. Provision of fewer than the required onsite spaces would result in significant impacts to the area street system as unserved demand would compete for the new insufficient on-street parking supply.

It should be noted that the parking standards set forth in the Emergency Barrio Logan Planned District Ordinance (adopted May 15, 1990) would result in a potentially significant undersupply of onsite parking for the project. Some provisions of the emergency ordinance of concern are:

- No parking requirement for small, non-residential lots (fewer than 25,000 square feet).

- A minimum parking requirement of one space per 1,000 square feet for all non-residential uses (on lots exceeding 25,000 square feet).

- A maximum parking requirement of one space per 400 square feet for non-residential uses.

Mitigation Measures

Two sets of mitigation measures are identified; the first set of measures includes the implementation of the Alternative 2 roadway configuration consisting of a one-way couplet with Beardsley Street one-way westbound and Crosby Street one-way eastbound between Harbor Drive and Logan Avenue. Tables 3-9 and 3-10 present future traffic conditions with implementation of these measures. The street improvements would result in all intersections studied operating at satisfactory levels of service (LOS D or better) during peak periods in the future. Daily volumes on all street segments analyzed would be within approximately 30 percent of the recommended maximum volume with three exceptions. Logan Avenue south of Crosby Street would carry traffic approximately 49 percent above the recommended maximum volume for the segment. Sigsbee Street between Newton Avenue and National Avenue and Logan Avenue and Harbor Drive would carry traffic exceeding the recommended maximum volume by more than 30 percent as well. In the

Table 3-8

BARRIO LOGAN REDEVELOPMENT PLAN AREA
ESTIMATED PARKING DEMAND FROM PROPOSED USES

LAND USE	INTENSITY	RATE(e)	NUMBER OF SPACES REQUIRED
Multi-Family Residential(a)	1,198 DU	(b)	2,100
Mixed Use - Commercial	568,458 SF	1 space/225 SF(d)	2,527
Mercado - Commercial	568,458 SF	1 space/200 SF	2,843
Commercial/Retail/Office	696,960 SF	1 space/220 SF(c)	3,168
Industrial	1,219,680 SF	1 space/400 SF	3,049
		TOTAL	13,687 space

DU = Dwelling Unit SF = Square Feet

(a) For the purpose of estimating total project parking requirements, all residential units were assumed to have an average of 1.5 bedrooms. Parking estimate may slightly understate ultimate requirements, since parking replacement needed to compensate loss of on-street parking due to curb cuts could not be calculated (specific project designs are unavailable).
(b) See multi-family parking worksheets, Appendix C.
(c) Assumed 75 percent retail/25 percent office uses, consistent with assumptions used in the trip generation analysis.
(d) Assumed 80 percent retail/20 percent office uses, consistent with assumptions used in the trip generation analysis.
(e) Source (unless otherwise noted): Transportation Planning Division Parking Rates Used for Discretionary Review, April 20, 1989.

Source: Basmaciyan-Darnell, Inc. 1991.

Table 3-9

SUMMARY OF INTERSECTION LEVELS OF SERVICE WITH MITIGATION IMPROVEMENTS (ASSUMES BEARDSLEY STREET/CROSBY STREET ONE-WAY COUPLET)

	ALTERNATIVE 2 LOS (NO MITIGATION)				ALTERNATIVE 2 LOS (WITH MITIGATION (a))			
	AM PEAK HR.		PM PEAK HR.		AM PEAK HR.		PM PEAK HR.	
INTERSECTION	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Kearney Avenue at:								
Crosby Street	0.82	D	1.32	F	0.64	B	0.82	D
Logan Avenue at:								
Sigsbee Street	0.42	A	0.58	A	0.31	A	0.59	A
Crosby Street	0.79	C	1.07	F	0.74	C	0.87	D
Beardsley Street	1.00	E	0.99	E	0.75	C	0.78	C
National Avenue at:								
Sigsbee Street	0.45	A	0.54	A	0.45	A	0.54	A
Beardsley Street	0.64	B	0.59	A	0.51	A	0.47	A
Crosby Street	0.32	A	0.61	D	0.30	A	0.63	B
Sampson Street	0.45	A	0.58	A	0.45	A	0.58	A
26th Street	0.63	B	0.72	C	0.47	A	0.47	A
Newton Avenue at:								
Beardsley Street	0.59	A	0.50	A	0.47	A	0.41	A
Crosby Street	0.38	A	0.86	D	0.38	A	0.71	C
Main Street at:								
Crosby Street	0.47	A	0.71	C	0.31	A	0.43	A
Harbor Drive at:								
Crosby Street	0.51	A	1.00	E	0.51	A	0.73	C
Sampson Street	0.54	A	0.73	C	0.52	A	0.73	C

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Unsignalized Intersection Analysis

		LEVEL OF SERVICE			LEVEL OF SERVICE	
INTERSECTION	APPROACH	AM PEAK	PM PEAK	APPROACH	AM PEAK	PM PEAK
Logan Avenue at:						
Sampson Street	ALL	>C(b)	>C(b)	ALL	>C(b)	>C(b)

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

Source: Basmaciyan-Darnell, Inc. 1991.

Table 3-10

COMPARISON OF ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC WITH RECOMMENDED MITIGATION
(Assumes Beardsley Street/Crosby Street One-Way Couplet)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2 (d)	7,500	9,000	1.20
Main St./Newton Ave.	3 (d)	15,000	12,900	0.86
Newton Ave./National Ave.	3 (d)	15,000	16,500	1.10
National Ave./Logan Ave.	3 (d)	15,000	19,100	1.27
Crosby Street:				
W/O Harbor Dr.	3C(f)	7,500	9,800	1.31
Harbor Dr./Main St.	3 (d)	15,000	10,200	0.68
Main St./Newton Ave.	3 (d)	15,000	13,100	0.87
Newton Ave./National Ave.	3 (d)	15,000	15,900	1.06
National Ave./Logan Ave.	3 (d)	15,000	18,600	1.24
Logan Ave./Kearny Ave.	4M	30,000	32,600	1.09
Kearny Ave./E/O	4C	15,000	12,700	0.85
Harbor Drive:				
N/O Crosby Street	4M	30,000	31,000	1.03
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Kearney Avenue:				
N/O Crosby Street	2 (d)	7,500	9,900	1.32
S/O Crosby Street	3 (d)	15,000	14,400	0.96

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is 64 feet curb-to-curb within 80 feet of right-of-way. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four lane collector. See text for further discussion.
(f) Two lanes eastbound and one lane westbound. Recommended maximum volume is estimated.

Table 3-10 (Continued)

COMPARISON OF ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC WITH RECOMMENDED MITIGATION

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Logan Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	11,600	0.77
Sigsbee St./Beardsley St.	4C(e)	15,000	12,900	0.86
Beardsley St./Crosby St.	4C(e)	15,000	16,900	1.13
Crosby St./S/O Crosby St.	4C(e)	15,000	22,400	1.49
Evans St./Sampson St.	4C(e)	15,000	11,300	0.75
Sampson St./26th St.	4C(e)	15,000	6,200	0.35
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	4C(e)	15,000	8,800	0.59
Crosby St./Dewey St.	4C(e)	15,000	11,500	0.77
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	5,900	0.39
Sigsbee St./Beardsley St.	4C(e)	15,000	5,800	0.39
Beardsley St./Crosby St.	4C(e)	15,000	8,200	0.55
Crosby St./Dewey St.	4C(e)	15,000	8,300	0.55
Dewey St./Evans St.	4C(e)	15,000	5,500	0.37
Evans St./Sampson St.	4C(e)	15,000	4,200	0.28
Sampson St./26th St.	4C(e)	15,000	10,400	0.69
26th St./S/O 26th St.	4C(e)	15,000	14,400	0.96
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,500	0.50
Beardsley St./Crosby St.	2C	5,000	5,700	1.14
Crosby St./Dewey St.	2C	5,000	6,300	1.26

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is 64 feet curb-to-curb within 80 feet of right-of-way. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four lane collector. See text for further discussion.
(f) Two lanes eastbound and one lane westbound. Recommended maximum volume is estimated.

Table 3-10 (Continued)

COMPARISON OF ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC WITH RECOMMENDED MITIGATION

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.03
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,700	0.94
Newton Ave./National Ave.	2C	5,000	7,000	1.40
National Ave./Logan Ave.	2C	5,000	5,300	1.06
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	4C	15,000	7,900	0.52

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is 64 feet curb-to-curb within 80 feet of right-of-way. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four lane collector. See text for further discussion.
(f) Two lanes eastbound and one lane westbound. Recommended maximum volume is estimated.

Source: Basmaciyan-Darnell, Inc. 1991.

case of Sigsbee Street and Sampson Street, City staff indicated that the higher average daily traffic volumes are acceptable.

The second set of measures is based on the existing circulation system. Tables 3-11 and 3-12 present future traffic conditions with implementation of the second set of measures. All intersections studied would operate at satisfactory levels of service (LOS D or better). The City determined that roadways exceeding recommended daily capacity by 30 percent or more warranted mitigation. In certain cases, such as Sigsbee Street and Sampson Street, City staff indicated that the higher average daily traffic volumes were acceptable and no mitigation measures were recommended.

One-way Couplet Alternative Mitigation Measures

- Implement a one-way couplet with Beardsley Street one-way westbound and Crosby Street one-way eastbound between Harbor Drive and Logan Avenue. Beardsley Street and Crosby Street would be widened from 40 feet to 52 feet curb-to-curb to allow the retention of on-street parking and three one-way travel lanes.

- Improve the intersection of Beardsley Street and Logan Avenue to accommodate high future projected volumes, as follows:

  - Provide two southbound approach lanes, and provide a northbound shared through plus left-turn lane and a northbound exclusive left-turn lane. These improvements to Logan Avenue would be required as a result of implementing the Beardsley Street/Crosby Street one-way couplet.

  - Widen the I-5 southbound off-ramp to provide two lanes at the intersection of Logan Avenue. This improvement would be required to accommodate projected future volumes and would be needed with or without the implementation of the Beardsley Street/Crosby Street one-way couplet. It should be noted that this improvement would require coordination with and the approval of Caltrans since it includes a Caltrans freeway facility.

- Improve the Logan Avenue/I-5 southbound on-ramp to provide two southbound left turn lanes on Logan Avenue and two lanes on the ramp.

Table 3-11

SUMMARY OF INTERSECTION LEVELS OF SERVICE
WITH MITIGATION IMPROVEMENTS

(Without Beardsley Street/Crosby Street One-Way Couplet)

	ALTERNATIVE 2 LOS (NO MITIGATION)				ALTERNATIVE 2 LOS (WITH MITIGATION (a))			
	AM PEAK HR.		PM PEAK HR.		AM PEAK HR.		PM PEAK HR.	
INTERSECTION	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Kearney Avenue at:								
Crosby Street	0.82	D	1.32	F	0.67	B	0.83	D
Logan Avenue at:								
Sigsbee Street	0.42	A	0.58	A	0.32	A	0.41	A
Crosby Street	0.87	D	1.51	F	0.48	A	0.86	D
Beardsley Street	0.95	E	1.04	F	0.64	B	0.63	B
National Avenue at:								
Sigsbee Street	0.45	A	0.54	A	0.45	A	0.54	A
Beardsley Street	0.74	C	0.67	B	0.53	A	0.49	A
Crosby Street	0.73	C	1.27	F	0.50	A	0.76	C
Sampson Street	0.45	A	0.58	A	0.45	A	0.58	A
26th Street	0.63	B	0.72	C	0.43	A	0.37	A
Newton Avenue at:								
Crosby Street	0.71	C	1.17	F	0.51	A	0.77	C

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

Table 3-11 (Continued)

SUMMARY OF INTERSECTION LEVELS OF SERVICE
WITH MITIGATION IMPROVEMENTS

(Without Beardsley Street/Crosby Street One-Way Couplet)

	ALTERNATIVE 2 LOS (NO MITIGATION)				ALTERNATIVE 2 LOS (WITH MITIGATION (a))			
	AM PEAK HR.		PM PEAK HR.		AM PEAK HR.		PM PEAK HR.	
INTERSECTION	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Main Street at:								
Crosby Street	0.61	B	0.90	D	0.44	A	0.66	B
Harbor Drive at:								
Crosby Street	0.73	C	1.12	F	0.65	B	0.85	D
Sampson Street	0.54	A	0.73	C	0.52	A	0.73	C

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INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:					
Sampson St.	ALL	>C(b)	>C(b)	>C(b)	>C(b)
Newton Avenue at:					
Beardsley St.	NB (Newton Ave.)	C	C	C	C
	SB (Newton Ave.)	C	C	C	C
	WB to SB left-turn	A	A	A	A
	EB to NB left-turn	A	A	A	A

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

Source: Basmaciyan-Darnell, Inc. 1991.

Table 3-12

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC WITH MITIGATION

(No One-Way Couplet)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	4,300	0.86
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	4C(e)	15,000	9,700	0.65
National Ave./Logan Ave.	4C(e)	15,000	11,700	0.78
Crosby Street:				
W/O Harbor Dr.	3C(f)	7,500	9,800	1.31
Harbor Dr./Main St.	4M	30,000	14,200	0.47
Main St./Newton Ave.	4M	30,000	18,900	0.63
Newton Ave./National Ave.	4M	30,000	22,900	0.76
National Ave./Logan Ave.	4M	30,000	26,600	0.89
Logan Ave./Kearny Ave.	4M	30,000	32,600	1.09
Kearny Ave./E/O	4C(e)	15,000	12,700	0.85
Kearney Avenue:				
S/O Crosby Street	2 (d)	7,500	9,900	1.32
S/O Crosby Street	3 (d)	15,000	14,400	0.96
Harbor Drive:				
N/O Crosby Street	4M	30,000	30,200	1.01
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.

Table 3-12 (Continued)

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC WITH MITIGATION

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Logan Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	11,600	0.77
Sigsbee St./Beardsley St.	4C(e)	15,000	9,600	0.64
Beardsley St./Crosby St.	4C(e)	15,000	14,000	0.93
Crosby St./S/O Crosby St.	4C(e)	15,000	22,300	1.49
Evans St./Sampson St.	4C(e)	15,000	11,300	0.75
Sampson St./26th St.	4C(e)	15,000	6,200	0.41
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	4C(e)	15,000	6,200	0.41
Crosby St./Dewey St.	4C(e)	15,000	11,500	0.77
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	5,900	0.39
Sigsbee St./Beardsley St.	4C(e)	15,000	5,900	0.39
Beardsley St./Crosby St.	4C(e)	15,000	6,300	0.42
Crosby St./Dewey St.	4C(e)	15,000	8,400	0.56
Dewey St./Evans St.	4C(e)	15,000	5,500	0.37
Evans St./Sampson St.	4C(e)	15,000	4,200	0.28
Sampson St./26th St.	4C(e)	15,000	10,400	0.69
26th St./S/O 26th St.	4C(e)	15,000	14,400	0.96
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,300	0.46
Beardsley St./Crosby St.	2C	5,000	4,100	0.82
Crosby St./Dewey St.	2C	5,000	6,400	1.28

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.

Table 3-12 (Continued)

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC WITH MITIGATION

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,500	0.90
Newton Ave./National Ave.	2C	5,000	6,700	1.34
National Ave./Logan Ave.	2C	5,000	5,200	1.04
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	4C(e)	5,000	8,000	0.53
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.06

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.

Source: Basmaciyan-Darnell, Inc. 1991.

The ramp should also be monitored to determine whether signalization is warranted by heavy future volumes. Note that both improvements would require Caltrans coordination and approval.

- Improve the intersection of Logan Avenue and Crosby Street to provide an exclusive left-turn lane, two through lanes, and an exclusive right-turn lane on the eastbound approach, and an exclusive right-turn lane and exclusive left-turn lane on the westbound approach. Other approach lanes should be restriped.

  An engineering study would be needed to determine the required intersection geometrics. Design elements which would require special consideration include provision of adequate curb-lane widths and curb return radii to accommodate truck turning movements with minimum disruption to traffic flow, the proximity of on-ramps to State Route 175 (the Coronado Bay Bridge), and compensation for conversion of Crosby Street to one-way eastbound flow (to avoid lane offsets at the intersection).

- Improve the intersection of Kearney Avenue and Crosby Street to provide one exclusive left-turn lane, one shared through plus left-turn lane and one right-turn lane on the northbound approach, one left-turn, one shared through plus left-turn and one exclusive through lane on the eastbound approach, and two westbound approach lanes. The additional turn lanes at this intersection would be required to serve high projected turn moves, primarily associated with freeway access.

- Improve the intersection of Main Street and Crosby Street to provide an exclusive southbound left-turn lane to serve high projected left-turn volumes.

- Widen Crosby Street between Logan Avenue and Kearney Avenue to provide two travel lanes in each direction and required turn lanes at intersections. The amount of widening needed should be determined in conjunction with the engineering study recommended in connection with improvements to the Logan Avenue/Crosby Street intersection. Excess right-of-way appears to be available.

- Widen Crosby Street west of Harbor Drive on the south side to provide on additional eastbound lane. This could be done as adjacent industrial property redevelops.

- Widen the following existing 52 foot roadways to 64 feet (within existing 80 feet of right-of-way) with appropriate transitions to provide two lanes each direction with parking. Additional widening and/or parking removal might be required at some intersections to accommodate needed intersection lane configurations previously discussed:

  - Logan Avenue between 16th Street and 26th Street
  - Main Street between Beardsley Street and Dewey Street
  - National Avenue from 16th Street to south of 26th Street

  Note that on Logan Avenue from the I-5 southbound on-ramp to north of Crosby Street, additional right-of-way would be required to accommodate the proposed lane and intersection configurations.

- Widen/restripe Kearney Avenue between Commercial Avenue and the I-5 northbound off-ramp. South of Crosby Street, Kearney Avenue would require three one-way travel lanes within 52 feet curb-to-curb. North of Crosby Street, Kearney Avenue should be two lanes one-way within a minimum 40 feet of pavement. Existing right-of-way varies from less than 50 feet up to 80 feet; therefore, some additional right-of-way would be required. This improvement may require coordination with Caltrans, since Kearney Avenue abuts I-5 and widening could include Caltrans right-of-way.

- As future traffic conditions warrant, provide traffic signals at the following unsignalized intersections:

  - Logan Avenue/Beardsley Street
  - National Avenue/Crosby Street
  - National Avenue/Beardsley Street
  - Newton Avenue/Crosby Street
  - Newton Avenue/Beardsley Street
  - Kearney Avenue/Crosby Street

- Logan Avenue/Sigsbee Street
- National Avenue/26th Street
- Logan Avenue/I-5 southbound on ramp
- Logan Avenue/Sampson Street

The following signalized intersections would need to be interconnected to operate as a system:

- Logan Avenue/Crosby Street
- Logan Avenue/I-5 southbound on ramp
- Crosby Street/Kearney Avenue

- As redevelopment occurs, improve turning radii at intersections to meet minimum standards for truck turning. Currently, operational difficulties are encountered where trucks attempt turns at intersections with substandard curb radii. Resulting traffic delays can be particularly pronounced in the study area, given the unusually high degree of truck traffic found in Barrio Logan.

- As the community redevelops, provide onsite parking adequate to fully serve project parking demand. Since existing on-street parking is heavily utilized, this is essential to avoid any additional impact on existing parking that might be caused by spill-over due to unserved project parking demand. On a case-by-case basis, shared parking arrangements could be pursued to minimize onsite parking requirements of mixed use sites.

Existing Circulation System Mitigation Measures

- Improve the intersection of Beardsley Street and Logan Avenue to accommodate high future projected volumes, as follows:

  - Provide two southbound approach lanes, and provide a northbound shared through plus left-turn lane and a northbound exclusive left-turn lane.

  - Widen the I-5 southbound off-ramp to provide two lanes at the intersection of Logan Avenue. It should be noted that this improvement would require

coordination with and the approval of Caltrans since it includes a Caltrans freeway facility.

- Improve the Logan Avenue/I-5 southbound on-ramp to provide two southbound left turn lanes on Logan Avenue and two lanes on the ramp. The ramp would also need to be monitored to determine whether signalization is warranted by heavy future volumes. Note that both improvements would require Caltrans coordination and approval.

- Improve the intersection of Logan Avenue and Crosby Street to provide an exclusive left-turn lane, two through lanes, and an exclusive right-turn lane on the eastbound approach, and an exclusive right-turn lane and exclusive left-turn lane on the westbound approach. Other approach lanes should be restriped.

- Widen Crosby Street between Habor Drive and Kearney Avenue to provide two lanes in each direction in accordance with four-lane major roadway specifications. Recommended curb-to-curb width is 78 feet within 98 feet of right-of-way. This is a standard cross-section that preserves parking. An alternate 64 foot/84 foot cross-section eliminates parking. East of Logan Avenue, acquisition of 98 feet of right-of-way is recommended in either case in order to preserve future roadway widening options.

- Widen Crosby Street west of Harbor Drive on the south side to provide one additional eastbound lane. This could be done as adjacent industrial property redevelops.

- Widen the following existing 52 foot roadways to 64 feet (within existing 80 feet of right-of-way) with appropriate transitions to provide two lanes each direction with parking. Additional widening and/or parking removal may be required at some intersections to accommodate needed intersection lane configurations previously discussed:

  - Logan Avenue between 16th Street and 26th Street
  - Main Street between Beardsley Street and Dewey Street
  - National Avenue from 16th Street to south of 26th Street

Note that on Logan Avenue from the I-5 southbound on-ramp to north of Crosby Street, additional right-of-way would be required to accommodate the lane and intersection configurations presented in the traffic report. These improvements should be done to the satisfaction of the City Engineer.

- Widen/restripe Kearney Avenue between Commercial Avenue and the I-5 northbound off-ramp. South of Crosby Street, Kearney Avenue would require three one-way travel lanes within 52 feet curb-to-curb. North of Crosby Street, Kearney Avenue should be two lanes one-way within a minimum 40 feet of pavement. Existing right-of-way varies from less than 50 feet up to 80 feet; therefore, some additional right-of-way would be required. This improvement may require coordination with Caltrans, since Kearney Avenue abuts I-5 and widening could include Caltrans right-of-way.

- As future traffic conditions warrant, provide traffic signals at the following unsignalized intersections:

  - Logan Avenue/Beardsley Street
  - National Avenue/Crosby Street
  - National Avenue/Beardsley Street
  - Logan Avenue/I-5 southbound on-ramp
  - Newton Avenue/Crosby Street
  - Kearney Avenue/Crosby Street
  - Logan Avenue/Sigsbee Street
  - National Avenue/26th Street
  - Logan Avenue/Sampson Street

  The following signalized intersections should be interconnected to operate as a system:

  - Logan Avenue/Crosby Street
  - Logan Avenue/I-5 southbound on-ramp
  - Crosby Street/Kearney Avenue

- As redevelopment occurs, improve turning radii at intersections to meet minimum standards for truck turning. Currently, operational difficulties are

encountered where trucks attempt turns at intersections with substandard curb radii. Resulting traffic delays can be particularly pronounced in the study area, given the unusually high degree of truck traffic found in Barrio Logan.

- As the community redevelops, provide onsite parking adequate to fully serve project parking demand. Since existing on-street parking is heavily utilized, this is essential to avoid any additional impact on existing parking that might be caused by spill-over due to unserved project parking demand. On a case-by-case basis, shared parking arrangements could be pursued to minimize onsite parking requirements of mixed use sites.

Implementation of Proposed Mitigation Measures

As described in the proposed Barrio Logan Redevelopment Plan and this EIR, the urban environment and pedestrian character of the project area is an attribute that the City wishes to retain. Although either set of mitigation measures listed above would mitigate traffic impacts identified in this EIR, the proposed widening of streets and provision of parking above that required by the Emergency PDO would adversely effect the urban nature of the project area and discourage pedestrian-oriented activities and transit ridership. Due to these adverse impacts, these street-widening measures are therefore not incorporated into the project. The traffic impacts related to increased traffic volumes on project area streets will create immitigable adverse impacts.

Unavoidable Adverse Impacts

Implementation of the identified mitigation measures would reduce potential impacts to acceptable levels; these measures are considered infeasible, however, and are not incorporated into the project. Unavoidable adverse impacts are anticipated.

3.3 AESTHETIC QUALITY

Affected Environment

An Historic and Urban Resource Survey was prepared in 1990 for the redevelopment area under the direction of the Office of the City Architect, City of San Diego Planning Department. According to the survey, Barrio Logan is a physically isolated community

with older housing stock (c. 1880-1920). Clusters of commercial uses are located on Logan Avenue and National Avenue; many commercial structures have residential uses on the second floor or at the rear of the property. Salvage yards are often adjacent to or included on residential property. Industrial activity occurs throughout Barrio Logan and is primarily concentrated along the southwest portion of the redevelopment area.

The waterfront is nearly inaccessible, dominated by the Navy and industry. Interstate 5 forms the northeastern boundary of the redevelopment area and divides it from the rest of Logan Heights. The San Diego-Coronado Bridge bisects the community. Chicano Park, developed in 1970, serves as an important community gathering place; it also helps to mitigate the disruption of the bridge with grass and murals on the bridge columns (City of San Diego, Planning Department 1990).

The principal streets run parallel to the waterfront and perpendicular to narrow secondary streets. Buildings often front property lines; setbacks of five to ten feet are typically fronted by a fence, wall or shrub. The community and commercial core of the Barrio Logan neighborhood is located along Logan Avenue southeast of Chicano Park. This corridor has a continuous, pedestrian-oriented streetwall with storefront displays, many buildings of historic and architectural significance, and historic streetlamps (City of San Diego, Planning Department 1990). The remainder of the principal streets have mixed commercial, industrial and residential uses; many of the streets lack street trees and are cluttered with overhead telephone lines. Landscaping is usually planted on private property; public landscaping is not prevalent or well maintained. Many commercial buildings, especially in commercial core, are finished in bright colors (City of San Diego, Planning Department 1990).

The Historical and Urban Resource Survey noted that Interstate 5, the San Diego-Coronado Bay Bridge and waterfront industries block most potential vistas. The survey identified vistas to Centre City from the intersections of Logan Avenue and Beardsley Street, and from both National Avenue and Newton Avenue northwest of the bridge. Only one unimpeded vista to the waterfront, from the intersection of Logan Avenue and Beardsley Street, was identified. Two vistas to the naval shipyards were identified, from the intersection of Logan Avenue and Sampson Street and the intersection of 26th Street and Sicard Street (see Figure 9).

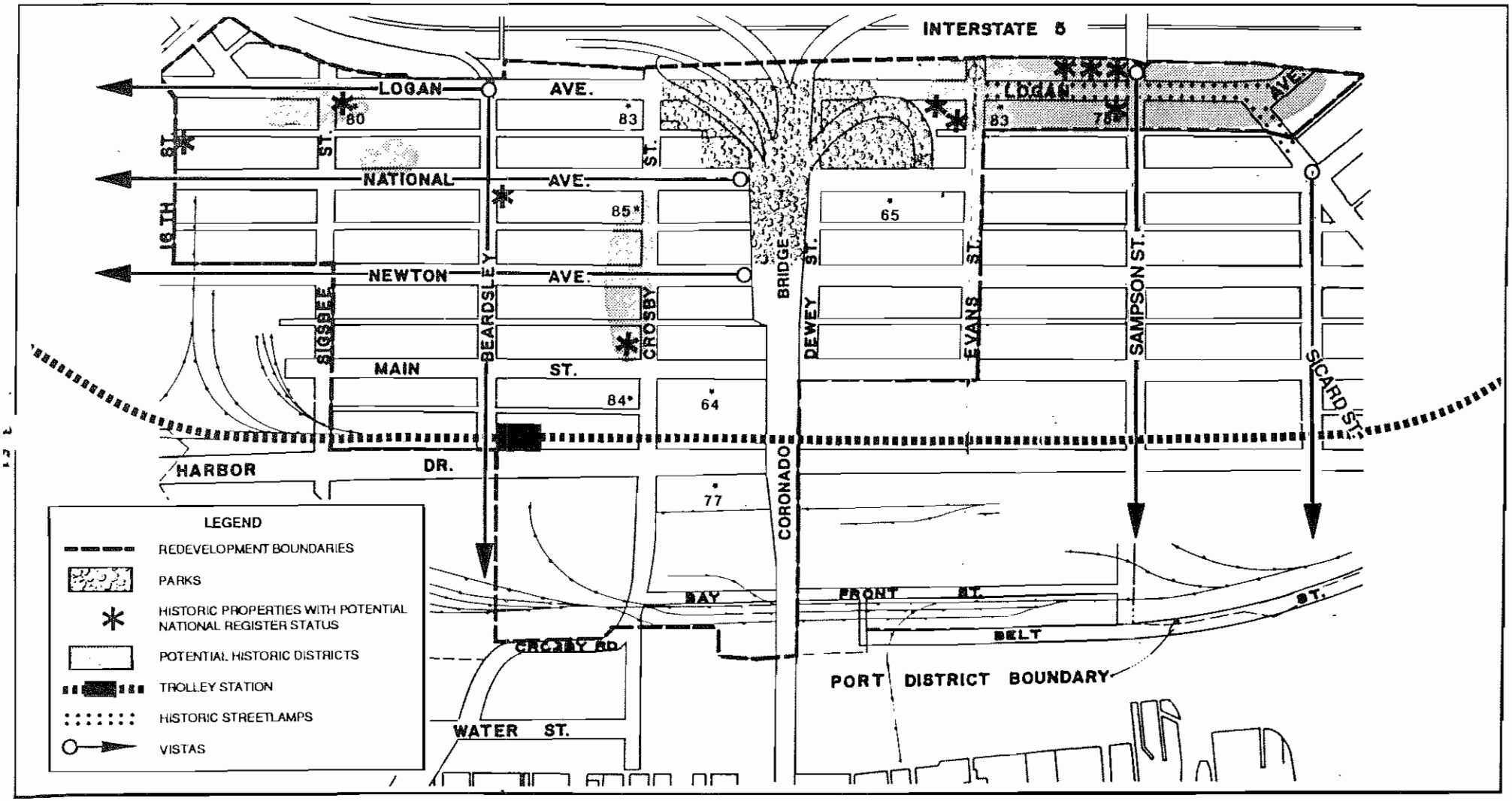
Figure 9 illustrates the visual resources in the Barrio Logan redevelopment area as identified in the Historical and Urban Resource Study. The resources depicted include Chicano Park, potential historic districts, significant historic properties, and the key vistas.

Figures 10 and 11 provide visual examples of Barrio Logan; Figure 12 depicts the photograph locations. Figure 10, location 1, illustrates the view from Logan Avenue facing north, between Evans Street and Sampson Street. A well-maintained produce store is located adjacent to a restaurant in a former streetcar, moved to the site in the late forties. Adjacent to the streetcar is a turn of the century Folk Victorian cottage. Overhead telephone lines and an historic street lamp are visible. Adjacent to the residences is a multi-use storage/retail lot. Figure 10, location 2, illustrates a view looking from Sampson Street, facing north towards Evans Street. The residence is located adjacent to the side of a commercial building which faces a principal street. Residential uses appear to be located on the second story of the commercial building. Figure 11, location 3, illustrates a typical view of the alleys in the project area. The view is from Evans Street, facing west with the Coronado Bay Bridge seen in the background. Utility lines are located aboveground which detracts from the visual quality. Figure 11, location 4 shows a typical view looking southeast from Commercial Street, down 16th Street. Centre City can be seen in the background; the trolley right-of-way runs down the middle of the street. Industrial and storage land uses dominate the viewshed.

Environmental Consequences

Redevelopment activity in Barrio Logan would eliminate physical and visual blight, and upgrade the condition of structures, streets and the landscape. Rehabilitation of existing housing units and construction of new housing would alleviate the current problem of deteriorated housing stock. The development of parks, recreation facilities, and pedestrian oriented spaces would enhance the visual quality and sense of community.

The potential exists for impacts on the area's existing aesthetic resources (identified in Figure 9). Redevelopment activity could demolish historic buildings, disrupt the pedestrian-oriented streetscape along Logan Avenue, or block existing vistas. Potential impacts to historic structures are discussed further in Section 3.10, Cultural Resources.



SOURCE: City of San Diego Planning Department, 1990

NOT TO SCALE

Visual Resources

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 9

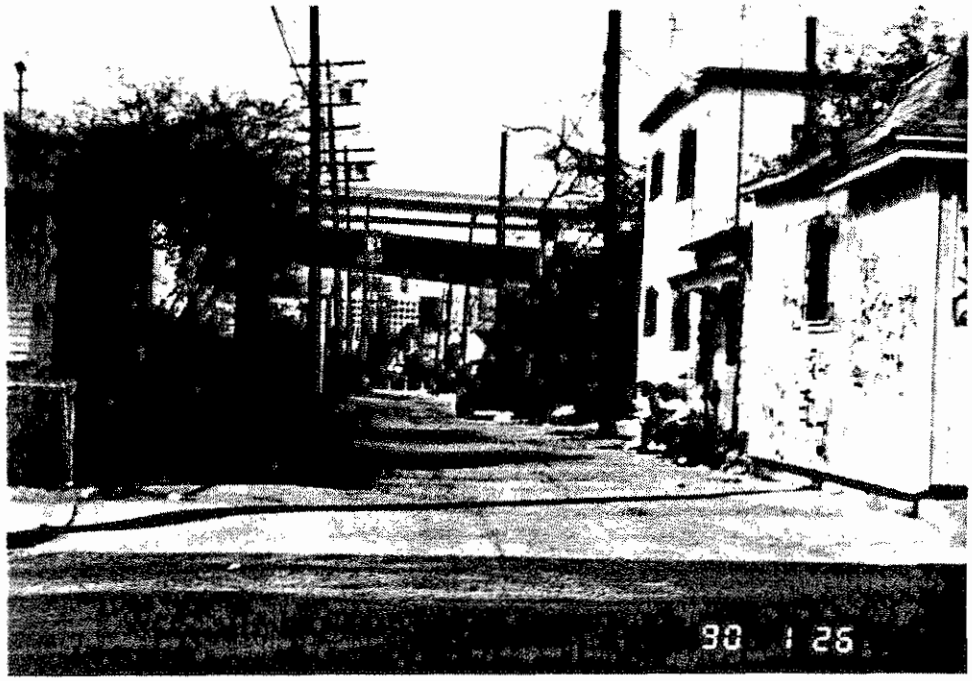
1. LOOKING FROM LOGAN AVENUE FACING NORTH BETWEEN EVANS STREET AND SAMPSON STREET.

2. LOOKING FROM SAMPSON STREET FACING NORTH TOWARD EVANS STREET.

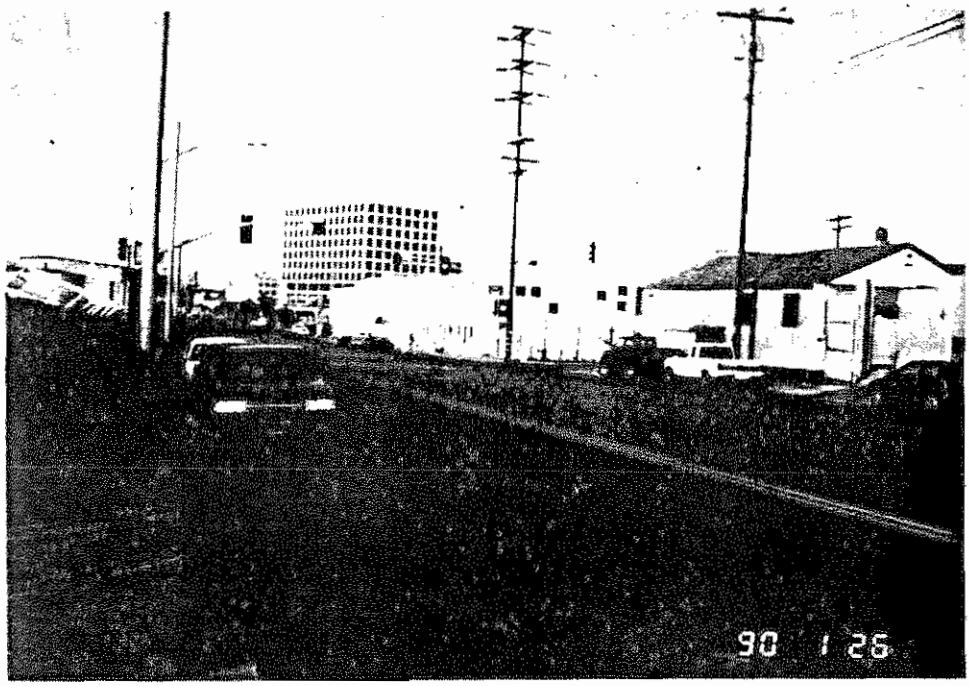
FIGURE 10

SITE PHOTOGRAPHS

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY



3. LOOKING FROM EVANS STREET FACING WEST WITH CORONADO BAY BRIDGE IN VIEW.

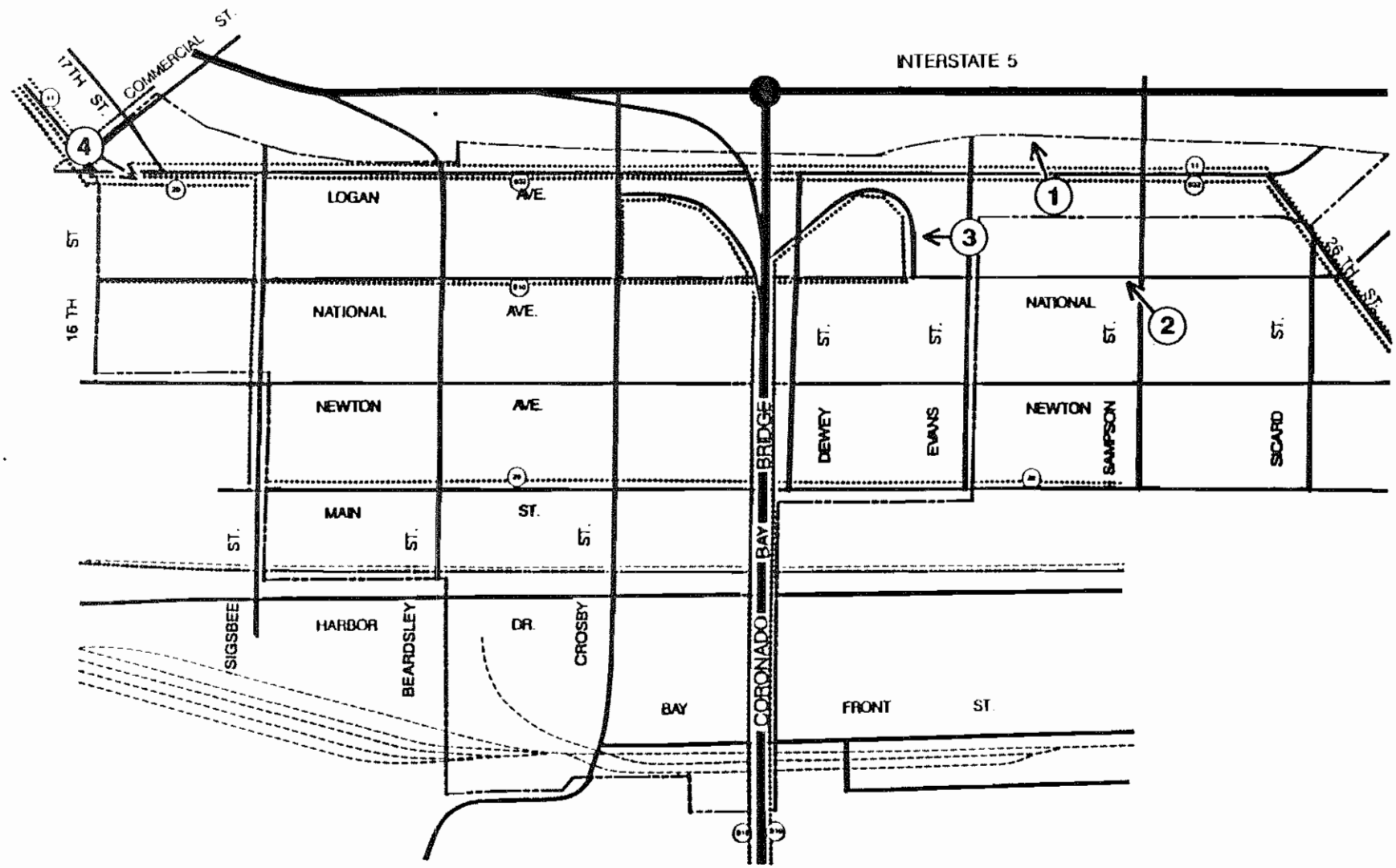


4. LOOKING SOUTHEAST FROM COMMERCIAL STREET DOWN 16th STREET.

FIGURE 11

SITE PHOTOGRAPHS

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY



NOT TO SCALE

PHOTO LOCATION MAP

BARRIO LOGAN REDEVELOPMENT PLAN EIR/EIS
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 12

Mitigation Measures

The redevelopment plan and Redevelopment Implementation Ordinances shall establish development standards and guidelines which address the aesthetic quality of the area including vistas, landscaping, pedestrian orientation, open spaces, compatibility with historic resources, human scale, color, and materials. Mitigation measures to preserve historic buildings are discussed in Section 3.10 of this EIR.

Any unidentified adverse impacts to aesthetic quality due to implementation of the project must be considered significant and unmitigated until specific aesthetic control measures have been incorporated into both the project design and a final Mitigation Monitoring and Report Program.

Unavoidable Adverse Impacts

With the implementation of the previously identified mitigation measures, there would not be any unavoidable adverse impacts to aesthetic resources associated with the project, except the loss of potentially historic structures, discussed in the Cultural Resources section.

3.4 ACOUSTIC ENVIRONMENT

This section was revised to reflect the new traffic study.

Background

Airborne sound is a small scale fluctuation of instantaneous air pressure above and below the local barometric pressure. Sound levels are usually measured and expressed in decibels (dB). Most of the sounds which we hear in the environment do not consist of a single frequency, but rather a mixture of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate sound.

Noise is generally defined as unwanted sound. For most people, the usual consequences of noise are associated with speech interference, distractions at home and at work, disturbance with rest and sleep, and the disruption of recreational pursuits. The long term effects of noise are physical as well as psychological. Physical effects may include

headaches, nausea, irritability, constriction of blood vessels, changes in the heart and respiratory rate and increased muscle tension. Prolonged exposure to high noise levels may result in hearing damage. Psychological effects may result from the stress and irritability associated with a change in sleeping patterns due to noise. In addition, noise may adversely affect property values and levels of productivity.

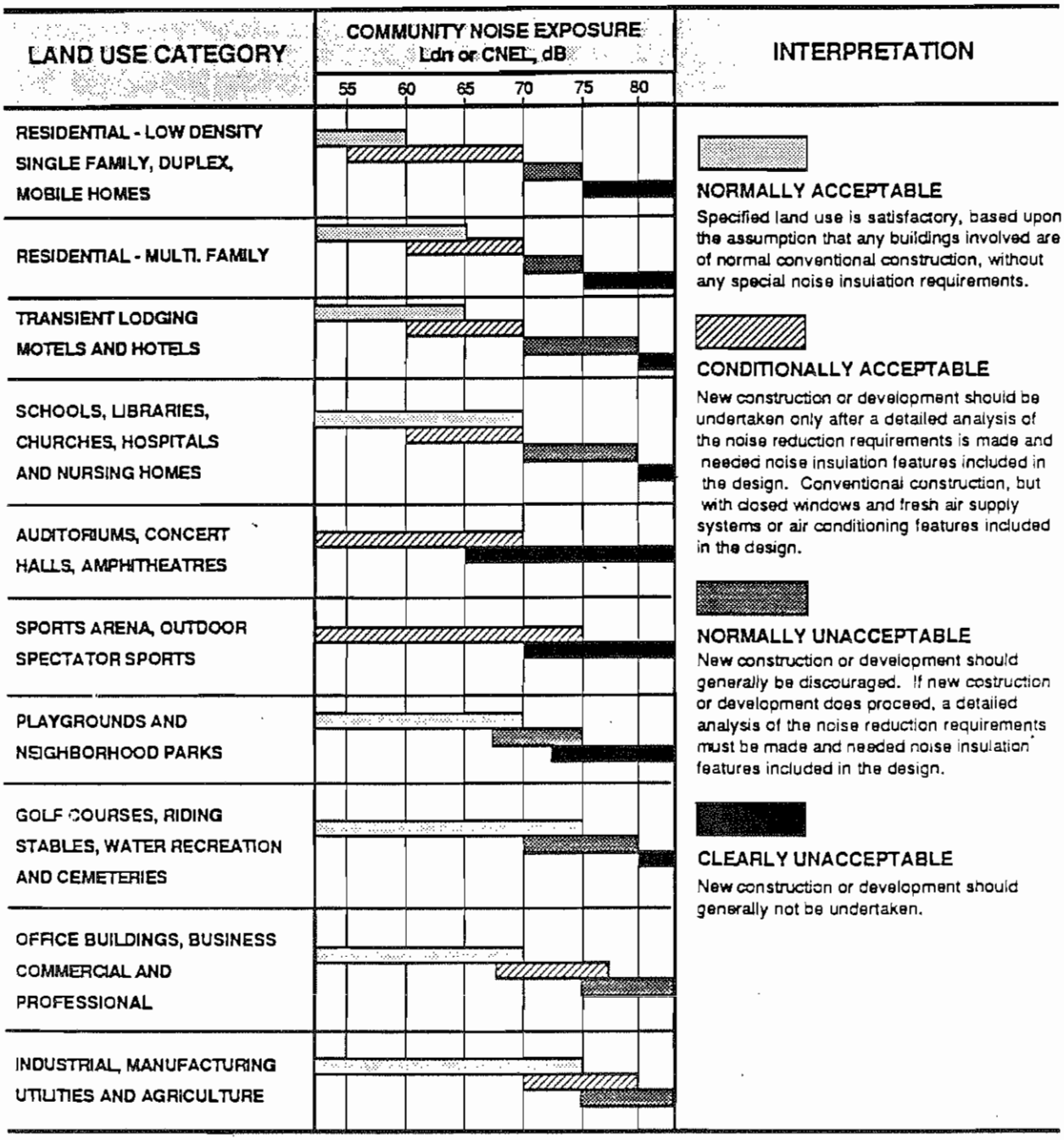
The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting system that reflects the decreased sensitivity of human hearing at low frequencies and at extremely high frequencies relative to the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). The level of a sound source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

The CNEL (Community Noise Equivalent Level) is the "A" weighted average sound level for a 24-hour day. It is calculated by adding 5 decibels to sound levels in the evening (7:00 pm to 10:00 pm), and 10 decibels to sound levels in the night (10:00 pm to 7:00 am) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. Appendix F defines additional acoustical terminology. A table of familiar noise sources and their measured noise levels (in decibels), is provided in Appendix G.

Applicable Standards

The City of San Diego recognized the relationship between noise and noise sensitive land uses, and emphasizes the need to control noise through land use regulation. The City of San Diego Transportation Element of the General Plan established noise standards for various land uses, Figure 13. The maximum acceptable exterior noise level for industrial and commercial land uses is 75 dBA CNEL; for business and professional office land uses is 70 dBA CNEL; and for residential land use is 65 dBA CNEL. The City requires a maximum exterior noise level for all useable outdoor living space (including patios, balconies, courtyards, seating areas, children's play areas, picnic and barbecue areas, and swimming pools) of 65 dBA CNEL or below (City of San Diego, 1986). In addition, the City of San Diego Planning Department's policy is that interior noise levels at business and professional office land uses are not to exceed 50 dBA CNEL. The California Code of Regulations, Title 24, Noise Insulation Standards (Title 24) requires that the interior noise level of all new multifamily residences must be 45 dBA CNEL or below. Furthermore, if the exterior sound level is greater than 60 dBA CNEL, Title 24 requires the preparation of

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENTS



SOURCE: Office of Noise Control, California Department of Health

FIGURE 13

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

BARRIO LOGAN REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO REDEVELOPMENT AGENCY

an acoustical analysis showing that the proposed design will limit interior noise to less than 45 dBA CNEL.

The Barrio Logan project area consists of a mix of various land uses from residential, to commercial, to heavy industrial; all within close proximity to each other. Therefore, it is important to evaluate sound levels at the boundaries of differing land use zones. The City of San Diego Noise Ordinance Section 59.5.0401 establishes hourly sound level limits for various land use zones, Table 3-13. The noise level limit on the boundary of differing land use zoning districts, as established by the noise ordinance, shall not exceed the arithmetic mean of the respective limits for the two districts.

Existing Conditions

As was previously described in the land use section of this report, the land uses within the Redevelopment Plan area are varied and often conflict with each other. Residential dwelling units are located adjacent to commercial or industrial uses, and institutional land uses (such as schools) are located adjacent to manufacturing types of land uses. The inconsistency may result in noise incompatible land uses. All noise calculations in this report assume "worst-case" conditions and, therefore, do not account for barrier shielding by buildings, topography or changes in elevation. For example, if a highrise building is located next to an interstate highway where exterior noise levels are projected to be 75 dBA CNEL, noise levels may actually be lower at ground elevation and higher at upper levels. In addition, a row of houses can generally have a sound attenuation of 5 dBA.

Vehicular Noise

Although the sensitive land uses in the area (single family residences and schools) are impacted by many noise sources, the most prevalent and consistent source of noise is generated by vehiclular traffic in the area, and primarily by the high percentage of truck traffic. Due to the high levels of noise produced in the community, many of the sensitive land uses in the Barrio Logan Redevelopment Plan area are subjected to noise levels in excess of the City's 65 dBA CNEL standard.

Existing noise levels were calculated, based on current traffic volumes along roadway segments within the Barrio Logan project area using the Federal Highway Administration's Stamina 2.0 computer noise prediction model. The model input included existing Average

Table 3-13

TABLE OF APPLICABLE LIMITS

It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

Land Use Zone	Time of Day	One-Hour Average Sound Level (decibels)
1. Residential		
All R-1	7 a.m. to 7 p.m.	50
	7 p.m. to 10 p.m.	45
	10 p.m. to 7 a.m.	40
2. All R-2	7 a.m. to 7 p.m.	55
	7 p.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
3. R-3, R-4 and all other Residential	7 a.m. to 7 p.m.	60
	7 p.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
4. All Commercial	7 a.m. to 7 p.m.	65
	7 p.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	60
5. Manufacturing all other Industrial. including Agricultural and Extractive Industry	any time	75

The sound level limit at a location on a boundary between zoning districts is the arithmetic mean of the respective limits for the two districts.

Source: San Diego Municipal Code Section 59.5.0401.

Daily Traffic volumes (ADT), vehicle mix and average vehicle speeds. The ADT was obtained from the Redevelopment Plan traffic study (BDI, 1991). Receiver elevations reflect the pad elevation plus 5-feet to approximate the height of the human ear. The vehicle mix was modeled at 80 percent cars, 10 percent medium trucks and 10 percent heavy trucks. These numbers reflect the high percentage of truck traffic generated by the abundance of industrial and commercial uses in the area. The portion of Interstate 5 that passes through the area was modeled with a typical mix of 96 percent cars, 2 percent medium trucks and 2 percent heavy trucks. The results of the modeling are summarized in Table 3-14.

The existing noise levels generated by traffic in the project area may exceed the 65 dBA CNEL standard at the property adjacent to all but 11 roadway segments (Logan Avenue from 16th to Beardsley and Evans to 26th; National Avenue from 16th to Sigsbee; Newton Avenue from Sigsbee to Evans; Main Street from Sigsbee to Evans; 16th Street From Logan to Newton; Sigsbee Street from Logan to Harbor; Beardsley from Logan to Harbor;. Crosby Street from Northeast of Logan to Harbor; Sampson Street from Logan to Harbor; and 26th Street from Logan to Harbor). A site-specific noise analysis should be required for all new noise sensitive developments within the project area where the predicted noise levels exceed 60 dBA CNEL.

Railroads and Light Rail Transit (Trolley)

The Santa Fe Railroad uses the tracks located in the southwest portion of the Redevelopment Plan area along Bay Front Street. The Railroad traffic volumes were obtained from the San Bernardino office of the Santa Fe Railroad. Typically, one freight train operation occurs nightly after 10:00 p.m. on Mondays thru Saturdays. The train is an average of 5,000 feet in length and travels at approximately 20 miles per hour (Graham, 1990). The San Diego-Imperial Valley Railroad uses the tracks located along Harbor Drive. Two freight train operations occur nightly after 10:00 p.m. on Mondays thru Fridays. The train is an average of 2,000 feet in length and also travels approximately 20 miles per hour (Macnab, 1990). Noise associated with the freight trains was calculated using a model developed by Wyle Laboratories (Wyle, 1973). Table 3-15 summarizes the noise contours produced by operations of both railroad companies.

Table 3-14
MODELED EXISTING CNEL NOISE CONTOURS

Roadway Segment	ADT	Distance From Roadway Centerline to Contour (feet)			
		75 dBA	70 dBA	65 dBA	60 dBA
Logan Avenue					
16th to Sigsbee	4,800	–	–	–	104
Sigsbee to Beardsley	4,500	–	–	–	103
Beardsley to Crosby	6,600	–	–	55	150
Crosby to Evans	8,800	–	–	75	198
Evans to Sampson	3,800	–	–	–	93
Sampson to 26th	2,400	–	–	–	60
National Avenue					
16th to Sigsbee	2,700	–	–	–	138
Sigsbee to Beardsley	3,900	–	–	55	160
Beardsley to Crosby	3,900	–	–	55	160
Crosby to Evans	5,200	–	–	83	220
Evans to Sampson	3,900	–	–	55	160
Sampson to 26th	10,300	–	–	125	365
Newton Avenue					
Sigsbee to Beardsley	1,200	–	–	–	109
Beardsley to Evans	1,100	–	–	–	100
Main Street					
Sigsbee to Crosby	2,700	–	–	–	138
Crosby to Dewey	2,600	–	–	–	108
Dewey to Evans	2,400	–	–	–	89
Harbor Drive					
Sigsbee to Crosby	12,800	–	55	153	400
Crosby to to Sampson	10,900	–	45	126	350
South of Sampson	14,400	–	63	160	425
16th Street					
Logan to Newton	1,900	–	–	–	72
Sigsbee Street					
Logan to National	1,600	–	–	–	65
National to Newton	2,300	–	–	–	98
Newton to Harbor	1,300	–	–	–	62
Beardsley Street					
Logan to National	5,000	–	–	–	112
National to Newton	4,000	–	–	–	88
Newton to Main	2,700	–	–	–	70
Main to Harbor	1,500	–	–	–	–
Crosby Street					
Northeast of Logan	10,800	–	–	90	218
Logan to National	9,000	–	–	75	190
National to Newton	8,000	–	–	68	165
Newton to Main	7,000	–	–	57	161
Main to Harbor	6,900	–	–	53	158
Sampson Street					
Logan to National	3,900	–	–	87	165
National to Newton	3,600	–	–	80	158
Newton to Main	3,900	–	–	87	165
Main to Harbor	5,200	–	–	93	210
26th Street					
Logan to National	3,700	–	–	–	91
South of National	2,100	–	–	–	48
Interstate 5					
North of SR 75	161,000	275	650	1290	4300
South of SR 75	151,000	260	635	1255	4183

Dashes (--) indicate the contour does not exist or falls within 50 feet of the roadway centerline.

Table 3-15

CALCULATED* EXISTING RAILROAD CNEL NOISE CONTOURS

Railroad Operations	Distance from Centerline of Tracks to Contour (feet) 65 dBA	60 dBA
Santa Fe Railroad	100	290
San Diego-Imperial Valley Railroad	160	520

* Wyle Laboratories, 1973. Assessment of Noise Environments Around Railroad Operations.

The horn on the engine is occasionally sounded during operations in the project area and has been measured at 105 dBA at 50 feet perpendicular to the track. Daily and nightly switching operations occur in the switching yards adjacent to the northwest corner of the Redevelopment Plan area and generate additional noise in areas near the switching yards. A site-specific noise analysis should be required for all noise sensitive projects proposed to be located in proximity to the switching yards.

The south line of the San Diego Trolley runs through the project area along Harbor Drive. The Trolley passes through Barrio Logan every 15 minutes making one stop at the intersection of Harbor Drive and Crosby Street in the project area. The hours of operation are 5:30 a.m. thru 1:30 a.m. everyday. The headway frequency decreases from once every 15 minutes to once every half-hour after 10:30 p.m. everyday, and before 7:30 a.m. weekends (MTS, 1990). The maximum passby sound level at 50 feet from the track for a 3-car LRT train at 45 miles per hour is 82 dBA (WESTEC, 1984). Based on the operations parameters the noise associated with trolley is expected to be less than 65 dBA CNEL at 50 feet from the track. A site-specific noise analysis should be required for all noise sensitive projects proposed to be located in proximity to railroad or trolley operations.

Aircraft

The Barrio Logan Redevelopment Plan area is outside of the 60 dBA CNEL for the airports of Lindberg Field (San Diego Unified Port District, 1989) and North Island Naval Air

Station (NAS North Island, 1979). Occasional aircraft may be redirected from their usual flight path and over the Redevelopment Plan area. Traffic, medical, and law enforcement helicopters may also fly over the area, however, aircraft noise is not a significant component of the noise environment.

Industrial Noise Sources

There are numerous industrial land uses scattered throughout the Barrio Logan project area. The noise generated by these industrial sources is varied and is a function of the type of industrial activity, hours of operation, and intensity of activity on the site.

Existing industrial activities in the Redevelopment Plan area include, but are not limited to, various manufacturing activities; auto, heavy metal, and aluminum can recycling; ship repair yard activities; and power generation plant activities. As mentioned previously in this section, the presence of the many industrial land uses greatly increase the number of heavy trucks in the area, thus contributing to the overall noise environment of the entire Redevelopment Plan area. A site-specific noise analysis should be required for all noise sensitive projects proposed to be located in proximity to industrial noise sources.

Environmental Consequences

Future noise impacts have been assessed throughout the general project area, however, site-specific noise analyses should be required for all new noise sensitive developments within the project area that will occur where the predicted noise levels exceed 60 dBA CNEL or in proximity to industrial noise sources.

Future Vehicular Noise

The most prevalent and consistent source of noise will continue to be generated by vehiclular traffic. The Stamina 2.0 noise prediction model was used (as decribed above) to determine the amount of traffic related noise that would impact the area. Model input included future ADT (BDI, 1991), vehicle mix, and average vehicle speeds. The results of modeling of future conditions are summarized in Table 3-16.

The future noise levels generated by traffic in the project area will continue to exceed the 65 dBA CNEL standard at the property adjacent to all but 3 roadway segments (Logan

Table 3-16

MODELED FUTURE CNEL NOISE CONTOURS

Roadway Segment	ADT	Distance From Roadway Centerline to Contour (feet)			
		75 dBA	70 dBA	65 dBA	60 dBA
Logan Avenue					
16th to Sigsbee	11,600	–	–	80	228
Sigsbee to Beardsley	9,600	–		76	209
Beardsley to Crosby	14,000	–	–	140	280
Crosby to Evans	23,300	–	60	162	418
Evans to Sampson	11,300	–	–	90	220
Sampson to 26th	6,200	–	–	–	130
National Avenue					
16th to Sigsbee	5,900	–	–	85	215
Sigsbee to Beardsley	5,900	–	–	85	215
Beardsley to Crosby	6,300	–	–	89	245
Crosby to Dewey	8,400	–	–	118	312
Dewey to Evans	5,500	–	–	88	230
Evans to Sampson	4,200	–	–	65	170
Sampson to 26th	10,400	–	48	130	365
Newton Avenue					
Sigsbee to Beardsley	2,300	–	–	–	98
Beardsley to Crosby	4,100	–	–	70	168
Crosby to Evans	6,400	–	–	95	258
Main Street					
Sigsbee to Beardsley	4,900	–	–	80	198
Beardsley to Crosby	6,200	–	–	82	245
Crosby to Dewey	11,500	–	59	161	394
Dewey to Evans	4,400	–	–	68	185
Harbor Drive					
Sigsbee to Crosby	30,200	–	113	315	710
Crosby to to Sampson	21,600	–	92	220	585
16th Street					
Logan to Newton	3,900	–	–	70	166
Sigsbee Street					
Logan to National	5,200	–	–	70	213
National to Newton	6,700	–	–	80	258
Newton to Harbor	4,500	–	–	65	180
Beardsley Street					
Logan to National	11,700	–	–	80	240
National to Newton	9,700	–	–	76	208
Newton to Main	7,000	–	–	69	196
Main to Harbor	4,300	–	–	64	185
Crosby Street					
Northeast of Logan	32,600	–	76	218	525
Logan to National	26,600	–	68	180	460
National to Newton	22,900	–	56	166	405
Newton to Main	18,900	–	49	130	350
Main to Harbor	14,200	–	–	105	277
Sampson Street					
Logan to National	6,900	–	–	79	274
National to Newton	6,600	–	–	83	257
Newton to Main	7,000	–	–	98	285
Main to Harbor	8,300	–	–	112	300
26th Street					
Logan to National	8,000	–	–	63	179
South of National	4,200	–	–	–	90
Interstate 5					
North of SR 75	239,000	325	790	1590	5300
South of SR 75	190,000	315	715	1400	4667

Dashes (--) indicate the contour does not exist or falls within 50 feet of the roadway centerline.

Avenue from Samson to 26th; Newton Avenue from Sigsbee to Beardsley; and 26th Street from National to Harbor). Sensitive land uses where the traffic noise level exceeds 65 dBA CNEL will have the potential to be significantly impacted.

Future Railroad and Light Rail Transit (Trolley) Operations

Freight rail and Trolley operations are not expected to change significantly as a result of the project. Future railroad CNEL contours are therefore not expected to change from those described in Table 3-12 and future Trolley noise levels are not expected to exceed 65 dBA CNEL at 50 feet from the track. Sensitive land uses located within 100 feet of the Santa Fe railroad operations along Bay Front Street or within 160 feet of the San Diego-Imperial Valley railroad operations along Harbor Drive will experience noise levels that exceed 65 dBA CNEL and will create a potentially significant impact.

Future Aircraft Operations

Noise associated with the Lindberg Field Airport and the North Island Naval Air Station should remain relatively unchanged. The Barrio Logan project area is expected to remain outside of the 60 dBA CNEL contours for both airports, therefore, noise associated with aircraft operations is not considered a potentially significant impact.

Future Industrial Noise Sources

The proposed land use plan for the Barrio Logan project area places the future industrial activities along the northwest portion of the Plan area. The majority of the industrial activity would not be adjacent to sensitive land uses under this plan, however, there is the possibility of adjacent incompatable land uses along portions of Main Street, Sigsbee Street, and the alley between National and Logan Avenues (Figure 3 of the Land Use Section). These areas represent the borders between the noise-sensitive commerical/ residential and/or Mercado mixed uses and light industry/commercial uses. Therefore, the potential for noise impacts in these areas exists and depends on the exact placement of sensitive land uses relative to the location of industrial noise generators. The potential for noise generated by future industrial sources is varied and is a function of the type of industrial activity, hours of operation, and intensity of activity on the site. These factors would have to be assessed during future site-specific noise analyses at which time

recommendations would be made regarding the relative noise sensitivity and compatability of adjacent or proximal land uses.

Mitigation Measures

Until site-specific plans are determined, only generalized mitigation measures can be identified.

- A site-specific acoustical analysis shall be required for all proposed residential residences where the potential exterior sound level is expected to be greater than 60 dBA CNEL. Exterior noise may be mitigated to below a level of significance by setbacks or barriers or a combination of both. The project design should orient outdoor living spaces away from noise sources.

- An interior acoustical analysis shall be required for all proposed multi-family residences where the exterior sound level has been identified to be 60 dBA CNEL or greater. The analysis shall ensure that the proposed design will limit the interior noise environment to 45 dBA CNEL or below. Mitigation of interior noise may require a closed window condition and mechanical ventilation. In high noise areas, dual glazed windows may be required.

- Potential noise impacts from industrial and commercial noise sources on sensitive receptors may be mitigated by the creation of noise buffers, and the routing of trucks away from residential areas. In addition, industrial and commercial noise sources shall comply with the provisions of the City noise ordinance (section 59.5.0401).

Proper mitigation measures shall be determined by a noise analysis for individual developments that are proposed for locations with noise levels above State standards, and shall be incorporated into construction plans and specifications and in the Mitigation Monitoring and Reporting Program. Noise impacts created by the project must be considered significant and not mitigated until mitigation measures have been implemented through a final Mitigation Monitoring and Reporting Program.

Unavoidable Adverse Impacts

Significant unavoidable adverse impacts are expected. Residential uses within the Redevelopment Plan area will continue to experience noise levels that exceed city-recommended 65 dBA CNEL.

3.5 GEOLOGY/SOILS

Existing Conditions

Topography

The project area is an area of gently sloping terrain. Elevations in the project area range from 35 to 60 feet above sea level (USGS 1975). Grading activities have leveled the site to a relatively flat area with slopes and drainages no longer distinguishable.

Soils

The Barrio Logan project site has been graded and thus several feet of top soil have been removed. The following description of soils is based upon the Soil Conservation Service's "Soil Survey of the San Diego Area" (1973). Soils in the project area are generally classified as "urban" and the Soil Conservation Service has not rated them for erodibility, stability, shrink-swell behavior or agricultural potential. Dredging of the shoreline of the project area occurred in 1941, 1942, 1949, 1951, 1955, and 1964 through 1966. Landfill of the shoreline of the project area occurred in 1924, 1930, 1934, 1937, 1949 and 1955. This activity does not include dredging prior to 1936 nor landfill prior to 1914, and does not include dredging or filling after 1971. There are no construction-quality sands in the project area (City of San Diego, 1978).

Geology

The project site is located in a geologic area of ancient marine deposits. The majority of the project site is underlain by deposits of the Bay Point Formation, which is comprised mostly of poorly consolidated, fine and medium grained, pale brown sandstone. These characteristics are indicative of a brackish water estuarine depositional environment and a late Pleistocene age. A small portion of the project area (west of Harbor Drive) is

comprised of artificial fill. The artificial fill was placed by man as part of construction of harbor facilities. The San Diego Formation underlies the Bay Point Formation, and although it is not exposed at the surface in the project area, may be encountered in subsurface excavations. It is a friable sandstone and conglomerate of Pliocene age. No specific fossil localities have been found in the project area. The area was once possibly a sedimentary basin below sea level that has since been uplifted by tectonic activity.

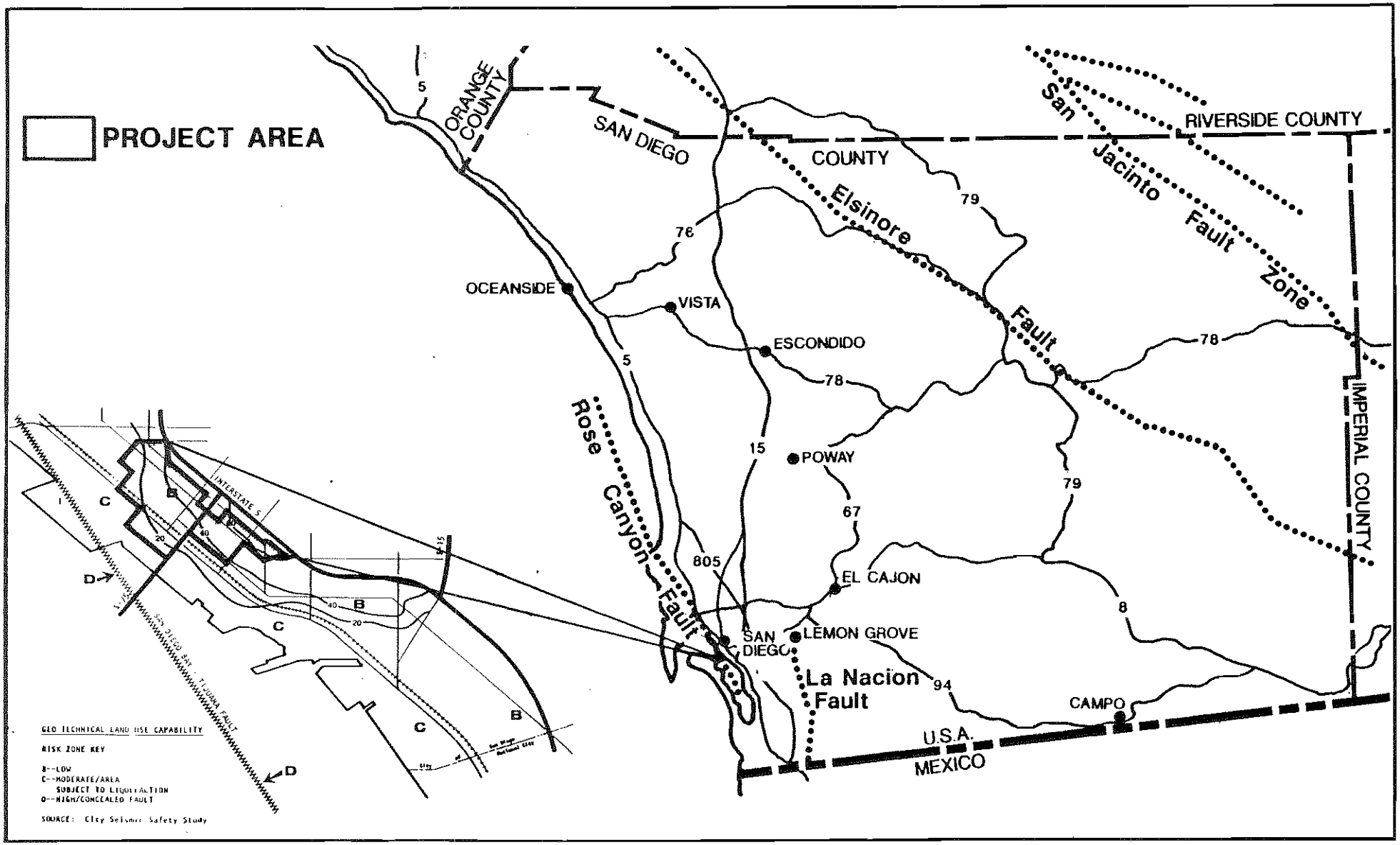
Surrounding the project area are several different rock types. Meta-volcanics and pleistocene terrestrial deposits are found to the east, and younger marine deposits are found scattered throughout the region (California Division of Mines and Geology, 1962).

Seismicity

San Diego is seismically active and lies within a Zone 3 area on the Seismic Risk Map of the United States. Zone 3 localities may be subject to violent shaking and major damage from earthquakes of magnitude VIII (Mercalli scale) or greater. The epicenters of several earthquakes have been in the San Diego area, and several active and potentially active faults have been identified. Although the area has experienced numerous earthquakes in the past 200 years, none of a devastating magnitude have occurred during this time (County of San Diego, 1975).

Two (2) active regional faults within San Diego County are the Elsinore and San Jacinto faults. See Figure 14 for a regional fault map and Table 3-17 for the aerial relationship between these fault systems and the project site. These faults have exhibited enough movement in the past for geologists to make estimates regarding the possibility of future movements along their fault lines.

Active faults are defined by the California Division of Mines and Geology as those which exhibit historic seismicity or displace Holocene deposits (11,000 years or less in age), while potentially active faults have no historic seismic record and displace Pleistocene (2,000,000 to 11,000 year old) but not Holocene strata (CDMG 1988).



NOT TO SCALE

REGIONAL FAULT MAP

BARRIO LOGAN REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 14

Table 3-17

APPROXIMATE DISTANCE TO FAULT ZONES FROM THE PROJECT SITE

Fault Zone	Status	To Main Street
Elsinore	Active	45 miles
San Jacinto	Active	65 miles
San Andreas	Active	90 miles
Coronado Banks	Active	10 miles
Rose Canyon	Potentially Active	<1 miles
La Nacion	Potentially Active	5 miles

Source: County of San Diego, January 1975.

The active Elsinore Fault will average one 7.3 Richter magnitude earthquake in 60 years, and one 7.5 Richter magnitude earthquake in 100 years. The San Jacinto Fault will average a 7.3 Richter magnitude earthquake in 90 years, a 7.8 Richter magnitude earthquake in 170 years (County of San Diego, January 1975).

The active San Andreas Fault is located outside the County, however, it does represent a hazard to the San Diego region and a majority of the State of California. La Nacion (also known as the Sweetwater Fault) is approximately five (5) miles from the project site. This fault is classified as potentially active.

The Rose Canyon Fault which runs generally north-south along the San Diego Coast is currently classified as potentially active but may potentially be linked with a zone of active faulting that includes the Newport-Inglewood Fault. In 1964, three (3) earthquakes of 3.5, 3.6 and 3.7 Richter magnitude occurred in San Diego with an epicenter in the middle of the central part of San Diego Bay, adjacent to the area, which may be related to this fault. Some evidence indicates that the Rose Canyon Fault Zone extends south along the alignment of the San Diego Bay-Tijuana Fault through San Diego Bay (City of San Diego, 1978).

The Coronado Banks fault is located approximately 10 miles offshore from the project site. It is believed to be part of the Palos Verdes – Agua Blanca fault zone. It is believed to be active and capable of producing magnitude 5–7 earthquakes (Legg and Kennedy 1979).

The City of San Diego Seismic Safety Study identifies only one fault structure within the project boundary. This is the southern end of the Texas Street Fault, which extends approximately two blocks into the project, near 28th Street. This fault is considered to be potentially active (or inactive) and is considered minor, as it is less than 3 miles long (Threet, 1977).

Geologic Hazards

Existing geologic hazards associated with the project site include the effects related to seismicity and soil stability.

Seismic Hazards

Seismic effects represent the primary geologic hazards to the Barrio Logan redevelopment area. Barrio Logan is within an active seismic region subject to major earthquake events, resulting in potential seismic hazards as described below.

Ground Rupture. Seismically-induced ground rupture is defined as the physical displacement of surface deposits in response to earthquake-generated seismic waves. The potential for ground rupture occurring onsite is considered low due to the lack of fault structure onsite. It is conceivable that ground rupture could occur in response to major seismic events along nearby regional structures, from undetected structures onsite. The site is not located within any Alquist-Priolo special studies zone as currently delineated.

Ground Acceleration. Ground acceleration is an estimation of the peak bedrock or ground motion associated with a specific earthquake event. It is expressed in terms of g forces, where g equals the acceleration due to gravity. Acceleration can be measured directly from seismic events or calculated from magnitude and fault distance data. Calculated peak ground acceleration parameters for the project site from maximum probable earthquakes along selected faults are given in Table 3-18. Estimated modified Mercalli Scale intensities (derived from peak ground acceleration values) associated with these earthquake events are

also listed in Table 3-18. Severe or extended ground accelerations can produce a variety of adverse structural effects as described in Table 3-19.

Based on observed and calculated data, the maximum anticipated ground acceleration value on the project site is projected as greater than 0.70 g associated with a magnitude 7.0 event along the Rose Canyon Fault. Such an event would likely generated Modified Mercalli Scale intensities of IX or more, potentially resulting in a variety of adverse effects (see Table 3-19).

Tsunami. Tsunamis are seismic sea waves, and are often mistakenly referred to as tidal waves even though they have no relation to tidal influences. Tsunamis are the result of seismic energy producing massive wavelike or oscillatory movement in large bodies of water (such as San Diego Bay or the Pacific Ocean). A seismic event along any of the large offshore faults could result in a tsunami which could affect portions of the project site. The effects of a tsunami is expected to be a very rare occurrence in the San Diego area, although it is one that can not be totally prevented.

Liquefaction

Portions of the project area are subject to liquefaction in the event of a strong local earthquake. Liquefaction refers to soil converting to a liquid state, caused by strong vibratory motion and may occur in areas underlain by loose granular soils and a near-surface groundwater table. Structures founded on soils that become liquefied may settle and suffer damage. A particular location may have a greater or lesser potential for this hazard depending on the on-site soil density and soil type, the severity of shaking, and the duration of shaking by an earthquake.

The locations prone to liquefaction in Barrio Logan are south of Interstate 5 and west of Dalbergia Street to San Diego Bay, west of Harbor Drive between 16th Street and Interstate 5 to San Diego Bay. These locations are assigned a "moderate" risk by the City's Seismic Safety Study. Land uses that are "provisionally suitable" in these areas are industrial and minor commercial uses, residential, minor public structures and schools, churches and other places normally attracting concentrations of people. Uses which are "generally unsuitable" are large power generation facilities and intertie systems, hospitals, fire, policy and other emergency communication facilities, critical transportation elements,

Table 3-18

MAJOR FAULTS AND SEISMICITY DATA

Potentially Active Faults	Minimum Distance and Direction from Site (miles)	Maximum Credible Earthquake (1)		
		Magnitude (2)	Peak Ground Acceleration (3)	Estimates Mercalli Scale Intensity (4)
Rose Canyon	<1 mile west	7.0	>.70 g	IX–X
La Nacion	5 miles southeast	6.75	.51 g	VIII–IX
Active Faults				
Coronado Banks	10 miles southwest	7.0	.36 g	VIII
Elsinore	45 miles northeast	7.5	.12 g	VI–VII
San Jacinto	65 miles northeast	7.5	.05 g	V–VI
San Andreas	90 miles northeast	8.25	.05 g	V–VI

(1) Defined as the maximum estimateed earthquake capable of occurring.
(2) Richter Magnitude.
(3) From Greensfelder (1974).
(4) From USGS (1980).

TABLE 3-19

The Modified Mercalli Scale of Earthquake Intensities

If most of these effects are observed	*then the intensity is:*
Earthquake shaking not felt. But people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them: trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	*I*
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	*II*
Effect on people: Felt by most people indoors. Some can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake; the shaking is like that caused by the passing of light trucks.	*III*
Other effects: Hanging objects swing. *Structural effects:* Windows or doors rattle. Wooden walls and frames creak.	*IV*
Effect on people: Felt by everyone indoors. Many estimate duration of shaking. But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls. *Other effects:* Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. *Structural effects:* Doors close, open or swing. Windows rattle.	*V*
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. *Other effects:* Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. *Structural effects:* Weak plaster and Masonry D* crack. Windows break. Doors close, open or swing.	*VI*
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. *Other effects:* Small church or school bells ring. Pictures thrown off walls, knicknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rustle. *Structural effects:* Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets and architectural ornaments fall. Concrete irrigation ditches damaged.	*VII*
Effect on people: Difficult to stand. Shaking noticed by auto drivers. *Other effects:* Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. *Structural effects:* Masonry D* heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	*VIII*
Effect on people: General fright. People thrown to ground. *Other effects:* Changes in flow or temperature of springs and wells. Cracks in wet ground and, on steep slopes. Steering of autos affected. Branches broken from trees. *Structural effects:* Masonry D* destroyed: Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Reservoirs seriously damaged. Underground pipes broken.	*IX*
Effect on people: General Panic. *Other effects:* Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed. *Structural effects:* Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.	*X*
Effect on people: General panic. *Other effects:* Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. *Structural effects:* General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	*XI*
Effect on people: General panic. *Other effects:* Same as for Intensity X. *Structural effects:* Damage nearly total, the ultimate catastrophe. *Other effects:* Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.	*XII*

* Masonry A: Good workmanship and mortar, reinforced, designed to resist lateral forces.
* Masonry B: Good workmanship and mortar, reinforced.
* Masonry C: Good workmanship and mortar, unreinforced.
* Masonry D: Poor workmanship and mortar and weak materials, like adobe.

and important public utility centers. "Suitable" uses are agriculture, marinas, parks, open space and refuse disposal sites.

Non-Seismic Hazards

Nonseismic geologic hazards include a number of potential physical and chemical effects including landsliding, compaction, expansion, and erosion.

Landsliding. The occurrence of landslides is generally influenced by a number of factors, including slope angles, oil moisture characteristics (including porosity and permeability), vegetation cover, and the physical nature and competency of surface and subsurface materials.

Landslide processes and deposits are generally associated with gravity-induced events. A number of additional mechanisms can influence or initiate the occurrence of landsliding, including seismic activity, fires, and grading. These events can affect the equilibrium of a given site or sites by altering specific conditions such as runoff capacity, vegetation cover, slope angle, or, in the case of seismic activity, by providing an energy force in addition to gravity by which to trigger a landslide event. The project area is relatively flat, and therefore would not be subject to the effects of landslides.

Compaction. Loose, well-graded soils (especially poorly manufactured fills and soils containing oversize materials) can be subject to compaction and settlement hazards, including differential compaction (i.e., varying degrees of settlement over short distances). These effects are often accentuated by cut and fill operations, and are a critical concern in terms of structure integrity. A number of other mechanisms may also produce compaction effect, including tectonic subsidence, hydrocompaction, (saturation of dry unconsolidated sediments), significant withdrawal of fluids from porous media, or collapse into natural or manmade subsurface cavities.

Most of the redevelopment area has been altered for the construction of buildings or been created by shoreline fill. The stability of altered or created land is a function of the nature of the placed material and construction practices. Any impacts relating to subsidence or compaction are expected to be mitigable through standard construction measures.

Expansion. Topsoils on the project site may contain variable quantities of clay. Accordingly, some areas of moderate expansion (or shrink-swell) potential may occur onsite due to the water holding capacity of clay minerals. Significant expansive behavior can adversely affect the integrity of foundations, fill slopes, and underground facilities. With proper construction methods, expansive soil conditions should not be significant.

Erosion. The incorporation of standard erosion control measures will insure that erosion effects will not be significant when surfical deposits are exposed during construction.

Groundwater

According to a geotechnical study conducted for the San Diego Mercado Project, groundwater depth is shallow and begins at approximately 25 feet below ground surface. The local hydrology is controlled by San Diego Bay, adjacent to the project site. The groundwater flows are believed to be to the southwest, towards San Diego Bay.

Environmental Consequences

Topography

Implementation of the proposed project would not require modification to the existing topography other than those activities required during normal site clearing, construction activities and street improvements.

Soils

Grading activities associated with development of the project area under the proposed project include site clearing, construction, and street improvements. Erosion of soils would be due to either rain or wind, and would occur during construction operations. These conditions would occur during any construction activities within the project area, regardless of the planning program. No significant impacts are identified.

Geology

Implementation of the proposed project would not be affected by any known geologic features or conditions in the project area or in the local vicinity.

Seismicity

Groundshaking associated with anticipated earthquakes on local and regional faults would affect the project area. Such groundshaking could result in damage to structures, infrastructure facilities and transportation systems. The rupture of severing of utility lines could result in related fire hazards, and could result in the loss of essential services in the project area immediately following an earthquake.

Liquefaction

As identified in the City's Seismic Safety Study, most of the project area is considered "Generally Stable" land and would not be impacted due to liquefaction. However, areas west of Harbor Drive would be subject to liquefaction and would require mitigation to allow development to occur.

Groundwater

Development projects within the project area may require dewatering during construction and operation phases; appropriate federal and state discharge permits must be obtained prior to project approval. Groundwater levels would not otherwise result in development limitations or expose persons or property to hazardous conditions.

Mitigation Measures

Topography

No significant adverse effects are expected and no mitigation measures are proposed.

Soils

No significant adverse effects are expected and no mitigation measures are proposed.

Geology

No significant adverse effects are expected and no mitigation measures are proposed.

Seismicity

Proposed developments within the project area shall be reviewed by the City Engineer to ensure that proposed structures are designed to withstand anticipated groundshaking caused by earthquakes, consistent with those standards established in the Uniform Building Code and design criteria of the Structural Engineering Association of California.

Liquefaction

Development proposed west of Harbor Drive will require preparation of geotechnical studies to identify appropriate measures to reduce potential liquefaction impacts to levels of insignificance.

Groundwater

No mitigation measures are necessary.

Specific mitigation measures for geological impacts in the project area shall be identified as project development occurs. These mitigation measures shall be incorporated into construction plans and specifications and the Mitigation Monitoring and Reporting Program. Geologic impacts must be considered significant and not mitigated until mitigation measures are implemented through a final Mitigation Monitoring and Reporting Program.

Unavoidable Adverse Impacts

As proposed, the proposed project would not result in any unavoidable adverse impacts with implementation of the identified mitigation measures. Existing topography, soils, geology, seismicity, liquefaction or groundwater environments do not present any unique features, or expose the general public to hazardous conditions. No unavoidable adverse impacts are anticipated.

3.6 AIR QUALITY

Affected Environment

The Redevelopment Plan area is located in the western portion of the San Diego Air Basin and is the responsibility of the Air Pollution Control District, County of San Diego (APCD), and the California Air Resources Board (CARB). The APCD establishes and enforces regulations for stationary air pollutant sources in the basin, and CARB is charged with control of motor vehicle emissions. Currently, the San Diego Air Basin is classified as a nonattainment area by the Environmental Protection Agency (EPA) in terms of oxidants (ozone) and carbon monoxide (CO).

The subject area is located closest to APCD's Downtown San Diego monitoring station (1111 Island Avenue, San Diego). Although data from this station does not necessarily reflect existing conditions in the project area, the information provided in Table 3-20 gives a general indication of ambient air quality in the project area.

Review of the data for the Downtown San Diego station indicates that the only pollutants for which Federal and/or State air quality standards have been exceeded are ozone and nitrogen dioxide (NO_2).

Ozone is the air pollutant of primary concern in the project area. Ozone is a secondary pollutant, meaning it is not directly emitted. Ozone is the result of the chemical reactions of other pollutants, most importantly hydrocarbons and nitrogen dioxide (NO_2) , in the presence of ultraviolet radiation (sunlight). Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the project area.

Air pollutants have a number of adverse impacts on human health, degradation of materials and finishes, and harmful to sensitive plants. The sources and effects of various contaminants are discussed briefly below.

Table 3-20

MEASURED AIR QUALITY LEVELS
DOWNTOWN SAN DIEGO AIR MONITORING STATION

Pollutant	California Standard	National Standard	Year	Maximum Level	Days State Standard Exceeded
Ozone	0.09 ppm for 1 hr.	0.12 ppm for 1 hr.	1987	0.14	1
			1988	0.18	2
			1989	0.18	9
CO	20 ppm for 1 hr.	35 ppm for 1 hr.	1987	12.0	0
			1988	17.0	0
			1989	13.0	0
Particulates	50 ug/m^3 for 24 hr.	150 ug/m^3 for 24 hr.	1987	194	0
			1988	217	0
			1989	173	0
NO_2	0.25 ppm for 1 hr.	0.05 ppm year avg.	1987	0.26	3
			1988	0.19	0
			1989	0.23	0

Source: Air Pollution Control District, 1990.

Carbon Monoxide (CO). Carbon monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon-containing substances. Carbon monoxide concentrations are generally higher in the winter when more fuel is burned and meteorological conditions favor the build-up of directly emitted contaminants. In the San Diego Air Basin, gasoline-powered motor vehicles are the largest source of this contaminant.

Carbon monoxide does not irritate the respiratory tract of living beings but passes through the lungs directly into the blood stream and, by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues, primarily the heart and brain, of oxygen. It is not known to have adverse effects on vegetation, materials and finishes, or eyesight.

Oxides of Nitrogen. Two oxides of nitrogen are important in air pollution. These are: nitric oxide (NO_x), a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure; and nitrogen dioxide (NO_2), a reddish-brown irritating gas formed by the combination of nitric oxide with oxygen. Motor vehicles are the primary source in the region, along with combustion in power plants. Some petroleum refining operations, other industrial sources, ships, railroads and aircraft operations are less important sources.

Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide (NO_x), combines with oxygen in the atmosphere, in the presence of hydrocarbons and sunlight, to form nitrogen dioxide (NO_2) and ozone. Nitrogen dioxide (NO_2), the most significant of these pollutants, is a reddish-brown gas which can color the atmosphere at concentrations as low as 0.5 ppm on days of 10-mile visibility. It is considered to be a major air pollutant in the region because it is a primary receptor of ultraviolet light which initiates the reactions producing photochemical smog.

Sulfur Dioxide (SO_2). Sulfur dioxide is a colorless, pungent irritating gas formed primarily by the combustion of sulfur-containing fossil fuels. In humid atmospheres, some of it may be changed to sulfur trioxide (SO_3) and sulfuric acid mist, with some of the latter eventually reacting with other materials to produce sulfate particulates. This contaminant is the natural combustion product of sulfur or sulfur-containing fuels. In the San Diego Air Basin, fuel combustion is the major source while chemical plants, sulfur recovery plants, and metal processing are minor sources. Introduction of low sulfur fuel oil, beginning in 1968, lowered SO_2 emissions. The recent shortages of natural gas have forced a greater use of low sulfur fuel oil, thus possibly adversely affecting air quality.

At sufficiently high concentrations sulfur dioxide (SO_2) irritates the upper respiratory tract; at lower concentrations, in combination with particulates, it appears able to do still greater harm by injuring lung tissues. Sulfur oxides, in combination with moisture and oxygen, can yellow the leaves of plants, dissolve marble and eat away iron and steel. Sulfur oxides can also limit visibility and cut down the light from the sun.

Photochemical Oxidant (O_x). The term "photochemical oxidant" can include several different pollutants, but consists primarily of ozone (more than 90 percent) and a group of chemicals called organic peroxynitrates, which comprise only a small percentage of the total. Photochemical oxidants are created in the atmosphere and are not emitted directly into the air. Reactive hydrocarbons and oxides of nitrogen are the emitted contaminants which participate in the reaction. Ozone is a pungent, colorless, toxic gas which is produced by the photochemical process. Photochemical oxidant is a characteristic of Southern California type smog, and reaches its highest concentrations during the summer and early fall when ultraviolet energy from the sun and other conditions are most suitable for oxidant-producing reactions. Motor vehicles are the major source of emission of oxides of nitrogen and reactive hydrocarbons (principal ozone precursors) in the San Diego Air Basin.

The common effects of oxidants are damage to vegetation and cracking of untreated rubber. Photochemical oxidants in high concentrations can also directly affect the lungs, causing respiratory irritation and possible changes in lung functions.

Particulates. Atmospheric particulates are made up of finely divided solids or liquids such as soot, dust, aerosols, fumes and mists. About 90 percent by weight of the emitted particles are larger than 10 microns, but about 90 percent of the number of particulates are less than 5 microns in diameter. The aerosols formed in the atmosphere are usually smaller than 1 micron. In areas close to major sources, particulates are generally higher in the winter, when more fuel is burned, and meteorological conditions favor the build-up of directly-emitted contaminants. However, in areas remote from major sources and subject to photochemical smog, particulates are higher during summer months.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, construction, combustion products, including automobile exhaust, and from atmospheric photochemical reactions.

Some natural activity such as wind-raised dust and ocean spray also put particulates into the atmosphere.

In the respiratory tract, very small particles of certain substances may produce injury by themselves, or may act in conjunction with gases to alter their deposition sites and scope of action. Suspended in the air, particulates of aerosol size can both scatter and absorb sunlight, reducing the amount of solar energy reaching the earth, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

Hydrocarbons and Other Organic Gases. Any of the vast family of compounds consisting of hydrogen and carbon in various combinations, found especially in fossil fuels, are known as hydrocarbons. Many hydrocarbon compounds are major air pollutants and those which can be classified as olefins or aromatics are highly photochemically reactive. Atmospheric hydrocarbon concentrations in general are higher in winter because the reactive hydrocarbons react more slowly in the winter and can accumulate in the atmosphere to higher concentrations.

The major source of reactive hydrocarbons in the San Diego Air Basin is now the internal combustion engine of motor vehicles, with minor sources including evaporation of organic solvents and petroleum refining and marketing operations.

Specific hydrocarbons, such as ethylene, damage plants by inhibiting growth and causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are extremely important components in the reactions which produce photochemical oxidants.

Within the project area, air pollutants are generated from primarily two sources, non-stationary (motor vehicles) and stationary (industrial, power plants, etc.). Currently, non-stationary sources generate approximately 247.8 tons/year CO, 22.1 tons/year NO_x, and 24.3 tons/year Total Organic Gases (TOG). Stationary sources result in the generation of pollution levels shown in Table 3-21.

Existing pollution sources, for stationary and non-stationary sources are shown in Table 3-22.

Table 3-21

AIR POLLUTION LEVELS
STATIONARY SOURCES (LBS./YR.)

	CO	HC	NO_x	SO_x	Part.
Natural Gas Consumption	5,490	2,196	32,940	165	41
Electric Power Generation	2,438	2,072	28,037	32,304	4,876
Total	7,928	4,268	60,977	32,469	4,917

Table 3-22

EXISTING AIR EMISSION LEVELS
PROJECT AREA (TONS/YEAR)

	CO	NO_x	TOG
Stationary	3.9	30.5	18.3
Non-Stationary	247.8	22.1	24.3
Total	251.7	52.6	42.6

Source: The Keith Companies, 1990.

Climate

The project area is located in a climatic region characterized by ocean influenced winds, mild temperatures and light to moderate precipitation primarily during the winter months. Annual temperatures range from 45° to 75°F, with an annual mean of 65°F. In general, temperatures within the San Diego Bay immediate area are more moderate than the surrounding inland areas.

The most characteristic feature of the wind conditions in the San Diego Bay area is the predominant onshore breeze, which persists as westerly daytime wind. This wind changes to an easterly, or offshore, wind during the evening hours. The onshore wind is less persistent in the winter months, and strong winds are infrequent except in the early fall and winter, when occasional hot and dry winds (Santa Ana) winds blow from the east.

The San Diego area, in general, frequently experiences strong temperature inversions together with light wind conditions in an easterly direction that are conducive to the concentration of air pollutants. The air pollution potential during the winter and spring months is generally lower than during the summer and fall months due to westerly wind velocities which tend to reduce the probability for temperature inversions.

Environmental Consequences

Commercial, residential, industrial and institutional land uses such as those proposed by the Redevelopment Plan potentially impact air quality almost exclusively through increased automotive emissions. Minor secondary emissions during construction, from increased fossil-fueled energy utilization and from small miscellaneous sources will also be generated, but these are usually much smaller in both duration and volume than the mobile source emissions.

The California Air Resources Board (CARB) has developed a land use and air pollution emissions computer model to calculate daily emission increases associated with the proposed project. This model, called URBEMIS2, was run for a build-out year of 2010. Output from the model runs is attached in Appendix D of this report. If final buildout occurs by the year 2010, the model predicts a project-related vehicular emissions burden as shown in Table 3-23. The proposed project would result in a 1,683 percent increase in CO, 1,094 percent increase in NO_x, and 951 percent increase in TOG (Table 3-24).

Additional potential pollutant generators not examined in the analysis include activities such as auto dismantling, toxic waste transfer, dry cleaners, vehicle maintenance, and metal plating. Because the size and number of these types of businesses are not defined by the Redevelopment Plan, assessment of their potential impacts is not possible at this time, but would occur as specific projects are proposed.

Growth introduces a number of secondary emissions sources that are individually and cumulatively small, but are nevertheless a significant portion of the County's pollution burden when summed with all countywide activities. These sources typically include:

- Increased fossil fuel combustion in power plants to provide electrical energy to the project site.
- On-site combustion of natural gas for heating, hot water, and cooking.
- Increased evaporative emissions from transport, storage and dispensing of gasoline for project related vehicles.
- Evaporative emissions from cleaners, paints, solvents and other materials used in building construction and ongoing maintenance.
- Dust emissions from the use of aggregates, concrete, sand, gravel, stucco and other building materials.
- Combustion emissions from mowers, edgers, blowers and other landscape utility equipment.
- Increased business travel at regional airports.

Mitigation Measures

Because the Redevelopment Plan does not include proposals for specific development projects, only general mitigation measures are provided here. As individual development projects are proposed, detailed analysis will be prepared to identify project related impacts and specific mitigation measures with regard to the California Clean Air Act and related measures (Transportation Demand Management and Congestion Plan).

Table 3-23

PROJECT AIR EMISSION LEVELS (TONS/YEAR)

	CO	NO_x	TOG
Stationary Sources	5.5	31.1	25.1
Non-Stationary Sources	4,482.6	597.0	422.6
Total	4,488.1	628.1	447.7

Table 3-24

AIR EMISSION INCREASES (TONS/YEAR)

	CO	NO_x	TOG
Existing Levels	251.7	52.6	42.6
Project Levels	4,448.1	628.1	447.7
Change	1,667%	1,094%	951%

Source: The Keith Companies, 1990.

- The use of alternative transportation modes shall be encouraged by project tenants by promoting public transit usage and providing secure bicycle facilities. Bicycle racks will be provided at all commercial facilities within the Redevelopment Plan area. All major employers will be required to submit a plan to the San Diego APCD identifying positive measures taken to implement this objective. Monitoring and enforcement will be an APCD responsibility.

- The City shall implement its Transportation Demand Management (TDM) Program within the Redevelopment Plan Area.

- Mass transit accommodations shall be provided in project design. These include but are not limited to park-and-ride facilities, bus turnout lanes, bus shelters and express transit access.

- Fugitive dust emissions during construction shall be minimized by watering the site for dust control, isolating excavated soil on-site until it is hauled away, and periodically washing adjacent streets to remove accumulated materials.

- During construction, truck routes shall be planned to preclude truck queuing or idling near sensitive receptor sites in order to reduce truck exhaust impacts.

- All non-direct sources of air pollution shall comply with any applicable measure in the adopted Regional Air Quality Strategy.

Mitigation measures developed for identified impacts to air quality shall be incorporated into construction plans and/or specifications and the Mitigation Monitoring and Reporting Program. Only until mitigation measures are implemented through a final Mitigation Monitoring and Reporting Program, the air quality impacts must be considered significant and not mitigated.

Unavoidable Adverse Impacts

The proposed project encourages more development in the project area; therefore, increasing the level of stationary and non-stationary polluters. This occurrence is an

unavoidable adverse impact. Even if mitigation measures are implemented, air quality could worsen over today's conditions on a regional scale.

3.7 POPULATION/HOUSING

Affected Environment

Population

The following population figures were obtained from the 1980 Census and 1988 and 1989 SANDAG projections. The Barrio Logan Redevelopment Plan area is located within two census tracts, CT 50.00 and CT 51.00. The closest adjacent tract, CT 49.00, a primarily residential tract, has been included for comparative purposes. Census tract 49.00 has the largest residential base, containing 4,129 residents. The other two tracts, which contain portions of the project area, have relatively smaller population bases. CT 50.00 has 1,565 residents and CT 51.00 has 1,707 residents (Table 3-25). Interstate 5 divided the neighborhood, as a result, CT 49.00, which is northeast of the Interstate 5, has retained its residential integrity, while the other two tracts have become increasingly industrial.

Table 3-25

POPULATION

Census Tract	1970	1980	1989
CT 49.00	3762	4147	4129
CT 50.00	1482	1578	1565
CT 51.00	1017	1327	1707

The existing population has grown slightly since 1970, but has grown at a slower rate than experienced in the City. Both CT 49.00 and 50.00 grew at less than one percent per year, Census tract 51.00, which includes portions of southeastern downtown, grew by 2.7 percent per year. The City grew by 2.6 percent per year between 1970 and 1980.

The San Diego City Planning Department estimates that the population in CT 49.00 and 50.00 has declined slightly since 1980, while the growth in CT 51.00 accelerated to 3.7 percent per year.

The project area has a higher proportion of children, a lower proportion of young adults, and a comparable share of teenagers, middle-aged adults, and elderly, in comparison to San Diego County according to the 1980 Census. It is expected that this area will continue to have a higher average share of children. The young adult generation, though the largest age group, is not as dominant in the project area as it is countywide.

The census tracts analyzed are predominantly Hispanic. CT 49.00 is 75 percent Hispanic, CT 51.00 is 78 percent Hispanic and CT 50.00 is 91 percent Hispanic, compared to the 15 percent Hispanic population citywide.

Housing

The number of housing units in census tracts 49.00 and 50.00 have essentially stayed the same, while they have increased slightly in census tract 51.00 (Table 3-26). There are an estimated 2,574 housing units in the three tracts reviewed. CT 49.00 has 1,397 units, an increase of 0.32 percent; CT 50.00 has 527 units, a decrease of 0.40 percent; and CT 51.00 has 650 units, an increase of 2 percent.

Table 3-26

HOUSING UNITS

				Annual Percentage of Change	
Census Tracts	1970	1980	1989	70–80	80–89
CT 49.00	1353	1380	1397	.20%	.12%
CT 50.00	552	543	527	–.16%	–.30%
CT 51.00	534	600	650	1.17%	.83%

Housing occupancy in 1987 is comparable to citywide housing occupancy, and reflects a healthy housing market in which new housing can be sold or rented. The average household size of approximately 3.1 persons per household in census tracts 49.00 and 50.00 is above the citywide average (2.5 persons), reflective of the large proportion of children in the sub-area population. The average household size of approximately 2.3 persons per household in census tract 51.00 is lower than the citywide average, probably due to single-room occupancy dwellings downtown.

The character of the existing residential stock within the project area is a mixture of single-family residential units and multi-family dwelling units. There are a total of 317 dwelling units within the project area. Approximately 68 percent of these units require moderate to heavy rehabilitation, or are substantially deteriorated.

Environmental Consequences

Population

As proposed, the Redevelopment Plan would allow for increased residential, commercial, retail and industrial development. As a result of increased availability of residential dwelling units (approximately 1,198 units) and employment opportunities (approximately 5,491) due to implementation of the Redevelopment Plan, population levels within the project area and within the adjacent communities are expected to increase. The level of expected population increase, however, is difficult to estimate due to the uncertainty of the size and type of dwelling units to be developed. Assuming a maximum buildout of 1,198 units and an average household population size of 3.1 persons in Barrio Logan (City of San Diego Planning Department 1989), the maximum buildout population for the redevelopment project area can be estimated to be approximately 3,700 persons. Significant adverse impacts involving population are not anticipated to result from implementation of the Redevelopment Plan.

Housing

Currently, there are approximately 317 dwelling units (single and multi-family) within the project area. As proposed, the project would allow for a total of 1,198 dwelling units within the Redevelopment Plan area, a net addition of 881 dwelling units. This would represent a 278 percent increase in the number of dwelling units. Most of the existing

dwelling units (single and multi-family) would be replaced by higher intensity uses. The potential dislocation and relocation impacts to the existing housing units is significant.

State law has established a number of mitigation measures to reduce the impact of relocation of those displaced by public agency projects. These mitigation measures include:

- relocation assistance payments,
- moving allowances,
- rent differential payments,
- grievance procedures, and
- provision of replacement housing.

By law, 20 percent of tax increment funds received by the Agency must be used to benefit low- and moderate-income areas.

If low- or moderate-income dwelling units are destroyed or removed from the market as a result of the project, the Agency will provide an equal number of replacement units within four years through new construction, rehabilitation or other means.

These measures reduce the adverse impact on the individuals who may be relocated by Agency action, and reduce the impact of demolition and relocation on the housing market by providing additional housing units in the price ranges the market is least able to provide.

Mitigation Measures

Population

No significant adverse effects are expected, and no mitigation measures are proposed.

Housing

No significant adverse effects are expected, and no mitigation measures are proposed.

3.8 PUBLIC SERVICES AND UTILITIES

The discussion of potential impacts of the Barrio Logan Redevelopment Plan on various public services and utilities is based upon correspondences with the service agencies and utilities that have jurisdiction of the project area.

Affected Environment

Schools

The Redevelopment Plan area is located within the San Diego Unified School District (SDUSD)/San Diego City Schools (SDCS). SDUSD facility enrollments and capacities are listed in Table 3-27. As is indicated in Table 3-27, current enrollments are below the as-built capacity of each school. Currently, student enrollment for students within the project area are: 143 students, grades K–6; 38 students, grades 7–9; and 35 students, grades 10–12, for a total student population of 216. The existing educational facilities within the project area are adequate to serve the current enrollments while maintaining a traditional school schedule.

Table 3-27

CAPACITY OF SDUSD FACILITIES[1]

Institution	Current Enrollment	As-Built Capacity	Unused Available Capacity
Lowell/Perkins Elementary	456	489[2]	33
Memorial Jr. High School	1075	1100	25
San Diego High School	1418	1640[3]	222

Source: Bruce Silva, SDUSD, April 1990.

1 Assumes a traditional school year schedule of nine (9) months.

2 School expansion is currently underway which will increase capacity from 489 to 750 pupils by year 1993.

3 Planned expansion will increase capacity to 1,831 by year 1996.

The SDUSD's Long Range Facilities Master Plan (March 1991) projects fall 1991 enrollment at the Lowell/Perkins Elementary to equal 557 students. The Master Plan has allocated Proposition Y funding monies to remodel the school to a 750-student capacity to accommodate projected growth in the Barrio Logan area. Construction began in January 1991 and is scheduled to be completed in 1993. The Master Plan also has allocated monies

to remodel and expand San Diego High School to add ten new classrooms by 1996 to accommodate an enrollment of 1,831 students.

The San Diego Community College District operates the Harbor View Center located on National Avenue immediately north of the Coronado Bay Bridge. This facility is not considered adequate for current or future needs.

Water Supply

Water service to the Redevelopment Plan area is provided by the City of San Diego Water Utilities Department. The City receives its water from the San Diego County Water Authority (CWA), a member agency of the Metropolitan Water District. Almost all (91.7 percent in 1989) of the water provided by the CWA was imported from either northern California or the Colorado River. The CWA reports that 626,502 acre-feet of water was used in fiscal year 1989 (SANDAG, 1990). Approximately five to ten percent of the City's remaining water supply is obtained from local water sources.

Currently, the project area consumes approximately 342 acre-feet of water per year. These existing water demands are detailed in Table 3-28. The City's Water Utilities Department Water Groups 445, 452 and 458 supply water to the project area. These pipeline mains have recently been replaced and range in size from 6-inch to 12-inch in diameter mains.

Sanitary Sewer

The Redevelopment Plan area is located within the service area boundaries of the City of San Diego Water Utilities Department, which provides sanitary sewer service. Effluent from the project area would receive treatment at the Point Loma Wastewater Treatment Plant (San Diego Metropolitan Sewerage System). The Point Loma Wastewater Treatment Plant currently treats approximately 190 million gallons of effluent per day (mgd), and has a current capacity to treat approximately 240 mgd (TKC, 1990 pers. comm.).

Approximately 302,600 gallons of sewage per day is currently being generated in the project area. A breakdown of these rates are shown in Table 3-29.

Existing sewerage lines serving the project area vary in size from 6-inch laterals to 39-inch in diameter interceptor lines. A majority of the sewerage lines in the project area are 6-inch

Table 3-28

EXISTING WATER DEMANDS

Land Use	Dwelling Units/ Acreage	Water Demand Conversion (gallons/day)[1]	Daily Water Demand (gallons)	Yearly Water Demand (gallons)
Residential	317	150 per dwelling unit	47,550	17,355,750
Commercial	5.4	4,025 per acre	21,735	7,933,275
Industrial	41.0	5,750 per acre	235,750	86,048,750
		TOTAL	305,035	111,337,775 (342 acre feet)

[1] Source: San Diego Water Utilities Department

Table 3-29

EXISTING WASTEWATER GENERATION

Land Use	Dwelling Units/ Net Acreage[1]	Wastewater Generation (gallons/day)[2]	Daily Wastewater Generation (gallons)
Residential	317 dwelling units	240 per dwelling unit[3]	76,080
Commercial	4.3 acres	5,000 per net acre	21,500
Industrial	32.8 acres	6,250 per net acre	205,000
		TOTAL	302,580

(1) Net acreage = 0.8 x gross acre
(2) Source: City of San Diego Water Utilities Department
(3) Assumes 3 persons per dwelling unit; 80 gallons/day per person

lines. Currently, the City of San Diego requires a minimum 8-inch line size for commercial and residential and a 10-inch line for industrial. Although these lines are undersized by current City standards, the project is not experiencing any problems with sanitary sewer service (TKC, 1990 pers. comm.).

The Barrio Logan project area will be included in the planned upgrade to "Secondary Treatment" under the mandated of sewage through the City's Clean Water Program. Moreover, the Capital Improvement Program (part of the City of San Diego Utilities Budget) currently allocates monies for sewer improvements which would fund the sewer improvements in the Barrio Logan area.

Public Transit

San Diego Transit (SDT), in coordination with the Metropolitan Transit System (MTS), provides public transit/bus service to the project area and currently has approximately 300 local express routes traversing the county (Murphy 1990). The project site has direct access to public transit service via routes 4, 11 and 29. Bus strand route 901, which also services the project area, is operated solely by the MTS. Both the MTS and the SDT provide a large inventory of bus stops within the project boundaries. San Diego Transit also operates carpool and vanpool matching services.

The Metropolitan Transit Development Board (MTDB) operates a trolley system in San Diego. The South Bay trolley line runs between Centre City and San Ysidro; it passes through, and makes one stop, in the southern portion of the redevelopment plan area.

Police Protection

Police services to the project area are provided by the Central Area Station of the San Diego Police Department. The Central Area Station, located at 801 West Market Street, currently has approximately 12 to 15 cars, with 12 beats, and approximately 100 sworn officers (Kurupas, 1990). Response time for emergency calls to the project site and surrounding areas is approximately 6.8 minutes (correspondence; Thompson, Kurupas, 1990). Currently, the project area is adequately served by police patrols (Kurupas, 1990).

Fire Protection

Fire protection for the project area is currently provided by the City of San Diego Fire Department. The fire stations that would initially respond to an emergency in the project area are Station 1, located at 1st Avenue and B Street; Station 7, located at 944 Crosby Street (in the project area); Station 4, located at 404 8th Avenue; Station 11, located at 945 25th Street, and Station 19, located at 35th Street and Oceanview Boulevard. Each station has a minimum of four firefighters available for service on a 24-hour basis. Each station has one 1,500 gpm engine and support equipment. Response time from these fire stations to the project area would vary between one and seven minutes. Existing facilities are adequate to serve the present population (Oates, 1990).

Environmental Consequences

Schools

Based upon SDUSD generation rates, maximum buildout of the project would increase the student population in the project area from 226 to approximately 851. Maximum buildout would allow for construction of approximately 881 dwelling units above the 317 existing dwelling units. These additional residences would generate approximately 396 students, grades K-6; 106 students, grades 7-9; and 123 students grades 10-12.

Presently, Lowell/Perkins Elementary School has a unused capacity of approximately 33 students. When the current expansion is completed, the school will have an unused capacity of 294 students. With the addition of 396 new students in grades K-6, the project would exceed the school's future (1993) capacity by 102 students, or by 14 percent.

Memorial Jr. High School has a current unused capacity of 25 students. Maximum buildout would generate 106 additional students, which would exceed the school's as-built capacity by 81 students, or 7 percent.

Currently, San Diego High School has an unused capacity of 222 students. Maximum buildout would generate approximately 123 additional students, This increase could be accommodated by the high school which would be operating at approximately 94 percent of the facility's as-built capacity. Additional capacity (approximately 190 spaces) would be available in 1996 if planned improvements occur.

With the provision of State Law AB 2926, the District may collect fees for the construction or refurbishment of school facilities to serve the project area. Funds for transportation services must come from the District's operations budget, which will increase from additional students generated from the proposed development projects. City involvement in the provision of school facilities is limited under the new law. Section 65995 of the Government Code (added by AB 2926) states in part that other than the SB 201 program to meet temporary classroom facility needs and the AB 2926 school impact fees, "...no fee, charge, dedication or other form of requirement shall be levied by the legislative body of a local agency against a development project" for the construction or reconstruction of school facilities. This section removes the City from school facilities financing. The legislature does, however, prohibit the City from issuing a building permit without certification, from the appropriate school district, that fee requirements have been complied with.

The redevelopment plan proposes to expand Harbor View Center operated by the San Diego Community College District to accommodate future need.

Water Supply

Water service is currently provided to the entire project area by the City of San Diego Water Utilities Department which would provide service for development identified under the project. As shown in Table 3-30, development of the project would result in a water demand of approximately 755 acre-feet of water per year (674,324 gallons/day). Project related water demands represent a 126 percent increase above existing levels. These

demands could be served adequately by existing facilities and those facilities identified for improvement to meet current standards (Bhola, 1990).

Table 3-30

PROPOSED PROJECT WATER DEMANDS

Land Use	Dwelling Units/ Square Footage	Water Demand Factor (gal./day)[1]	Daily Water Demand (gal./day)
Residential	1,198	150/du	179,700
Commercial	1,833,876	150/1,000 sq.ft	275,081
Industrial	1,219,680	180/1,000 sq.ft	219,543
		TOTAL	674,458,324

[1] Source: City of San Diego Water Utilities Department

To minimize water demand, the following water conservation measures are required and would be part of the Redevelopment project:

1. Low-flush toilets (see Section 17921.3 of the Health and Safety Code).

2. Low-flow showers and faucets (California Administrative Code, Title 24, Part 6, Article 1, T20-1406F).

3. Insulation of hot water lines in water recirculating systems (California Energy Commission regulations).

4. Interior measures required by the City:
   a. Flush valve operated water closets: maximum three (3) gallons per flush;
   b. Drinking fountains equipped with self-closing valves;
   c. Pipe insulation: recommended all hot water lines to be insulated to provide hot water faster with less water, and to keep hot pipes from heating cold water pipes

d. Restaurants: use of water-conserving models of dishwashers.

5. Exterior measures required by the City:
   a. Landscape with low water-consuming and drought tolerant plants wherever feasible;
   b. Use mulch extensively in all landscaped areas to improve the water-holding capacity of the soil be reducing evaporation and soil compaction;
   c. Preserve and protect existing trees and shrubs, as established plants are often adapted to low water conditions thus avoiding use of water needed to establish replacement vegetation;
   d. Install efficient irrigation systems which minimize runoff and evaporation and maximize the amount of water which will reach plant roots; use of drip irrigation, soil moisture sensors and automatic irrigation systems will increase irrigation efficiency.
   e. Use reclaimed water for irrigation.

Existing fire flows within the project area are adequate, however, in order to serve new development, fire hydrants will need to be relocated and/or new hydrants installed. Currently, fire hydrants are located at each intersection in the project area, approximately 600 feet apart, and current City standards require fire hydrants to be located 360 feet apart in residential, commercial and industrial areas. No significant impacts are identified regarding fire hydrants.

Sanitary Sewers

As proposed, the project would result in the generation of approximately 525,400 gallons of sewage per day (Table 3-31). This would represent a 74 percent increase above the 302,600 gallons of sewage currently being generated. The City has indicated that this increase could be adequately served by existing facilities.

The Point Loma Wastewater Treatment Plant has a current unused capacity of approximately 50 million gallons per day. Wastewater from the project area would use approximately 1 percent of the the facility's unused capacity. The project would not have a significant impact of sewage collection systems or treatment facilities.

Table 3-31

PROPOSED PROJECT WASTEWATER GENERATIONS

Land Use	Dwelling Units/ Net Acreage[1]	Wastewater Factor (gal./day)[2]	Daily Wastewater Generation (gal./day)
Residential	1,198	208/du[3]	249,184
Commercial	25.3	5,000 per net acre	101,200
Industrial	28	6,250 per net acre	175,000
		TOTAL	525,384

(1) Net acreage = 0.8 x gross acre
(2) Source: City of San Diego Water Utilities Department
(3) Assumes 2.6 persons per dwelling unit; 80 gallons/day per person

Public Transit

Development permitted under the proposed project would increase demands on public transportation systems. San Diego Transit and MTS have indicated that existing facilities and routes would provide adequate service to the project area upon project buildout.

Police Protection

Assuming a household size of 3 persons per unit and a net increase of 881 dwelling units, implementation of the proposed project would increase the resident population by approximately 2,600 persons. According to the City of San Diego Police Department, new development within the City will require the addition of 1.64 officers per 1,000 new residents or employees. As a result of development associated with the project, approximately 5 new officers would be required, a five percent increase in current staff for the project area. The increase in the number of officers is not considered significant.

Fire Protection

The San Diego Fire Department has indicated that sufficient manpower and equipment exists to serve the project area and no additional service will be needed to accommodate the project (Oates, 1990).

Mitigation Measures

Schools

The use of AB 2926 school fees shall be imposed on proposed development projects within the Redevelopment Plan area to alleviate the impacts on local schools due to an additional students generated by the proposed project. In addition, the Agency is authorized under Sections 33445 and 33401 of the Community Redevelopment Law, and the Redevelopment Plan, to assist the school entities to provide facilities to accommodate growth during the redevelopment period. With the cooperation of the school entities, any impact will be insignificant.

Water Supply

No significant impact are identified and no mitigation measures are needed.

Sanitary Sewer

Project impacts would not significantly affect existing sewer lines, therefore no mitigation measures are required.

Public Transit

No significant impacts are anticipated, therefore not mitigation measures are required.

Police Protection

No significant impacts are identified; no mitigation measures are needed.

Fire Protection

As proposed, the project is not expected to have a significant impact on City Fire protection services, therefore no mitigation measures are recommended.

Mitigation measures developed for project impacts to schools shall be incorporated into a Mitigation Monitoring and Reporting Program. Impacts to these public services and utilities must be considered significant and not mitigated however, until implementation of the final Mitigation Monitoring and Reporting Program.

Unavoidable Adverse Impacts

Given the nature of the development proposed for the project area and the available mitigation measures, the project would not have a significant unavoidable adverse impact on the local school systems. Water and sewer service, police and fire protection, and public transit are not expected to be unavoidably impacted.

3.9 ENERGY

Affected Environment

Electricity

The Redevelopment Plan area is located within the service area of San Diego Gas and Electric Company (SDG&E). Two substations serve the project area: the Main Street substation, at Evans Street; and the Sampson substation, at Sampson Street and Harbor Drive. A 138 kilovolt (kV) transmission line located in Evans Street, and several 69kV transmission lines are located with the project area. Existing electric distribution facilities in the redevelopment are include 12kV and 4kV circuits, both overhead and underground, and associated structures and equipment. Land uses within the project are currently consume approximately 9.9kWh per year of electricity (Table 3-32).

Natural Gas

The Redevelopment Plan area is within the jurisdiction of San Diego Gas & Electric company (SDG&E). SDG&E maintains several gas mains in existing streets in the project area,ranging in size from 1.25 inch-60 pounds per square inch (psi) to 16 inch-150 psi. The existing 16 inch-150 psi gas main in Main Street reduces to 12

inch-150 psi in Sigsbee Street (between Main and Newton) and 12 inch-150 psi in Newton Avenue (between Commercial and Sigsbee). Currently, this is the major feeder to serve the entire downtown and Coronado areas. According to SDG&E, the existing distribution system is adequate for the foreseeable future. No system modification is planned for this area.

Currently land uses within the project area consume approximately 73.5 million cubic feet of natural gas per year (Table 3-33).

Table 3-32
EXISTING ELECTRICITY CONSUMPTION

Land Use	Units/ Sq. Ft.	Consumption Factor [a]	Total Consumption (million Kwh per year)
Residential	317 d.u.	5,340 Kwh/year	1.69
Commercial	120,000 sq.ft.	46.6 Kwh/sq.ft./year	5.59
Industrial	892,980 sq.ft.	5.3 Kwh/sq.ft./year	4.73
		TOTAL	12.0

[a] Factors obtained from San Diego Gas & Electric

Table 3-33
EXISTING NATURAL GAS CONSUMPTION

LandUse	Units/ Sq. Ft.	Natural Gas Consumption Factor [a]	Total Consumption (therms [b] per year)
Residential	317 d.u.	348 therms/year	110,316
Commercial	120,000 sq.ft.	.35 therms/year/sf	42,000
Industrial	892,980 sq.ft.	1.18 therms/year/sf	1,053,716
		TOTAL	1,206,032

[a] Factors obtained from San Diego Gas & Electric
[b] 100 cubic feet = 1 therm

Environmental Consequences

Electricity

Development of the project is expected to consume approximately 98.3 million kilowatt hours per year (Table 3-34), an increase of 719 percent over the existing demand. Electric distribution facilities would be affected by the proposed project. Specific impacts would depend on the details of the project, but could include relocations, upgrades, overhead to underground conversions, etc. Transmission facilities could be affected, depending particularly on circulation plan changes. However, SDG&E has indicated that service to the plan area would not be impacted.

Natural Gas

Development of the project is expected to consume approximately 250 million cubic feet of natural gas per year, an increase of 99 percent over the existing demand (Table 3-35). SDG&E has indicated that the facilities needed to serve the new development would be within range of facilities planned for future redevelopment in the area. The project area would not have an adverse impact in SDG&E's long-term ability to provide service in the area (Danna, 1990).

The proposed project activities may affect existing natural gas distribution facilities. A portion of these facilities currently act as major feeders to the entire downtown and Coronado areas. Any improvements to or closures of existing roadways could affect existing SDG&E right-of-ways; the city routinely coordinates with SDG&E during the design and construction processes, however, and no significant impacts are identified (Danna, 1990).

Mitigation Measures

No significant impacts are identified, no mitigation measures are required.

Table 3-34
PROPOSED PROJECT ELECTRICITY CONSUMPTION

Land Use	Units/ Sq. Ft.	Consumption Factor [a]	Total Consumption (million Kwh per year)
Residential	1,198 d.u.	5,340 Kwh/month	6.40
Commercial	1,833,876 sq.ft.	46.6 Kwh/sq.ft./year	85.46
Industrial	1,219,680 sq.ft.	5.3 Kwh/sq.ft./year	6.46
		TOTAL	98.31

[a] Factors obtained from San Diego Gas & Electric

Table 3-35
PROPOSED PROJECT NATURAL GAS CONSUMPTION

LandUse	Units/ Sq. Ft.	Natural Gas Consumption Factor [a]	Total Consumption (therms [b] per year)
Residential	1,198 d.u.	348 therms/year	416,904
Commercial	1,833,876 sq.ft.	.35 therms/year/sf	641,857
Industrial	1,219,680 sq.ft.	1.18 therms/year/sf	1,439,222
		TOTAL	2,397,983

[a] Factors obtained from San Diego Gas & Electric
[b] 100 cubic feet = 1 therm

3.10 CULTURAL RESOURCES

Affected Environment

A records search was conducted by The Keith Companies Archaeological Services Division at the San Diego Museum of Man (see "W" numbers) and at the South Coastal Information Center, San Diego State University (see SDi numbers). These institutions provided previously described site locations, site forms and bibliographies, and the South Coastal Information Center also provided locations of previous cultural resources surveys. Results are presented below.

Archaeological Resources

The Barrio Logan/Harbor 101 Community Plan identifies sites of Native American encampments in the project vicinity at 26th Street at National Avenue and at 16th Street at Imperial Avenue. The cultural groups associated with these sites have been identified as La Jollans who lived in the San Diego region during the milling period from 7,000 to 3,000 years ago. In these prehistoric times the bay shore was a marshy area rich in shellfish and these Native Americans subsisted mainly on fish, shellfish, and native vegetation supplemented by hunting. Their occupation sites along the coast are characterized by large quantities of broken shell and stone tools. Archaeological resources may exist below the foundations of homes and other buildings in the project area, particularly buildings which were not constructed on graded pads.

Eleven cultural resources studies have been undertaken in the project vicinity, but only one partially included the project area and only one archaeological site is known to occur within the project area. The survey identified a resource which was partially within the project area was a reconnaissance level survey along the San Diego & Arizona Eastern Railway right-of-way (Carrico, 1978). The researchers discovered a site, referred to as SDi-5931/W-1627, that is located within the southwestern portion of the project area. The site contained prehistoric tools such as a hammerstone-pounder, a blade fragment, utilized flakes and waste flakes. This site (SDi-5931/W-1627) was disturbed by alleged unauthorized grading in 1990. A burial was discovered and an archaeological survey, monitoring program and site significance assessment was conducted for the AT&SF track and facilities improvement and relocation project in the Barrio Logan community of San

Diego. Monitoring and test excavations revealed remnants of sporadically deposited campsites associated with the Encinitas Tradition of the Early Millingstone Horizon circa 5,000 years ago. The disturbed female human burial was removed and subsequently reburied as requested by the Native American community. While the site and the burial represent a significant cultural resource, the site has been badly disturbed over the past 100 years and the burial has been removed. The remaining known site elements do not constitute a significant resource.

Other sites recorded within a 1 mile radius of the project area are SDi-55, SDi-66, SDi-8723 (W-957), W-193 and W-299B. SDi-55, recorded earlier this century, is on a bluff to the south of the project area. This site was recorded as a prehistoric shell midden, has not been test excavated, and its present condition is unknown. SD-66, across the Bay and was recorded in 1913, and is also described as a prehistoric shell midden, reportedly smaller than SDi-55. Its present condition is also unknown. SDi-8723 was recorded in 1981 and is a historic site north of the project area. This site holds the SDG&E oil and gas manufacturing facility (Station A) from 1910 with aspects dating possibly earlier, and a blacksmith shop that may also be dated to an earlier time. W-193 was recorded during the construction of a portion of the San Diego Naval Station. This site has not been test excavated and the amount of the site remaining is unknown. This site is reported to be a large one that was occupied at the time the Spanish passed through the area. This area was referred to as "Las Chollas" because of the cholla cactus surrounding the area. W-299B is an isolated find, recorded as an arrow shaft straightener found along K Street. W-299 was originally designated to include all discoveries of prehistoric remains in San Diego.

Historic Resources

The City of San Diego's Office of the City Architect has completed a historic and urban resource survey in the project area. This survey was reviewed by the City's Historical Site Board to determine if any structures and/or districts within the project area are eligible for historic designations, including those eligible for the National Register of Historic Places, in compliance with Section 106 of the National Historic Preservation Act of 1966. The Board will take action to designate those properties which meet its designation criteria.

History of the Project Area: Alonzo Horton founded what was to become modern San Diego during 1867–1885 with his town center, which was located much in the same area as today's Horton Plaza. As Alonzo Horton's New Town grew outward from the

city's center, Logan Heights became a lucrative area for development. In 1870, enterprising businessmen subdivided a large tract of land in Logan Heights in a diagonal fashion to take advantage of the scenic bay, lured by the construction of the San Diego and Gila Railroad which would run through Logan Heights. However, sales were soon stalled by the collapse of the railroad. The land reverted to the city and was subsequently granted in 1872 to the Texas and Pacific Railroad as an inducement for railroad construction. Unfortunately, the stock market crashed in 1873 and construction ended.

Determined to bring the railroad to San Diego, several entrepreneurs organized the California Southern Railroad in 1880, which was to run through Logan Heights. The line was completed in 1885. In 1886, the building boom was intensified when the San Diego Land and Town Company, a subsidiary of Santa Fe Railroad, offered choice lots in Logan Heights. D.C. Reed and O.S. Hubbell opened up a tract of land just southeast of the San Diego Land and Town Addition. This land was arranged in the typical north, south, east and west gridiron fashion.

During the years following the building boom, Logan Heights remained a rural community. Squatters resided near the bayfront and seasonal Indian settlements existed in the area. The bayside community was inhabited by a middle-class population. In 1892, the San Diego Electric Railway began service from downtown to Logan Avenue, bringing a concentration of larger homes and commercial buildings along the route. One year later, a horse-drawn railcar line was built along National Avenue, previously known as Milton Avenue, providing a second commercial artery.

Interest in the railroad system continued to be an enticement for speculation in Logan Heights. John D. Spreckles purchased the Santa Fe property along Commercial Street for his San Diego and Arizona Eastern Railroad. Groundbreaking occurred in 1907, bringing a significant change to the quiet community of Logan Heights. Industries such as shipbuilding, fishing and lumber developed.

Skilled and semi-skilled workers were attracted to the area supplying bayside industries with a large labor force. Most of the homes were owner-occupied by the laborers of bayfront industries. As one the few "non-restricted" neighborhoods in San Diego, it was comprised of various ethnic groups which formed a tightly knit community and an interesting mix of cultures.

Between 1912 and 1920, industries such as the California Iron Works, later renamed National Steel and Shipbuilding, developed in Logan Heights. Canneries were constructed to support the fishing industry and lumber mills took advantage of the harbor for shipping. As the waterfront industry grew, improvements in transportation were required for shipping. The Coronado Bridge and Interstate 5 bisected the community and a Naval presence came to dominate the scenic harbor. From the 1930's to the 1960's, the area was consumed by railways, highways, industry and the Navy.

Today, Logan Heights is an active predominantly Mexican–American community with diversified forms of industry mixed with residential land use. In 1970, Chicano Park was developed to provide a focal point and a sense of place in the neighborhood.

Significant Properties and Districts: The Barrio Logan Historic and Urban Resource Survey prepared by the Office of the City Architect contains 84 properties which appear to have potential for historic designation. Such properties were categorized according to their significance based upon information available at the time. The addresses of the potential historic structures are listed in the survey on file at the Office of the City Architect. The general location of the potential National Register sites and Districts are depicted on Figure 9, in the Aesthetic Quality section.

Ten properties are tentatively identified as potentially eligible for the National Register of Historic Places . These properties appear to meet the criteria for listing on the National Register. This determination will be made by the State Historic Preservation Office. The remaining properties will be reviewed by the Historic Site Board to determine if they meet the City's designation criteria.

Four potential historic districts have been tentatively identified in the survey area, and their significance is subject to further analysis. Of these four districts, District I/Core appears to have the most potential for National Register eligibility. This District is located at the southeast end of Logan Avenue between the Coronado Bridge and 27th street and is regarded as the heart of the community. The area contains a mixture of single-family houses, apartments and commercial buildings; they are in good-to-excellent condition.

Environmental Consequences

The Barrio Redevelopment Plan would require substantial land acquisition and clearing to implement the proposed land use plan. The specific occurrence of any archaeological resources on the site cannot be determined until structures and hardscape have been removed from the site. Implementation of the Redevelopment Plan could result in significant adverse impact on unknown cultural resources.

The Redevelopment Plan, particularly the pressure to redevelop sites at higher intensity uses, could result in the demolition of 84 potentially historic structures, including 10 of potential National Register status; and 4 potential historic districts, including one of potential National Register status. Historic architecture and urban fabric would be lost. These potential impacts would be significant, long-term and adverse. Impacts to structures and district of potential National Register status would be unmitigable. Impacts to other structures would be mitigable to below a level of significance.

Mitigation Measures

Due to the potential for significant impacts to any existing resources from grading, the following mitigation measures shall be incorporated into the Mitigation Monitoring and Reporting Program:

1. The applicant shall provide verification that a qualified archaeologist has been retained to implement the archaeological monitoring program. This verification shall be presented in a letter from the archaeologist to the Development and Environmental Planning Division (DEP) of the City Planning Department prior to construction activities. (A qualified archaeologist is defined as an individual certified by the Society of Professional Archaeologists.)

2. The qualified archaeologist shall attend any pre-construction meetings and shall be present on-site during all remaining grading. The archaeologist's duties shall encompass four elements: monitoring, evaluation, analysis of collected materials, and preparation of a report. These elements are as follows:

a. Monitoring Program

The qualified archaeologist shall attend any pre-construction meetings to make comments and/or suggestions concerning the monitoring program and discuss grading plans with the construction contractor. The archaeologist shall be on-site to monitor all ground disturbance activities and to inspect for additional in situ archaeological deposits.

b. Evaluation Program

In the event that additional archaeological deposits are discovered, the archaeologist shall have the authority to temporarily halt, direct or divert any ground disturbance operations in the area of discovery to allow evaluation of potentially significant archaeological resources. The significance of the discovered resources shall be determined by the archaeologist, in consultation with DEP staff. For significant archaeological resources, a research design and data recovery program shall be prepared and carried out to mitigate impacts. At the time of discovery, the archaeologist shall notify DEP staff. DEP must concur with the evaluation procedures to be performed before construction activities are allowed to resume. Any human bone of Native American origin shall be turned over to the appropriate Native American group for reburial.

c. Analysis of Collected Materials

All collected cultural remains shall be cleaned, catalogued and permanently curated with an appropriate scientific institution. All artifacts shall be analyzed to identify function and chronology as they relate to the history of the area. Faunal material shall be identified as to species. Specialty studies shall be completed, as appropriate.

d. Report Preparation

A monitoring report (with appropriate graphics) shall be prepared and submitted to DEP summarizing the results of the above program within three months following termination of the archaeological monitoring program.

3. The construction contractor shall notify DEP of any pre-construction meeting dates and of the start and end of construction. For questions regarding the SOPA-certified archaeologists, DEP shall be contacted. Selection of the SOPA-certified archaeologist, or equivalent, shall be approved by DEP.

The following will partially mitigate the impacts from demolition of structures with potential National Register status, but not to below a level of significance. The following will mitigate the impacts from demolition of the historical resources not identified as potential National Register Status to below a level of significance.

4. The City Architect shall review all project proposals that alter a designated or potentially designatable historic site. Any project proposal that substantially alters a designated or potentially designatable site shall be reviewed by the Historic Site Board. The City Architect shall determine if the proposed alteration is substantial and requires Historical Site Board review. Alterations to a designated or potentially designatable historic site which are not substantial may be approved by the City Architect.

5. All applications for the demolition and/or removal of any building shall be approved by the City Architect. If any structure or building is intentionally demolished or substantially damaged without obtaining a demolition permit, a building permit for that site will not be issued for a period of one year or a previously issued permit may be revoked for a period of one year. If the site was a designated historic site, a permit will not be issued for two years or a previously issued permit may be revoked for a period of two years.

6. The City Architect shall approve such an application for a demolition permit if it is determined that the site in question is not a potentially designatable historic site. The City Architect shall make the determination within ten working days of the receipt of the application in the Office of the City Architect. If the City Architect does not make the determination within the specified period, the site shall be deemed not to be a potentially designatable historic site. If a potentially designatable historic site is found, the demolition or removal permit application shall not be approved for 90 days or until the Historical Site Board has evaluated and acted on the site's historic significance, whichever occurs first. The provisions of this Section shall not apply to the following:

a. Any building or structure found by the City Manager of the City of San Diego to present a hazard to public health or safety and for which an emergency permit for demolition must be issued; or

b. Any permit approved by the City Architect, Planning Commission, Redevelopment Agency, or City Council as part of a development project submitted, reviewed and approved in accordance with this ordinance, and provided that such development application includes an environmental document prepared in accordance with the California Environmental Quality Act which describes and addresses the historic/architectural significance of the property. Such report shall be reviewed by the Historical Site Board for the purpose of recommending to the City Architect whether the proposed project should be approved, modified or denied based on the importance of the existing building(s) or structure(s).

7. The Department of Building Inspection and/or Engineering and Development Department shall not issue any permit for the installation of fixtures or equipment, or for the erection, construction, conversion, establishment, alteration, rehabilitation, demolition, move on, addition or enlargement of any building, structure or improvement, or for the occupancy of any building, structure or premises, or for the grading, subdivision or street actions for any site in any portion of the Barrio Logan Redevelopment Plan area until approval of the Planning Department's Zoning Administrator has been obtained by the applicant in compliance with the development criteria contained herein. Applications for grading permits, tentative maps, street actions and demolition of structures shall not be accepted unless concurrent application is made for a building permit. The Zoning Administrator may impose conditions and requirements consistent with the Barrio Logan/Harbor 101 Community Plan and the Barrio Logan Redevelopment Plan.

Mitigation measures developed for impacts to cultural resources shall be incorporated into construction plans and specifications and the Mitigation Monitoring and Reporting Program. Impacts to cultural resources must be considered significant and not mitigated or partially mitigated until implementation of the final Mitigation Monitoring and Reporting Program.

Unavoidable Adverse Impacts

Implementation of specified mitigation measures would reduce potential unavoidable adverse impacts to archaeological resources and those historic resources not identified with potential National Register status to below a level of significance. The potential for significant impacts to those historic resources with potential Historic Register status would remain significant even after implementation of identified mitigation resources.

3.11 PALEONTOLOGICAL RESOURCES

Introduction

Many scientifically significant fossil discoveries have recently been made in the San Diego area. The preservation of these important non-renewable resources is a concern of local government agencies and scientific institutions. Information concerning fossil localities was obtained from a paleontological resource inventory prepared by the City of San Diego (undated). This overview report identifies areas within the City where the potential exists for encountering significant fossil remains. Information was also obtained from Kennedy and Peterson's "Geology of the San Diego Metropolitan" (1975).

Affected Environment

Fossils are the remains or traces of plants and animals that have been preserved in sedimentary rocks since some past geologic or prehistoric time. Fossils include casts of the hard parts of an organism (such as bone or shell), the original bone or shell material, petrified portions of an organism (where the original substance, such as wood or bone, has been replaced by mineral matter from circulating solutions within the rocks or by infilling of pore spaces with mineral matter), preserved traces of animals, such as burrows, tracks or scat, and a numerous number of other forms. Fossils are important in that they provide information on past environmental conditions and are important time indicators for correlating rocks of similar ages from different places.

Rock formations can be thought of as possessing a specific paleontologic resource sensitivity which is based on the rock's type (sedimentary, igneous etc.) and previous fossil discoveries made in that formation. A sedimentary formation that has produced important or significant amounts of fossil remains is considered to have a high resource

potential. A sedimentary formation that has produced few fossil remains, or is limited by the nature of its deposits is considered to have a low paleontological resource potential. Rock formations which crystalized from a magma (such as granite), or have a molten volcanic origin (i.e basalt) can not contain preserved fossil remains, and are considered to have no paleontological resource potential.

The Barrio Logan Redevelopment Area is underlain by the Bay Point Formation and recent artificial fill (Kennedy and Peterson 1975). The Bay Point Formation underlies the majority of the project area except for areas of artificial fill associated with the harbor, generally west of Harbor Blvd. Below the Bay Point Formation lies the San Diego Formation, which, although not exposed at the surface, may be encountered during deep excavations. The Barrio Logan area is generally entirely covered with pavement, buildings, landscaping and streets and little if any geologic material is exposed at the surface. Although no fossil discoveries have yet been made in the project area, there have been many discoveries nearby. In the nearby urbanized downtown areas fossil discoveries have generally been made when construction excavations extend into the rock formations below the surface of the ground (i.e. during the excavation for foundations, basement levels or underground structures).

Bay Point Formation. The Bay Point Formation is composed predominantly of marine and non-marine, fine and medium grained pale brown sandstone. This formation comprises the bedrock along most of the redevelopment area. The Bay Point Formation (Downtown Pleistocene of the City of San Diego) is considered to have a low to moderate paleontological resource potential. Although no fossil discoveries have been made within the project boundaries, several fossil localities have been identified in this formation just a few blocks south of the redevelopment area and a few miles to the north near Horton Plaza. These discoveries most likely are the result of recent redevelopment projects. It is expected that fossil discoveries would be made in this formation in the Barrio Logan project area as redevelopment construction begins. Fossils recovered from these deposits are generally a variety of molluscan species, foraminifera and ostracods. Mollusks include snails, clams, mussels and other small shelled creatures. Foraminifera are single celled organisms with outer skeletons (tests) made of calcium carbonate. Ostracods are microscopic bivalved organisms with calcium carbonate shells.

San Diego Formation. The San Diego Formation is composed generally of yellow-brown, fine to medium grained sandstone with thin interbeds of bentonite (a type of clay), brown

mudstone and marl (a mixture of clay and shell fragments). It is not exposed at the surface in the project area, but is expected to be encountered in some deep excavations. The San Diego Formation in the downtown area is considered to have a high to very high paleontological resource potential. The formation is known to produce a rich assemblage of marine vertebrate and invertebrate fossils. Significant fossil discoveries have occurred in this formation just a few miles north of the project area (near the airport) and include the remains of baleen whales, dolphins, sea lions, aquatic birds and sharks.

Artificial Fill. The areas of artificial fill were placed by man as part of the construction of harbor facilities. It is not a naturally occurring formation, and is recent in age, therefore it is considered to have zero paleontological resource potential.

Environmental Consequences

Whenever rocks containing fossils are excavated, there is the potential for adverse impacts to the region's paleontological resources. The physical destruction of important fossil remains during construction activities results in the loss of a non-renewable resource, and is considered to be significant. If fossils are discovered onsite during grading and trenching for redevelopment within the community plan boundaries, the measures described below would mitigate potential adverse impacts to the resources to below a level of significance.

Mitigation Measures

1. Because fossil remains may be encountered in the project area during excavation, a qualified paleontologist shall be retained by the building developer (applicant) to carry out an appropriate mitigation program. (A qualified paleontologist is defined as an individual with a M.S. or Ph.D. in paleontology or geology, who is familiar with paleontological procedures and techniques).

2. When fossils are discovered, the paleontologist or paleontological monitor (an individual who has experience in the collection and salvage of fossil materials who works under the direction of a qualified paleontologist) should recover them. In most cases this fossil salvage can be completed in a short time. However, some fossil specimens may require extended salvage time. In these instances the paleontologist (or paleontological monitor) should be allowed to

temporarily direct, divert, or halt excavation work to allow recovery of fossil remains in a timely manner.

3. A paleontologist or paleontological monitor should be present onsite at all times during the original cutting of previously undisturbed sediments within formations which are considered to have a high resource sensitivity (i.e. the San Diego Formation) to inspect the excavation and spoils for the presence of fossil remains. A paleontologist or paleontological monitor should be onsite at least half-time during the original cutting of previously undisturbed sediments with moderate resource sensitivity (i.e. the Bay Point Formation). A monitor is not required for cutting operations in zero sensitivity deposits (i.e. artificial fill).

4. Fossil remains collected during the monitoring and salvage portion of the mitigation program should be cleaned, sorted, and cataloged and then with the owner's permission, deposited in a scientific institution with paleontological collections.

5. A final summary report should be prepared and submitted to the City Planning Department, Development and Environmental Planning Division (DEP), outlining the methods followed and summarizing the results of the mitigation program. This report should also include a list of the kinds of fossils recovered, and a summary of the stratigraphic context of all collecting localities.

Unavoidable Adverse Impacts

No unavoidable adverse impacts are anticipated.

3.12 RISK OF UPSET

The following analysis addresses potential health and safety considerations relative to hazardous substances.

Affected Environment

Due to the highly developed nature of the project area and the past and present use of the site being somewhat limited in nature, the potential for substantial amounts of hazardous

substances being located onsite is considered to be high. Past or present uses within the project area which may be associated with hazardous substances include the following:

- Automotive Repair/Body Shops: A large number of automotive related uses are evident in the project area. Fuel storage is currently provided by both portable, above-ground and underground fuel tanks. Additionally, associated abandoned, underground storage tanks and piping are located to a great extent in the open without benefit of enclosed structures (ERA, 1989).

- Light/Heavy Industrial Operations: Significant amounts of hazardous substances are known to be associated with the existing industrial operations. Servicing/repairing of onsite equipment appears to be accomplished onsite by mobile maintenance vehicles which travel to the site. Superficial hydrocarbon staining was noted in areas where vehicles and equipment/machinery were stored, parked or serviced. Industrial (both active and inactive) uses account for approximately 40 percent of the total study area (ERA, 1989). Industrial uses are present on the majority of the blocks in the study area. The highest concentration of industrial uses is on the blocks adjacent to Harbor Drive, and between Crosby Street and the Coronado Bay Bridge, and from National Avenue to Harbor Drive.

- Warehousing/Storage: Warehousing and storage uses account for a large percentage of the total study area. Through field reconnaissance of the study area, numerous automobile storage areas were noted. Soil staining was noted on the site surface, along with unidentifiable barrels and containment cans. In other areas of the project boundaries, numerous sites appear to serve as trash dumps for residential refuse and abandoned appliances. Numerous "maintenance sheds" were observed along National Avenue on the western portion of the project site. Minor volumes of maintenance-related fluids and numerous containers of unknown substances appear to be stored within these sheds. Other evidence of potential surface contaminations was observed.

- Other Potential Hazardous Substance Generators: It is possible that the following hazardous substances could be found onsite within the Barrio Logan area:

- Polychlorinated biphenyls (PCBs) possibly contained in onsite transformers; and
- Asbestos-containing materials (ACM) possibly found in onsite structures or associated support structure.

As part of a preliminary review of existing conditions in the project area several agencies were contacted regarding the use, storage, generation, or presence of toxic or hazardous materials. These agencies included:

- United States Environment Protection Agency, Region 9
- State of California Regional Water Quality Control Board, Region 9
- County of San Diego Department of Health Services
- City of San Diego Fire Department

Documentation provided by the Regional Water Quality Control Board, Leaking Underground Tank List, indicate that two (2) sites within the project area have submitted remediation plans for actions and schedule for clean up and removal of leaking underground storage tanks. Additionally, three (3) sites have completed remediation programs and their cases have been closed. The quantities and types of materials involved with these cases was not disclosed by the Board.

Records from the United States Environmental Protection Agency (EPA), Region 9, contain a listing of those regulated facilities which have notified the EPA that they generate, transport or treat, store or dispose of hazardous wastes. Within the project area, seven (7) firms generate large quantities (2,240 pounds or more annually) of hazardous materials; eight (8) firms generate small quantities (less than 2,240 pounds annually); four (4) firms transport hazardous materials; and one (1) firm treats, stores or disposes of hazardous materials.

Information provided by the San Diego County Department of Health Services indicates that there are approximately 52 sites in the project area. The status of these sites is shown in Table 3-36.

The quantities and types of materials involved with inventory was not included in the information provided by the County. However, approximately 50 or more sites within the

Table 3-36

STATUS OF POTENTIALLY-HAZARDOUS SITES IN PROJECT AREA

Status	Number of Sites
Waste Only	10
Inventory Only	7
Underground Storage Tanks Only	4
Waste Inventory	16
Waste/Underground Storage Tanks	1
Waste/Inventory/Underground Storage Tanks	5
Bio-medical Waste Only	3
Business Plan Check for	1
Building Permit Only	1
Soil Contamination-Tank Related	5
TOTAL	52

Source: San Diego County Department of Health Services, 1990.

project area are involved with the use, storage, generation, and/or processing of hazardous or toxic materials, which is reflective of the industrial character of the project area.

City Fire Department records involving installation and/or removal of underground storage tanks indicate that 24 sites within the project area have approved permits. These permits date from 1939 to the present. Approximately 53 underground storage tanks (45 gasoline, 7 diesel, 1 waste oil) have been installed in the project area, and 14 underground tanks (12 gasoline, 2 diesel, 1 waste oil) have been removed.

In order to fully evaluate the potential presence of toxic or hazardous materials for the proposed Mercado del Barrio development, an environmental audit was conducted in 1989 by LeRoy Crandall and Associates (geotechnical consultants).

Subsequent to the environmental audit, a soil sampling program was conducted in 1989 onsite by Vadose, Inc. The results of the sampling effort indicated subsurface soils in the area were contaminated by volatile organic compounds, namely petroleum hydrocarbon constituents (BT4E). According to the Vadose, Inc. report, sampling indicated that a number of other areas in the project area had been contaminated.

The environmental audit performed by Crandall consisted of site reconnaissance to observe any potential contamination sources, review of geologic maps, examination of current and historical aerial photographs to determine the existing and past uses of the site, review of agency records to determine if any federal or state superfund sites, landfills or underground storage tanks exist at the site, and consultation with public agencies regarding current and/or prior environmentally threatening activities related to the site. Findings of the environmental audit suggested that some environmental impairment exists associated with underground tanks located at and in the vicinity of the proposed Mercado del Barrio site. Approximately 20 underground storage tanks were identified in the project area, at least one of which had been suspected of an unauthorized spill. Additionally, contamination has been reported in association with an onsite sump.

Environmental Consequences

It is anticipated that the present and previous use of hazardous substances within the Barrio Logan Redevelopment Area would have an impact on the proposed project and/or on areas surrounding the annexation area. Both the industrial and warehousing operations are

subject to state and federal regulations which restrict the types of chemicals that can be used, but also control their transportation, use and disposal.

Development of the proposed project area would necessitate removal of all potential sources of contamination: fugitive drums, aboveground and underground storage tanks and associated piping, municipal refuse, and onsite stocks of hazardous materials (i.e., motor oil, waste oil, antifreeze and solvents). Depending on the extent of contamination caused by these sources, additional site remediation could be required prior to project implementation. For example, petroleum stained soils could require excavation and proper disposal. If the site is properly cleared and any necessary remediation is conducted, no significant long-term contamination impact is anticipated since potential onsite contamination from past and present activities appear to be localized. Based on preliminary investigation, significant hazardous substances have been identified onsite. If proper remediation operations take place at the project site, proposed project land uses could be implemented.

Mitigation Measures

As development projects are proposed, the following mitigation measures shall be required and incorporated into the Mitigation Monitoring and Reporting Program and construction plans.

1. Prior to property acquisition by the project proponent or responsible agency, a detailed environmental audit shall be undertaken by the project proponent.

2. Prior to site preparation for any development, potential sources of contamination, including but not limited to discarded drums/containers, aboveground and underground storage tanks, and onsite sumps shall be removed from the project site, or treated onsite and disposed of in accordance with all applicable local, state and federal regulations.

3. Sampling of the contents of the discarded drums/containers shall be undertaken to determine the nature of the contents, and to identify a proper disposal method. Analysis shall also be conducted to determine if soil/groundwater contamination has occurred as a result of leakage from the source. Such analysis shall also be conducted at both the aboveground and underground

storage tanks locations. Any contamination found as a result of these analyses shall be remediated in accordance with all applicable local, state and federal regulations.

4. If soil/groundwater contamination is found on the project site, the project applicant/proponent shall coordinate cleanup and remediation activities with the San Diego County Hazardous Materials Management Division (HMMD) and the California Regional Water Quality Control Board (San Diego Region) and the APCD.

Only when specific mitigation measures are developed and implemented, these project impacts must be considered significant and not mitigated.

Unavoidable Adverse Impacts

No unavoidable adverse impacts are anticipated if the proposed project is implemented. If the project is not implemented, adverse impacts would be expected with a continuation of soil contamination.

3.13 CUMULATIVE IMPACTS

The related projects that were considered, along with the proposed project for this Cumulative Impact Analysis, were provided by the City of San Diego Redevelopment Agency and are listed in Table 3-37.

Table 3-37
RELATED PROJECTS

Map No.	Name	Land Use	Size
1	Centre City Redevelopment	Mixed-Use	1,485 acres
2	San Diego T.O.F.C. Facility	Cargo Transfer Facility	(+1.5 million square feet)
3	Convention Center Expansion	Convention	(+4.5 acres)
4	Father Joe Carroll's Shelter	Residential	3.5 acres

Source: D. Kilburn, City of San Diego, 1990.

Land Use

The entire project vicinity has been and is earmarked for transformation to higher intensity land uses. In so doing, the downtown San Diego area has gained an identity consistent with expectations for a large city. Cumulative development is expected to further promote this identity. The proposed development would also significantly add to this identity and would be consistent with cumulative development in the area. Cumulatively, intensification of land uses in downtown San Diego is considered a beneficial land use impact to the identification of this area as an urban and cultural core.

Traffic/Circulation/Access

In addition to the Barrio Logan Redevelopment Plan, there are several other projects in the City of San Diego which have been proposed or recently approved for development, particularly in the Centre City area. These other projects combined with overall regional growth will result in an increase in traffic volumes on the streets which pass through the project area, regardless of the status of the Barrio Logan Redevelopment Plan.

The specific projects which were considered were extracted from the brochure titled "Centre City 1989," prepared by the Redevelopment Agency of San Diego and the Centre City Development Corporation (February 1989). They include the Roger Morris Hotel at Brunswig Square/Gaslamp Quarter (Project #86), One Harbor Drive (Project #76), Marina

Court (Project #62), Harbor Place Inn #48), Roger Morris Plaza (Project #87), the Hyatt Regency Hotel (Project #55), and the Seaport Village Phase II expansion (Project #102). These are the pending projects in the Centre City Redevelopment area south of Market Street which may generate traffic through the Barrio Logan area. Another project which has been considered in the cumulative analysis is the Santa Fe TOFC Facility.

It has been assumed that the cumulative impacts of these projects and the effects of regional growth will result in an increase in traffic volumes on Harbor Drive, National Avenue, Logan Avenue, 16th Street, Crosby Street, Sampson Street, and 26th Street.

Implementation of the proposed Barrio Logan Redevelopment Plan plus cumulative effects of regional growth and other proposed development in the area will result in an increase in traffic volumes on the project area street network. Based on the traffic generation and distribution assumptions outlined previously for the proposed Barrio Logan land uses and considering the cumulative impacts described above, future traffic volumes have been projected (Appendix C).

Street segments in the project area which would be substandard in the future are listed below:

- Logan Avenue – From 16th Street to Sampson Street
- National Avenue – From 16th Street to 26th Street
- Main Street – From Crosby Street to Evans Street
- Crosby Street – From Logan Avenue to Harbor Drive
- Sampson Street – From Logan Avenue to Harbor Drive
- Beardsley Street – Logan Avenue to Newton Avenue
  (If traffic intrusion measures are not implemented on Beardsley Street)
- Sigsbee Street – From Logan Avenue to Harbor Drive
  (If traffic intrusion measures are implemented on Beardsley Street)

These street segments must be improved to accommodate projected traffic volumes adequately.

The Barrio Logan Redevelopment Plan will generate a significant demand for parking at such time that the proposed projects are developed. As the project area currently has a deficiency of off-street parking facilities and an over-utilization of the available on-street

parking spaces, it must be ensured that the proposed developments are provided with an adequate supply of off-street parking spaces. Such facilities could be provided on-site or at an adjacent site in conjunction with each individual development project.

Aesthetic Quality

Cumulative development in the project region would alter the overall appearance of the area to one of high-density urban development. The proposed project would contribute to this appearance. The impact is subjective in that it depends on one's perception of high-density urban development, therefore, the impact is considered neither adverse nor beneficial.

Acoustic Environment

The growth in traffic in the project vicinity will cause noise to increase significantly adjacent to roadways. For discussion on cumulative noise impacts, the reader is referred to Section 3.4.

Geology Soils

Geology and seismicity impacts are site-specific, and would not contribute to cumulative impacts.

Air Quality

Cumulative development will generate short-term emissions due to construction operations and long-term impacts due to emissions from vehicles and permanent facilities. The electricity and natural gas used by permanent facilities will emit pollutants into the atmosphere. The cumulative development will contribute to the significant air quality effect in the San Diego Air Basin.

SECTION 4
PROJECT ALTERNATIVES ANALYSIS

The California Environmental Quality Act (CEQA) requires that an EIR include a discussion on alternatives "capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance" (CEQA, Section 15126(d)(3)). This EIR has analyzed potential impacts of the Barrio Logan Redevelopment Plan. The following discussion presents evaluations of alternatives as required by CEQA. Table 4-1 provides a land use summary of the project and the two alternatives.

4.1 ALTERNATIVE A: 30 PERCENT DENSITY/INTENSITY REDUCTION

Alternative A would involve land uses similar to those proposed under the project, however, land use densities and intensities would be decreased by 30 percent. As proposed, Alternative A would allow for development of 836 multi-family dwelling units (for Residential and Mixed-Use categories), 885,792 square feet of Commercial/Retail/ Office uses, 397,920 square feet of Mercado District uses, and 853,776 square feet of Light Industrial uses. Public/Quasi-Public uses would remain at the same levels and types of uses as identified under the project.

Land Use

Assuming that one-third of the mixed use and Mercado designations would be developed as residential, implementation of Alternative A would create 836 additional multi-family dwelling units, an increase of 164 percent above the existing 317 dwelling units. Many of the existing dwelling units are in severely deteriorated conditions, and many of these units would be removed to allow for the construction of units specified by Alternative A. Approximately 518 of the dwelling units would be developed on parcels designated for Residential uses, with a density of 37 units per acre, which would represent a 76 percent increase in density above existing conditions (21 units per acre). While the number of dwelling units would increase, the acreage designated for Residential uses would decrease from 15.3 acres to 13 acres (15 percent decrease).

Development of residential units at proposed densities would significantly limit the opportunities for construction of owner occupied types of residences. High density, apartment-type construction is typical of densities of 37 units per acre.

Table 4-1

LAND USE SUMMARY
PROJECT AND ALTERNATIVES

		Project			Alternative A			Alternative B			
Land Use	Acreage	DU/AC	FAR	Dwelling Units/ Building Square Footage	DU/AC	FAR	Dwelling Units/ Building Square Footage	Acreage	DU/AC	FAR	Dwelling Units/ Building Square Footage
Residential	14.0	53	NA	742 Dwelling Units	37	N/A	518 Dwelling Units	15.3	21.0		317 Dwelling Units
Mixed Use* (Commercial/ Residential)	13.0	53	1.5	568,458 sq. ft. 228 DUs	37	1.0	397, 920 sq. ft. 159 DUs	0			0
Commercial/ Retail/Office	8.0		2.0	696,960 sq. ft.		1.4	487,872 sq. ft.	5.4		0.5	120,000 sq. ft.
Mercado District*	13.0	53	1.5	568,458 sq. ft. 228 DUs	37	1.0	397, 920 sq. ft. 159 DUs	0			0
Light Industrial	28.0		1.0	1,219,680 sq. ft.		0.7	853,776 sq. ft.	41.0		0.5	892,980 sq. ft.
Public/Quasi-Public	57.0		NA	NA		NA	NA	69.4		NA	NA
Vacant	—		—	—			—	1.9		—	N A
Total	133			3,035,556 sq. ft. 1,198 DUs			2,474,208 sq. ft. 836 DUs	133			1,012,980 sq. ft. 317 DUs

DU/AC = Dwelling Units per acre
FAR = Floor Area Ratio
*Assumes that 2/3 of total acres develop as commercial uses and 1/3 develop as residential

Commercial related development under Alternative A would decrease intensities from 1.5 FAR and 2.0 FAR to 1.0 FAR and 1.4 FAR. This would allow for development of 1,283,712 square feet of commercial related uses which would represent a 970 percent increase above the approximate 120,000 square feet of existing commercial development. Development of proposed commercial related land uses, to the intensities proposed, would require the removal of most existing structures and replacement of 25 acres of residential and industrial land uses with commercially oriented land uses.

Industrial land uses currently include approximately 41 acres in the project area, and would be reduced by 46 percent to 28 acres as a result of Alternative A. Development intensities permitted for industrial uses (0.7 FAR) would allow for development of 853,776 square feet of industrial buildings. Overall, lands utilized for industrial activities will be reduced as a result of Alternative A, thereby reducing potential land use conflicts.

Barrio Logan/Harbor 101 Community Plan

As specified in the Community Plan, new housing densities range from 14 to 29 units per acre. Alternative A would allow 37 units per acre in the Residential, Mixed Use, and Mercado designations. Under the Community Plan, 570 multi-family dwelling units could be developed. Under Alternative A, 836 multi-family dwelling unit would be permitted, an increase of 55 percent.

As adopted, the Community Plan did not specify land use intensities for non-residential uses (i.e., commercial, industrial, etc.). Development intensities of these land uses is regulated by height restrictions, setback requirements and parking standards, therefore, as development of non-residential land uses under Alternative A would be subject to these same regulations, no significant impacts are anticipated.

Alternative A represents a change in proposed land uses and residential densities. The change in land uses represents a redistribution of similar land uses, modifying the current land use plan. Additionally, the increase in residential densities would also require modification of the Community Plan Land Use Plan and appropriate zoning ordinances.

Although these changes do not represent a significant shift in land use policies in the project area, Alternative A would require an amendment to the Community Plan and the Local

Coastal Plan. As such, appropriate hearings before the City of San Diego Planning Commission, City Council and California Coastal Commission would be required.

Southeast Enterprise Zone

The intent of the Southeast Enterprise Zone is to enhance economic growth by stimulating business investment through various state and local economic incentives. As proposed, Alternative A would reduce industrial uses by 46 percent, from 41 acres to 28 acres. Although the proposed reduction in industrial acreage would conflict with the purpose and intent of the Enterprise Zone, it would reduce potential land use conflicts with existing and proposed uses. Additionally, the plan would increase commercial activity, which is within the purpose of the Enterprise Zone. Finally, increased commercial and residential uses could serve to strengthen the local economy through private development. No significant adverse impacts to the Enterprise Zone program are anticipated.

Emergency Interim Zoning Ordinance

As proposed, Alternative A allows a maximum residential density of 37 units per acre in residential, mixed use, and Mercado areas. This represents a 28 percent increase above densities permitted under the Emergency Interim Zoning Ordinance. Overall, Alternative A would allow construction of 838 dwelling units which is a 6 percent increase above the 788 dwelling units permitted under the current Emergency Interim Zoning Ordinance. It is not expected that this increase in density would have a significant adverse impact on the project area.

Implementation of the project would allow for significant increases in commercial and residential development. Proposed increases in intensity and density would significantly impact existing land uses, resulting in either relocation or dislocation of businesses and residences. Mitigation measures which reduce potential impacts, associated with relocation or dislocation, to acceptable levels are identified in Section 3.7, Population/Housing.

Transportation/Circulation

Adoption of Alternative A would increase daily traffic volumes by 21,130 ADT, or a 94 percent increase. Alternative A generated traffic is shown in Appendix C.

Based on these traffic generation characteristics and the cumulative traffic impacts described in the traffic report, the future traffic volumes and the volume to capacity ratios on each street link have been estimated, as shown on Table 2 of the Traffic Study contained in Appendix C. As indicated by V/C ratios which are greater than 1.00, certain street segments would be substandard in the future if the alternative project scenarios were implemented.

Based on the City of San Diego's parking requirements, Alternative A would require 7,858 off-street parking spaces. As potential projects become more defined parking alternatives and requirements can be more precisely determined.

Aesthetic Quality

Alternative A would result in impacts to aesthetic quality similar to the proposed project. Redevelopment activity would remove deteriorated structures. It may, however, demolish historic structures and impact the pedestrian-oriented streetscape and block vistas.

Acoustic Environment

Alternative A would represent an overall decrease of 30 percent in the land use densities and intensities as specified under the proposed project. Impacts associated with construction activities would be similar to those identified under the proposed project, although the duration of these activities would be shorter due to a decrease in the amount of construction that would be required. Noise impacts would be temporary and short-term in nature and would not represent a significant impact.

As indicated in Section 3.2 (Traffic/Circulation/Parking) traffic levels would increase above existing levels and would produce noise levels adjacent to Logan Avenue, Crosby Street and Harbor Drive which exceed state and federal levels (75 dBA) for residential (single and multi-family) and commercial/office uses. The primary sources of traffic generated noise in the project area would be due to high levels of heavy truck traffic which would travel through the local area from downtown San Diego.

Geology/Soils

Impacts associated with Alternative A are expected to be similar to those identified for the proposed project. Fewer residents and businesses would be affected by potential seismic activity in the project area since development would occur at a lower intensity than under the proposed project.

Air Quality

As proposed, Alternative A would decrease land use intensities and densities by 30 percent below those identified in the Redevelopment Plan. Air pollution levels generated in association with these land uses represent significant increases in new source air pollutant emissions in the San Diego Air Basin. Combined stationary and non-stationary sources, associated with Alternative A, would produce 3,149.6 tons/year of CO, 440.7 tons/year of NO_x, and 315.4 tons/year TOG. These levels represent a 1,151 percent increase in CO, 738 percent increase in NO_x, and 640 percent increase in TOG above existing levels.

Analysis of the project did not address potential air emission sources involving activities or businesses including auto dismantling, toxic waste transfer, dry cleaners, vehicle maintenance, and metal plating. Because the exact size and number of these types of land uses are not identified, assessment of their potential impacts is not possible at this time, but would occur as specific projects are proposed.

Population/Housing

Alternative A would represent a 30 percent decrease in proposed intensities and densities of land uses identified in the Redevelopment Plan, resulting in 362 fewer multi-family dwelling units than the proposed 1,198. The expected increases in population would vary depending on the type of dwelling units developed and the types of units replaced; accurate estimation of anticipated population levels is difficult. Project related impacts on population are not expected to be significant.

Public Services/Utilities

Schools

Based upon SDUSD generation rates, adoption of Alternative A would increase the student population in the project area from 226 students to approximately 597. As proposed, Alternative A would allow for construction of approximately 519 multi-family dwelling units in addition to the 317 existing dwelling units. These additional residences would generate approximately 236 students in grades K–6; 62 students in grades 7–9; and 73 students in grades 10–12.

Presently, Lowell/Perkins Elementary School has a unused capacity of approximately 33 students. When the current expansion is completed, the school will have an unused capacity of 294 students which could accommodate the additional 236 new students in grades K–6.

Memorial Jr. High School has a current unused capacity of 25 students. Alternative A would generate 62 additional students.

As proposed, Alternative A would generate approximately 73 additional high school students which is 149 less than the existing unused capacity of 222 students for San Diego High School, Additional capacity (approximately 190 spaces) would be available by 1996 if planned improvements occur.

With the provision of State Law AB 2926, the District may collect fees for the construction or refurbishment of school facilities to serve the project area. Funds for transportation services must come from the District's operations budget, which will increase from additional students generated from the proposed development projects. City involvement in the provision of school facilities is limited under the new law. Section 65995 of the Government Code (added by AB 2926) states in part that other than the SB 201 program to meet temporary classroom facility needs and the AB 2926 school impact fees, "... no fee, charge, dedication or other form of requirement shall be levied by the legislative body of a local agency against a development project" for the construction or reconstruction of school facilities. This section removes the City from school facilities financing. The legislature does, however, prohibit the City from issuing a building permit without certification, from the appropriate school district, that fee requirements have been complied with.

Water Supply

Water service is currently being provided to the entire project area by the City of San Diego Water Utilities Department, and would provide service for development identified under Alternative A. As shown in Table 4-2, development under Alternative A would result in a water demand of approximately 519 acre feet of water per year (463,099 gallons/day). Project related water demands represent a 52 percent increase above existing levels. These demands could be served adequately by existing facilities and those facilities identified for improvement to meet current standards (Bhola, 1990).

Existing fire flows within the project area are adequate, however, in order to serve new development, fire hydrants will need to be relocated and/or new hydrants installed. Currently, fire hydrants are located at each intersection in the project area, approximately 600 feet apart, and current City standards require fire hydrants to be located 360 feet apart in residential, commercial and industrial areas. No significant impacts associated with fire hydrants are expected.

Sanitary Sewers

As proposed, Alternative A would result in the generation of approximately 443,900 gallons of sewage per day (Table 4-3). This would represent a 47 percent increase below the 302,600 gallons of sewage currently being generated. The City has indicated that project-generated sewage could be adequately served by existing facilities. As proposed, Alternative A would not have a significant impact of sewage collection systems or treatment facilities.

Public Transit

Development permitted under Alternative A would increase demands on public transportation systems. San Diego Transit and MTS have indicated that existing facilities and routes would provide adequate service to the project area upon project buildout.

Table 4-2

ALTERNATIVE A – WATER DEMANDS

Land Use	Dwelling Units/ Sq.footage	Water Demand Factor (gal./day)[1]	Daily Water Demand (gal./day)
Residential	836	150/du	125,400
Commercial	1,283,712	150/1000 sq.ft.	192,557
Industrial	853,776	170/1000 sq.ft.	145,142
	TOTAL		463,099

[1] Source: San Diego Water Utilities Department

Table 4-3

ALTERNATIVE A – WASTEWATER GENERATION

Land Use	Dwelling Units/ Net Acreage [1]	Wastewater Factor (gal./day) [2]	Daily Wastewater Generation (gal./day)
Residential	836	208/du [3]	173,888
Commercial	29.5	5,000 per net acre	147,500
Industrial	19.6	6,250 per net acre	122,500
	TOTAL		463,888

[1] Net acreage = 0.8 x gross acre
[2] Source: San Diego Water Utilities Department
[3] Assumes 2.6 persons per dwelling unit; 80 gallons/day per person

Police Protection

Assuming a household size of 3 persons per unit and a net increase of 519, the implementation of Alternative A would result in a population increase of approximately 1,560 persons. According to the City of San Diego Police Department, new development within the City will require the addition of 1.64 officers per 1,000 new residents or employees. As a result of development associated with Alternative A, approximately three new officers would be required. This would represent a three percent increase in current staff for the project area. The increase in the number of officers is not considered significant.

Fire Protection

The City Fire Department has indicated that the project would not adversely affect the ability to provide adequate fire service to the project area. Alternative A would have no effect on fire protection.

Energy

Electricity

Adoption of Alternative A would result in a electrical demand of 68.8 million KwH per year in the project area (Table 4-4). This represents a 595 percent increase in electrical demands, however, SDG&E indicates that service to the project area should not be impacted.

Natural Gas

Adoption of Alternative A would result in a yearly natural gas demand of 119.0 million bic feet (Table 4-5). Although this represents a 62 percent increase in natural gas demands, SDG&E indicates that service to the project area would not be impacted.

Cultural Resources

Impacts associated with Alternative A would be similar to those cultural resources impacts identified for the proposed project. Redevelopment activity would disrupt archaeological

Table 4-4

ALTERNATIVE A - ELECTRICITY CONSUMPTION

Land Use	Units/ Sq. Ft.	Consumption Factor [a]	Total Consumption (million Kwh per year)
Residential	836 d.u.	5,340 Kwh/month	4.46
Commercial	1,283,712 sq.ft.	46.6 Kwh/sq.ft./year	59.82
Industrial	853,776 sq.ft.	5.3 Kwh/sq.ft./year	4.52
		TOTAL	68.8

[a] Factors obtained from San Diego Gas & Electric

Table 4-5

ALTERNATIVE A - NATURAL GAS CONSUMPTION

LandUse	Units/ Sq. Ft.	Natural Gas Consumption Factor [a]	Total Consumption (therms[b] per year)
Residential	836 d.u.	348 therms/year	290,928
Commercial	1,620,432 sq.ft.	.35 therms/year/sf	449,299
Industrial	853,776 sq.ft.	1.18 therms/year/sf	1,007,456
		TOTAL	1,189,526

[a] Factors obtained from San Diego Gas & Electric
[b] 100 cubic feet = 1 therm

sites and may demolish 84 historic properties including 10 of potential National Register Status.

Paleontological Resources

Impacts associated with Alternative A would be similar to those identified for the proposed projects. Redevelopment activity may disrupt paleontological sites.

Risk of Upset

Those impacts identified as significant as part of the project impact analysis would still occur under Alternative A. Risk of upset impacts would not be less significant than the project if Alternative A were implemented.

4.2 ALTERNATIVE B: "NO PROJECT" ALTERNATIVE

Under this alternative, the proposed Redevelopment Plan would not be adopted, and the existing land uses would remain. It is unlikely that the character of existing land uses would change. Moreover, the project objectives would not be met with this alternative. Buildings currently on-site are in a state of decay. According to the City of San Diego, they do not have the financial resources, without redevelopment, to arrest and/or reverse the current pattern of dilapidation, deterioration and economic decline, or to provide incentives to enable private enterprise to revitalize the area. Moreover, the City does not have the financial capacity to resolve the public infrastructure problems in the Barrio Logan area, or continue on-going operating costs (City of San Diego, Wedin Enterprises, Inc., 1990).

Alternative B would not involve any changes in land uses from existing conditions. Existing adverse land use impacts, such as incompatible land uses and deterioration and dilapidation of buildings would continue to exist if the project was not implemented. Because the proposed Redevelopment Plan is expected to improve land use conditions in the project area, the no project alternative represents an environmentally inferior alternative with respect to land use and aesthetic quality.

The proposed increase in development intensity, identified in this EIR, results in increased traffic and air quality impacts. The no project alternative would not realize these impacts.

However, the proposed project would provide funding to improve traffic and circulation impacts in the project area. These redevelopment funds would not be available under the no project alternative.

Alternative B would not alter the existing aesthetic environment of the project area, resulting in a continuation of the existing visual character of the Barrio Logan community. Existing building conditions, which, over 75 percent require maintenance, rehabilitation, or demolition, may not be improved as a result of Alternative B. Some structural rehabilitation would be expected to occur over time as property ownership and land uses change, however, there would be no uniform design or development guidelines to ensure compatible architectural and streetscape treatments. Alternative B would not alter the existing visual quality of the area.

Alternative B would allow for development to occur within the project area under existing land use and zoning designations. Changes in development standards which would allow for increased building intensities and densities, as specified in the Redevelopment Plan, would not occur, and the resultant increases in noise levels would also not occur. Under Alternative B noise levels would continue to exceed state and federal noise standards as previously indicated.

Other issue areas discussed within this EIR (i.e., geology/soils, cultural and paleontological resources and risk of upset) would not be affected by the no project alternative. Because the implementation of the redevelopment plan is proposed to eliminate blight in the project area and revitalize the present economic situation, the no project alternative is not considered to be an environmentally superior alternative. The no project alternative would maintain the status quo and would not improve the overall land use situation in the Barrio Logan community.

SECTION 5
GROWTH INDUCING IMPACTS

Development of the Barrio Logan Redevelopment Plan would generate residential and employment growth. It would enhance the perception of the Barrio Logan community as a center for private enterprise, as well as a Latino cultural center. In this respect, the proposed project would be growth inducing.

An estimated 5,491 direct, new, long-term employment opportunities would be created if maximum buildout were to occur. The new employment may generate a modest amount of secondary impacts on the demand for consumer goods and services, and thus employment opportunities. Growth in the demand for housing can also be expected as a percentage of long-term employees are expected to in-migrate to the project area. Implementation of the project would increase the population base within the community area. As proposed, the project could generate up to 1,198 dwelling units. An estimated 317 dwelling units now exist within the project boundaries. The new housing units could generate a modest secondary impact on the demand of public utilities and services.

Enhancing the Barrio Logan area by implementing the proposed project would meet the policy objectives set forth by the City of San Diego regarding the future use of the project area. The City has designated this area as a regional Latino cultural area, and the proposed project would be consistent with this designation; therefore, the growth-inducing impacts of this project would be considered positive.

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SECTION 6
RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

In general, the entire Redevelopment Plan area is currently used for urban uses. With the approval of the proposed project, development of the Redevelopment Plan area would not change from its urbanized community. Implementation of the redevelopment plan would result in project specific and cumulative impacts, including but not limited to traffic, air and noise quality and public services. Unavoidable impacts associated with the project would occur.

Short-term benefits of the project would include the creation of construction-related employment opportunities. Long-term benefits would include an increase in the regional housing supply, employment opportunities in the commercial center and light industrial operations, and increased tax revenue from property, operations and sales taxes.

Portions of the project area is used for industrial and storage operations. Hazardous materials and substances are used or stored onsite. Subsequent development would mandate the proper removal, cleanup, use, storage and transport of hazardous materials and substances. Implementation of the proposed project would contribute to the remediation of hazardous materials and substances onsite which would have beneficial long-term impacts.

Implementation of the project would contribute to the permanent loss of historic structures. The project would increase the intensity of use of the redevelopment plan area in terms of land efficiency and greater economic return.

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SECTION 7
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF ENERGY SUPPLIES AND OTHER RESOURCES RESULTING FROM IMPLEMENTATION OF THE PROPOSED PROJECT

The environmental changes produced by the implementation of the proposed project would occur as a result of alterations to the existing environment in the form of residential, industrial, commercial and office uses, and increased land use intensity. If the project is approved, and subsequently implemented, new structures will be built, utilities installed, and street modifications will be constructed; energy demands would increase.

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SECTION 8
LIST OF PREPARERS/PERSONS AND ORGANIZATIONS CONSULTED

EIR PREPARERS

The Keith Companies
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Costa Mesa, California 92626
(714) 641-0600

Principal-in-Charge	Thomas Holm, A.I.C.P.
Project Manager	Paul Calderwood
Environmental Analysts	Dan Lowery
	Adnan Hindiyeh
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Project Coordination	Debby Rogoff

ERC Environmental and Energy Services, Co.
5510 Morehouse Drive
San Diego, California 92121

Project Director	David A. Potter, A.I.C.P.
Project Manager	Shawna Anderson
Environmental Analysts	Suzanne Aucella
	Melissa Porter

PERSONS AND ORGANIZATIONS CONSULTED

City of San Diego

Redevelopment Agency	Rudy Gonzalez
	Sara Isgur
	Kurt Chilcott
Planning Department	Ted Shaw
	Anne E. Lowry
	Ella Paris
Police Department	Capt. Sanders
Fire Department	Sam Oates, FPB
Water Utilities	Jay Bhola
	Hossien Jaybari
San Diego Unified School District	J.O. Ward
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	Damon Schamu

Engineering and Development Department	Charlene Gabriel Julio C. Fuentes D. Kilburn
County of San Diego	Carol Landsman Rich Robinson
San Diego Transit District	Richard Murphy
San Diego Gas & Electric	Michael V. Danna

SECTION 9
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APPENDIX A

INITIAL STUDY

Note: Subsequent to the preparation and distribution of the Initial Study and Notice of Preparation (NOP), it was determined that an Environmental Impact Statement (EIS) pursuant to NEPA was not required for the adoption of the Redevelopment Plan.

A separate EIS will be prepared to address federal funding to implement specific projects within the boundaries of the redevelopment plan.

CITY OF SAN DIEGO
Planning Department
Development and Environmental Planning
202 C Street
Mail Station 4-A
San Diego, California 92101
(619) 236-6460

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

THE CITY OF SAN DIEGO PLANNING DEPARTMENT will be the Lead Agency for the preparation of a Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the following project described below.

PROJECT: As proposed, the Barrio Logan Redevelopment Plan would: 1) eliminate existing blighted conditions, including substandard lots, incompatible land uses, obsolete and dilapidated buildings, and substandard and deteriorated public improvements; 2) rehabilitate buildings and preserve any significant historic properties; 3) plan and redesign for the development of areas which are stagnant or underutilized; 4) include participation of owners and tenants in the revitalization of their properties; 5) provide low and moderate income housing; and 6) provide new commercial and office opportunities.

The project area of the Barrio Logan Redevelopment Plan includes approximately 133.0± acres in the western portion of the City of San Diego and adjacent to the eastern side of San Diego Bay. The project area reflects a pattern of residential and commercial uses interspersed with a variety of industrial uses. There is evidence of inconsistent land uses and varying lot sizes which are symptomatic of blighted conditions. Residential stock is old and in a state of decline. Commercial development is minimal and service commercial uses are lacking. Residential and commercial uses are more prevalent in the areas southeast of the Coronado Bay Bridge. Industrial uses predominate the project area, however, they do not appear to be labor intensive. Industrial uses reflect the industrial character of harbor related uses and the industrial sector to the south of downtown San Diego. Many of these industrial activities involve the use and/or storage of hazardous materials.

A component of the Redevelopment Plan is the San Diego Oprcado Project, which is located in the southeastern portion of the subject area. As proposed, the San Diego Mercado would involve a 130,000-square foot mixed-use development, which includes: a market; retail shops; restaurants; professional offices; and a cultural center. Applications for financial assistance for this component of the Plan, in the form of Urban Development Action Grant (UDAG) and Federal Section 108 loan guarantee, were submitted in July 1989, and approved for funding in September 1989. Therefore, the environmental review of the Mercado del Barrio Redevelopment Plan must comply with those guidelines established by the California Environmental Quality Act (CEQA) and the National Environmental Quality Act (NEPA).

The project area is bounded on the northeast by the Interstate 5 Freeway (I-5), on the southeast by the Coronado Bay Bridge, Evans Street, and Logan Avenue to 26th Street (including both sides to the alley), on the southwest by Port District Boundary and Harbor Drive, and on the northwest by 16th and Sigsbee Streets. I-5 forms a distinct barrier between Barrio Logan and the adjacent residential community of Logan Heights. The Coronado Bay Bridge functions as a visual barrier to those areas south of the project area.

DEP NO.: 90-0133

Based on an Initial Study, it appears that the project may result in significant environmental impacts in the following areas:

- Hazards and Nuisances, including Site Safety
- Energy Consumption
- Water Resources
- Demographic Character Changes
- Displacement
- Health Care
- Social Services
- Solid Waste
- Storm Water
- Water Supply

- Police Protection
- Fire Protection
- Emergency Medical
- Open Space
- Recreation
- Cultural Resources
- Transportation/Circulation
- Air Quality
- Noise

For more information, or to provide comments on the scope and content of the Draft EIR/EIS, contact the following person at the address above:

Ted Shaw, Associate Planner, (619) 236-6152.

Written comments on the scope and content of the Draft EIR/EIS must be sent to the above address by no later than thirty (30) days after receipt of this notice.

Responsible agencies are requested to indicate their statutory responsibilities in connection with this project when responding.

Attachments: Initial Study/Environmental Assessment

Distribution:

City of San Diego
Planning Department
Development and Environmental Planning
202 C Street
Mail Station 4-A
San Diego, California 92101
(619) 236-6460

ENVIRONMENTAL ASSESSMENT (NEPA/HUD)
DEP NUMBER 90-0133

SUBJECT: Barrio Logan Redevelopment Plan EIS/EIR. COUNCIL APPROVAL of the Barrio Logan Redevelopment Plan for approximately 133± acres located south of the downtown sector of the City of San Diego. Applicant: City of San Diego Redevelopment Agency.

I. PURPOSE AND MAIN FEATURES:

It is the purpose and intent of the Barrio Logan Redevelopment Plan, in compliance with California Community Redevelopment Law, to: 1) eliminate existing blighted conditions, including substandard lots, incompatible land uses, obsolete and dilapidated buildings, and substandard and deteriorated public improvements; 2) rehabilitate buildings and preserve any significant historic properties; 3) plan and redesign for the development of areas which are stagnant or underutilized; 4) include participation of owners and tenants in the revitalization of their properties; 5) provide low and moderate income housing; and 6) provide new commercial and office opportunities. It is also the purpose of this Plan to provide an official document to guide future development of this portion of the City of San Diego, for use by the City Council, Mayor, Planning Commission, Redevelopment Agency, related government agencies, property owners, developers, residents, businesses within this community, and private organizations concerned with planning and civic improvement.

Two City initiated studies, Barrio Educational Cultural Activity (BECA) and Barrio Logan Planning and Feasibility Study, served as the genesis of the development of the Barrio Logan Redevelopment Plan. Also, a private development proposal arose directly from the recommendations from the Feasibility Study. This private proposal represents a specific financial

commitment, however, certain financial shortfalls were identified and an Urban Development Action Grant (UDAG) and HUD Section 108 loan guarantee request applications were made through the City of San Diego in July 1989. The private development proposal, augmented with UDAG and Section 108 funding, would serve as a catalyst for additional private development initiatives identified in the Barrio Logan Redevelopment Project.

The Plan would provide for new commercial and office development which will result in increased economic vitality through the generation of additional jobs and the revitalization of blighted areas. Housing development accomplished through redevelopment techniques will enhance housing programs already initiated in the Centre City to the northwest of the project area, and Dells/Imperial Redevelopment areas to the northeast of the project area. Use of tax increment funds will help create a balanced mix of new housing stock, including low and moderate income housing, and rehabilitation of existing dwelling units. The Plan may also be utilized to assist in the elimination of incompatible land uses, which are primarily located in the residential area, thus strengthening the residential character of the community.

The Plan would also serve to assist in the coordination of public infrastructure improvements involving multiple public jurisdictions for the benefit of the entire project area. These agencies include the San Diego Unified School District, the Community College District, the San Diego Unified Port District, the Metropolitan Transit Development Board, and the City of San Diego. Redevelopment would also allow for the implementation of Community Plan goals for the provision of new transit and parking facilities.

II. ENVIRONMENTAL SETTING:

The project area of the Barrio logan Redevelopment Plan includes approximately 133.0± acres in the south western portion of the City of San Diego and adjacent to the eastern side of San Diego Bay. The project area reflects a pattern of residential and commercial uses interspersed with a variety of industrial uses. There is evidence of inconsistent land uses and varying lot sizes which are symptomatic of blighted conditions. Residential stock is old and in a state of decline. Commercial development is minimal and service commercial uses are lacking. Residential and commercial uses are more prevalent in the area

southeast of the Coronado Bay Bridge. Industrial uses predominate the project area, however, they do not appear to be labor-intensive. Industrial uses reflect the nature of harbor related development within the area immediately south of downtown San Diego. Many of these industrial activities involve the use and/or storage hazardous materials.

The project area is bounded on the northeast by the Interstate 5 Freeway (I-5), on the southeast by the Coronado Bay Bridge, Evans Street, and Logan Avenue to 26th Street (including both sides to the alley), on the southwest by Port District Boundary and Harbor Drive, and on the northwest by 16th and Sigsbee Streets. I-5 forms a distinct barrier between Barrio Logan and the adjacent residential community of Logan Heights. The Coronado Bay Bridge functions as a visual barrier to those areas south of the project area. Harbor Drive defines an industrial corridor which separates the heavily industrialized harbor from Barrio Logan, and serves as an arterial which facilitates industrial land development in the project area. As one of the few direct accesses to the waterfront, Crosby Street is subject to extensive use by industrial traffic. Designated off-street parking is very limited with most parking occurring along streets or on vacant dirt lots.

Multimodal transportation services provided in the project area include the San Diego Trolley line and bus routes operating along Logan Avenue, National Avenue and Main Street. These public transportation services provide good access south of the project area and to the City Centre area of San Diego. The Atchinson Topeka and Santa Fe Railway (ATSF) and Southern Pacific Railroad (SPRR) lines are located adjacent to the Port District Boundary along the southwestern portion of the project area.

Residential uses in the project area include approximately 15.3± acres (11.5 percent) of the project area. Currently, there are approximately 217 dwelling units in the project area, both single family and multi-family residential dwellings. These residences are characterized by wood and stucco construction, with approximately 90 percent of the buildings requiring some level of maintenance or rehabilitation.

Commercial uses account for approximately 5.4± acres (4.1 percent) of the total project area. The two largest commercial parcels (0.9± acres) include a vacant gas station and a recently constructed motel, both located on Logan Avenue. Other commercial uses in

the project area include restaurants, neighborhood markets, pawn shops, convenience stores, bakery, auto parts stores, car sales, service station equipment sales, and office related uses. Commercial uses are scattered throughout the project area, with concentrations occurring along Logan Avenue and adjacent to major intersections. Approximately 60 percent of these buildings require some level of maintenance or rehabilitation.

Approximately 41.0± acres (30.8 percent) of the project area is made up of industrial types of land uses. Industrial land uses are intermixed throughout the project area and are present on over 90 percent of the blocks. The highest concentration of industrial uses are on the blocks adjacent to Harbor Drive, National Avenue, and between Crosby Street and the Coronado Bay Bridge. Approximately 70 percent of these buildings require some level of maintenance or rehabilitation.

Public/Quasi-Public land uses occupy approximately 69.4± acres (52.2 percent) of the project area. Approximately 48.9± acres are used for freeways, streets, alleys and railroads. Other uses, include: Lowell Elementary School; Chicano Park; San Diego Gas & Electric; Logan Heights Family Health Centre, Fire Station No. 7; Harbor View Education Center; and churches. Lowell Elementary School (4.1 ± acres) and Chicano Park (7.4± acres) are the largest of the publicly owned parcels in the project area. Approximately 90 percent of these buildings are in sound condition.

Vacant parcels of land account for approximately 1.9± acres (1.4 percent) of the project area. The project area appears to contain more vacant parcels than is indicated above. This is due to a number of these parcels being utilized for some form of outdoor storage.

III. ENVIRONMENTAL ASSESSMENT CHECKLIST

The Environmental Assessment Checklist is designed to identify the potential for significant environmental impacts which could be associated with the proposed project. All determinations are explained in Section IV.

IMPACT CATEGORIES	IMPACT LEVELS A	B	C	D	E	F
1. Land Development						
Conformance With Comprehensive Plans and Zoning		X				
Compatibility and Urban Impact		X				
Slope	X					
Erosion	X					
Soil Suitability Hazards and Nuisances, Including Site Safety			X		X	
Energy Consumption			X		X	
2. Noise						
Effects of Ambient Noise on Project and Contribution to Community Noise Levels			X		X	
3. Air Quality						
Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels			X		X	
4. Environmental Design and Historic Values						
Visual Quality-Coherence, Diversity, Compatible Use, and Scale		X				
5. Socioeconomic						
Demographic Character Changes			X		X	
Displacement			X		X	
Employment and Income Patterns		X				

	IMPACT LEVELS					
	A	B	C	D	E	F
6. Community Facilities and Services						
Educational Facilities		X				
Commercial Facilities		X				
Health Care	X					
Social Services	X					
Solid Waste			X		X	
Storm Water			X		X	
Water Supply			X		X	
Public Safety						
Police			X		X	
Fire			X		X	
Emergency Medical			X		X	
7. Natural Features						
Water Resources			X		X	
Surface Water	X					
Floodplains	X					
Wetlands	X					
Coastal Zone	X					
Unique Natural Features	X					
Agricultural Lands	X					
Open Space and Recreation						
Open Space			X		X	
Recreation			X		X	
Cultural Facilities		X				

	IMPACT LEVELS					
	A	B	C	D	E	F
Transportation/ Circulation			X		X	

A. No Impact Anticipated

B. Potentially Beneficial

C. Potentially Adverse - Requires Documentation Only

D. Potentially Adverse - Requires More Study

E. Needs Mitigation

F. Requires Project Modification

IV. ENVIRONMENTAL ASSESSMENT DISCUSSION

1. Land Development

Conformance With Comprehensive Plans and Zoning - (B) Potentially Beneficial

As proposed, the Redevelopment Plan will involve modification to the existing Barrio Logan/Harbor 101 Community Plan and zoning designations for the project area. Implementation of the Redevelopment Plan will also require a Local Coastal Plan Amendment due to proposed changes in land use and zoning designations. These modifications will seek to eliminate incompatible land uses and substandard lot sizes which are prevalent throughout the project area. The Barrio logan Redevelopment Plan will serve as the official comprehensive planning document to guide future development of the project area. Therefore, implementation of the Redevelopment Plan would have a potentially beneficial impact on the project area.

Compatibility and Urban Impact - (B) Potentially Beneficial

The project area reflects a pattern of residential and commercial uses interspersed with a variety of industrial uses. Additionally, many of the structures are in varying states of decline, requiring some level of maintenance and rehabilitation. The Redevelopment Plan would provide for a new commercial development, enhance housing programs, and assist in the coordination of public infrastructure improvements. As proposed, the Redevelopment Plan would have potentially beneficial impacts on the local community, relating to land use compatibility and the urban environment.

Slope - (A) No Impacts Anticipated

Topography of the project area is characterized by relatively flat terrain which gently slopes from east to west. Potential development related to the Redevelopment Plan would not be limited due to site topography, therefore, no impacts are anticipated with approval of the proposed project.

Erosion - (A) No Impacts Anticipated

Currently, approximately 98.4 percent of the project area is developed with residential, commercial and industrial types of uses. Implementation of the Redevelopment Plan would involve recycling of existing uses which would not expose soils to wind or water erosion, excepting during grading and construction activities. These activities are short-term in nature and would be controlled by City regulations requiring site watering for dust control and runoff retention measures to reduce soil erosion. No impacts relating to erosion are anticipated with approval of the proposed project.

Soil Suitability - (A) No Impact Anticipated
No known hazardous soil conditions (e.g., liquefaction, expansive soils, landslides, etc.) exist within the project area. Soil suitability within the project area is not expected to have any adverse impacts on approval of the proposed Redevelopment Plan.

Hazards Nuisances, Including Site Safety - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Within the project area are various industrial activities which involve the use and/or storage of hazardous materials. Additionally, many of these materials are stored in tanks both above the ground and subsurface. Hazardous materials may have been spilled on the ground or have leaked into soils in the project area. These hazardous materials may pose hazards or nuisances to current and future employees and residents. Development relating to implementation of the Redevelopment Plan may have potentially adverse impacts which will require additional documentation and development of appropriate mitigation measures.

Energy Consumption - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the Redevelopment Plan will allow for intensification of land uses which will result in an increase in energy consumption within the project area. This may have a potentially adverse impact on energy resources and secondary impacts on other natural resources which will require mitigation.

2. Noise

Effects of Ambient Noise on Project and Contribution to Community Noise Levels - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the Redevelopment Plan will allow for intensification of land uses within the project area, which will result in an increase in ambient noise levels during construction and operation phases of the Plan. Increased ambient noise levels may have an adverse impact on existing and future residents and employees. Construction activities are expected to be short-term in duration, however, as the project will serve as a long-term planning guide, construction activities may occur over a longer period of time until project build-out. Additionally, new employees and/or residents may be exposed to existing noise sources associated with industrial activities which may exceed acceptable levels. Mitigation measures will need to be developed to reduce impacts to acceptable levels for short-term and long-term noise generators, and for existing and future residents and employees.

3. Air Quality

Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation

Implementation of the Redevelopment Plan will allow for intensification of land uses which will result in a degradation in ambient air quality during construction and operation phases, which may have an adverse impact on existing and future residents and employees within the project area. Construction activities are expected to be short-term in duration, however, as the project is a long-term planning guide, construction activities may occur over a longer period of time until project build-out. Additionally, new employees and/or residents may be exposed to air pollutant sources associated with existing industrial uses which may result in significant adverse impacts. Increased traffic volumes resulting from additional commercial and residential development will further degrade the local and regional air quality. Mitigation measures will need to be developed to reduce impacts to acceptable levels for short-term and long-term air pollutant generators, and for existing and future residents and employees.

4. Environmental Design and Historic Values

Visual Quality/Coherence, Diversity, Compatible Use and Scale - (B) Potentially Beneficial

Existing land uses are not considered aesthetically significant and do not represent a coherent pattern of land development. The mixture of single-story, wood frame, single family residences intermixed with light and heavy industrial structures does not represent compatible use and scale. Implementation of the Redevelopment Plan would provide for development of compatible land uses, and enhancement of a community identity with architecture whose scale and character would be coherent and aesthetically compatible. Implementation of the Redevelopment Plan is considered a potentially beneficial impact to the community.

Historic, Cultural, and Archaeological Resources - (A) No Impact Anticipated

There are no known structures within the project area which are on the State Register of Historic Buildings, or any structures which are being considered for nomination. As indicated in the Environmental Impact Report prepared for the Barrio Logan/Harbor 101 Community Plan (November 1978), which includes the project area, three recorded sites occur within the Barrio Logan/Harbor 101 Community Plan project area. All of these sites area thought to have been destroyed due to urbanization, and none of these sites is located within the subject area. However, there is the remote possibility that archaeological resources may continue to exist below the foundations of existing structures in the project area. Approval of the Redevelopment Plan would not impact any historic, cultural, or archaeological resource.

5. **Socioeconomic**

Demographic Character Changes - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation

As proposed, the Redevelopment Plan would allow for new commercial development which may displace existing residents, relocating them outside of the project area. Additionally, local commercial business which are operated by, or employ, residents within the project area, may also be displaced by new commercial development. Therefore, implementation of the Redevelopment Plan may adversely impact the demographic character of the project area.

Displacement - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation

As proposed, the Redevelopment Plan would allow for new commercial development which may displace existing residents, relocating them outside of the project area. Additionally, local commercial and industrial businesses may also be displaced by new commercial development. Therefore, implementation of the Redevelopment Plan may result in a adverse impact through the displacement of local residents, commercial and industrial businesses outside the project area.

Employment and Income Patterns - (B) Potentially Beneficial

Implementation of the proposed Redevelopment Plan would allow for new development in the project area, which would increase employment opportunities during the construction (short-term) and operation (long-term) phases of the proposed project. It is expected that the proposed project will have a beneficial impact on employment opportunities and income levels due to a potential increase in the number of long-term employment opportunities, which may also be at higher income levels than existing opportunities.

6. Community Facilities and Services

Educational Facilities - (B) Potentially Beneficial
As proposed, the Plan would serve to assist in the coordination of public infrastructure improvements which would have a beneficial impact on the San Diego Unified School District (James Russell Lowell Elementary School) and the Community College District.

Commercial Facilities - (B) Potentially Beneficial
The Redevelopment Plan would provide for new commercial development within the project area. Revitalization of commercial businesses in the project area would have a beneficial impact through generation of additional jobs and increased economic strength.

Health Care - (A) No Impact Anticipated
Currently, the Logan Heights Family Health Centre provides health care services for residents and employees in the project area. This facility will not require relocation or be displaced due to implementation of the proposed Redevelopment Plan. Therefore, no impacts are anticipated with approval of the proposed project.

Social Services - (A) No Impact Anticipated
Currently, the Barrio Station Social Services Center provides services for residents and employees in the project area. This facility will not require relocation or be displaced due to implementation of the proposed Redevelopment Plan. Therefore, no impacts are anticipated with approval of the proposed project.

Solid Waste - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increase in the generation of solid waste, which may have an adverse impact on landfills which provide service for the project area.

Waste Water - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increase in the generation of waste water, which may have an adverse impact on waste water collection and treatment facilities which provide service for the project area.

Storm Water - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Approximately 98.6 percent of the project area is developed with residential, commercial, or industrial uses. Implementation of the proposed Redevelopment Plan would not significantly increase the amount of impermeable surfaces in the project area. Closure of streets for potential development projects may alter storm water runoff patterns which may expose persons or property to flooding.

However, the Plan would assist in the coordination of public infrastructure improvements, and new development may involve maintenance and/or enhancement of existing facilities, which would result in a beneficial impact to the project area.

Water Supply - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increase in water use in the project area, which may have an adverse impact on water distribution facilities in the local area and on the ability of water utilities to serve the project area.

Police - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increase in water use in the project area, which may have an adverse impact on water distribution facilities in the local area and on the ability of water utilities to serve the project area.

Fire - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increased demand for fire protection in the project area, which may have an adverse impact on local fire services.

Emergency Medical - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses within the project area. This will result in an increased demand for emergency medical protection in the project area, which may have an adverse impact on local emergency medical services.

7. Natural Features

Water Resources - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the Redevelopment Plan will allow for intensification of land uses which will result in an increase in water consumption within the project area. This may have a potentially adverse impact on water resources which will require mitigation.

Surface Water - (A) No Impact Anticipated
Presently, there are no naturally occurring surface water features within the project area. No impacts from approval of the proposed project are anticipated.

Floodplains - (A) No Impact Anticipated
As indicated on FIRM map 060295-0159C, the project area is located in Zone C, is not located in a floodplain, and is not subject to flooding. No impacts from approval of the proposed project are anticipated.

Wetlands - (A) No Impact Anticipated
Presently, there are no naturally occurring wetlands within the project area. No impacts from approval of the proposed project are anticipated.

Coastal Zone - (A) No Impact Anticipated
The project area is located within the Coastal Zone. Land uses within this area are regulated by the Barrio Logan/Harbor 101 Community Plan, which serves as the Local Coastal Plan (LCP) for this area. As proposed, the Redevelopment Plan will require a LCP Amendment as part of the approval process. The Plan will not conflict with policies and objectives of the LCP, and will not limit or preclude access to the coastal area. No impacts from approval of the proposed project are anticipated.

Unique.Natural Features - (A) No Impact Anticipated
Presently, there are no unique natural features within the project area. No impacts from approval of the proposed project are anticipated.

Agricultural Lands - (A) No Impact Anticipated
Presently, there are no agricultural lands within the project area. No impacts from approval of the proposed project are anticipated.

Open Space - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses, and increase the day-time and resident population within the project area. This will

result in an increased demand for open space areas for passive and active recreational activities, which may have an adverse impact on existing open space areas and recreational facilities.

Recreation - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification of land uses, and increase the day-time and resident population within the project area. This will result in an increased demand for areas for passive and active recreational uses, which may have an adverse impact on existing recreational activities.

Cultural Facilities - (B) Potentially Beneficial
Currently, there does not exist within the project area any cultural facilities which may be impacted by the proposed Redevelopment Plan. However, a cultural arts center is proposed as part of the Redevelopment Plan which would provide new cultural facilities in the project area. This would have a potentially beneficial impact on the local neighborhood.

Transportation - (C) Potentially Adverse (Requires Documentation Only), (E) Needs Mitigation
Implementation of the proposed Redevelopment Plan will allow for intensification and alteration of the types of land uses within the project area. This will result in increased vehicular and pedestrian traffic which will have a potentially adverse impact on the existing circulation system.

The significance of these impacts, and appropriate mitigation measures to reduce significant adverse impacts to acceptable levels, will be addressed in the subject EIR/EIS.

V. STATUTORY REVIEW CHECKLIST

AREA OF STATUTORY - REGULATION COMPLIANCE

IMPACT LEVELS

	A	B	C	D	E
1. HISTORIC PROPERTIES	X				
2. FLOODPLAIN MANAGEMENT	X				
3. WETLANDS PROTECTION	X				
4. NOISE					X
5. AIR QUALITY					X
6. MAN-MADE HAZARDS					X
Thermal/Explosive Hazards					
Airport Clear Zone	X				
7. WATER QUALITY					
Navigable Water	X				
Aquifers	X				
8. SOLID WASTE DISPOSAL	X				
9. COASTAL AREAS					
Coastal Zone Management				X	
Coastal Barrier Resources	X				
10. ENDANGERED SPECIES	X				

A. No Applicable - No Impact to Project or From Project
B. Consultation Required and Completed
C. Permit Required and Obtained
D. Project Consistent With Applicable Plans/Standards
E. Conditions/Safeguards/Mitigations Required

VI. STATUTORY REVIEW DISCUSSION

Historic Properties - Not Applicable/No Impact to Project or from Project

As indicated in the Environmental Impact Report prepared for the Barrio Logan/Harbor 101 Community Plan (November 1978), there are no known structures within the project area which are on the City, State or Federal Register of Historic Buildings, or any structures which are being considered for nomination. Approval of the Redevelopment Plan would not impact, nor be impacted by, any historic or cultural resources.

Floodplain Management - Not Applicable/No Impact to Project or From Project

As indicated on FIRM map 060295-0159C, the project area is located in Zone C, is not located in a floodplain, and is not subject to flooding. No impacts from approval of the proposed project are anticipated.

Wetlands Protection - No Applicable/No Impact to Project or from Project

Presently, there are no naturally occurring wetlands within or adjacent to the project area. No impacts from approval of the proposed project are anticipated.

Noise - Conditions/Safeguards/Mitigations Required

Implementation of the Redevelopment Plan may expose existing noise sensitive receptors (e.g., residents, students, etc.) to short-term construction impacts as development within the project area occurs. Existing and future noise sensitive receptors may be exposed to noise existing and future sources (e.g., industrial activities, vehicular traffic, etc.) which exceed Federal and State standards. Potential impacts and compliance with appropriate Federal and State regulations will be addressed in the subject EIR/EIS. Conditions and mitigations will be required to comply with appropriate Federal and State noise level requirements.

Air Quality - Conditions/Safeguards/Mitigations Required

Implementation of the Redevelopment Plan will allow for the intensification of land uses within the project area. This will result in short-term air quality impacts associated with construction activities which may exceed Federal and State standards. Increased traffic volumes resulting from implementation of the Redevelopment Plan may exceed Federal and State air quality standards. Potential impacts and compliance with appropriate Federal and State regulations will be addressed in the subject EIR/EIS. Implementation of the proposed Redevelopment Plan may eliminate some existing industrial uses, which may result in a beneficial impact on local air quality.

Thermal/Explosive Hazards - Conditions/Safeguard/Mitigations Required

Within the project area, past and present land uses involve the use and/or storage of hazardous materials. Implementation of the Redevelopment Plan may expose persons to hazardous materials and/or explosive hazards. Potential impacts and compliance with appropriate Federal and State regulations will be addressed in the subject EIR/EIS.

Airport Clear Zone - Not Applicable/No Impact to Project or from Project

As proposed, the project area does not lie within the San Diego International Airport or the North Island U.S. Naval Air Station Airport Clear Zones. No impact to the proposed project or from the proposed project is anticipated.

Navigable Water - Not Applicable/No Impact to Project or From Project

As proposed, the project areas does not lie within or adjacent to navigable waterways. No impact to the proposed project or from the proposed project is anticipated.

Aquifers - Not Applicable/No Impact to Project or from Project

Approval of the proposed Redevelopment Plan would not impact, nor be impacted by, aquifers located beneath the project area. However, as a result of implementation of the proposed Redevelopment Plan some industrial uses may be replaced with commercial use. Many of the industrial uses in the project area involve the use and/or storage of hazardous material which could potentially impact the local groundwater system through accidental spills, leaks and poor maintenance practices. Replacement of these uses with others not involving the use and/or storage of hazardous materials may have a beneficial impact on the local groundwater system.

Solid Waste Disposal - Conditions/Safeguards/Mitigations Required

Implementation of the Redevelopment Plan will allow for the intensification of land uses within the project area. This will result in increased generation of solid waste material which will impact landfill facilities. Potential impacts and compliance with appropriate Federal and State regulations will be addressed in the subject EIR/EIS.

Coastal Zone Management - Project Consistent with Applicable Plans/Standards

As proposed, the Barrio logan Redevelopment will require and amendment to the Barrio Logan/Harbor 101 Community Plan, which serves as the Local Coastal Plan (LCP). Upon approval, the Plan will be consistent with the guidelines detailed in the LCP.

Coastal Barrier Resources - Not Applicable/No Impact to Project or from Project

As proposed, the project area does not lie within or adjacent to an area with coastal barrier resources, and is therefore not subject to regulations governing these coastal resources. No impacts to the proposed project or from the proposed project is anticipated.

Endangered Species - Not Applicable/No Impact to Project or from Project

No known endangered or threatened species are known to inhabit the project area. No impact to the proposed project or from the proposed project is anticipated.

VII. SUMMARY OF FINDINGS AND CONCLUSIONS

As proposed, the Barrio logan Redevelopment Plan may result in potentially adverse impacts in the following areas:

- Hazards and Nuisances
- Energy Consumption
- Water Resources
- Domestic Character Changes
- Displacement
- Solid Waste
- Storm Water
- Water Supply
- Police
- Fire
- Emergency Medical
- Open Space

- Recreational
- Transportation/Circulation

Impacts identified in the EIR/EIS will be mitigated to acceptable levels.

Additionally, implementation of the proposed project may result in potentially beneficial impacts in the following areas:

- Conformance with Comprehensive Plans and Zoning
- Compatibility and Urban Impact
- Visual Quality - Coherence, Diversity, Compatible Use and Scale
- Employment and Income Patterns
- Educational Facilities
- Commercial Facilities

VIII. SUMMARY OF ENVIRONMENTAL CONDITIONS

The project area of the Barrio logan Redevelopment Plan includes approximately 133.0± acres in the southwestern portion of the City of San Diego and adjacent to the eastern side of San Diego Bay. The project area reflects a pattern of residential and commercial uses interspersed with a variety of industrial uses. Residential stock is old and in a state of decline. Commercial development is minimal and service commercial uses are lacking. Residential and commercial uses are more prevalent in the area southeast of the Coronado Bay Bridge. Industrial uses predominate the project area, however, they do no appear to be labor intensive. Industrial uses reflect the nature of harbor related development.

XI. PROJECT MODIFICATION AND ALTERNATIVES CONSIDERED

Recommended project modifications, if any, and project alternatives to be considered will be addressed in the subject EIR/EIS.

X. ADDITIONAL STUDIES PERFORMED

As part of preparation of the Redevelopment Plan, traffic/circulation and acoustical studies are being prepared. These studies will be incorporated where appropriate into the subject EIR/EIS.

XI. MITIGATION MEASURES NEEDED

Recommended mitigation measures to potential adverse impacts will be specified in the subject EIR/EIS.

XII. DETERMINATIONS

On the basis of this initial evaluation:

The project is in compliance with applicable laws and regulations.

____ The proposed project will not significantly affect the quality of the human or natural environment, and a FINDING OF NO SIGNIFICANT IMPACT (FONSI) and NEGATIVE DECLARATION should be prepared.

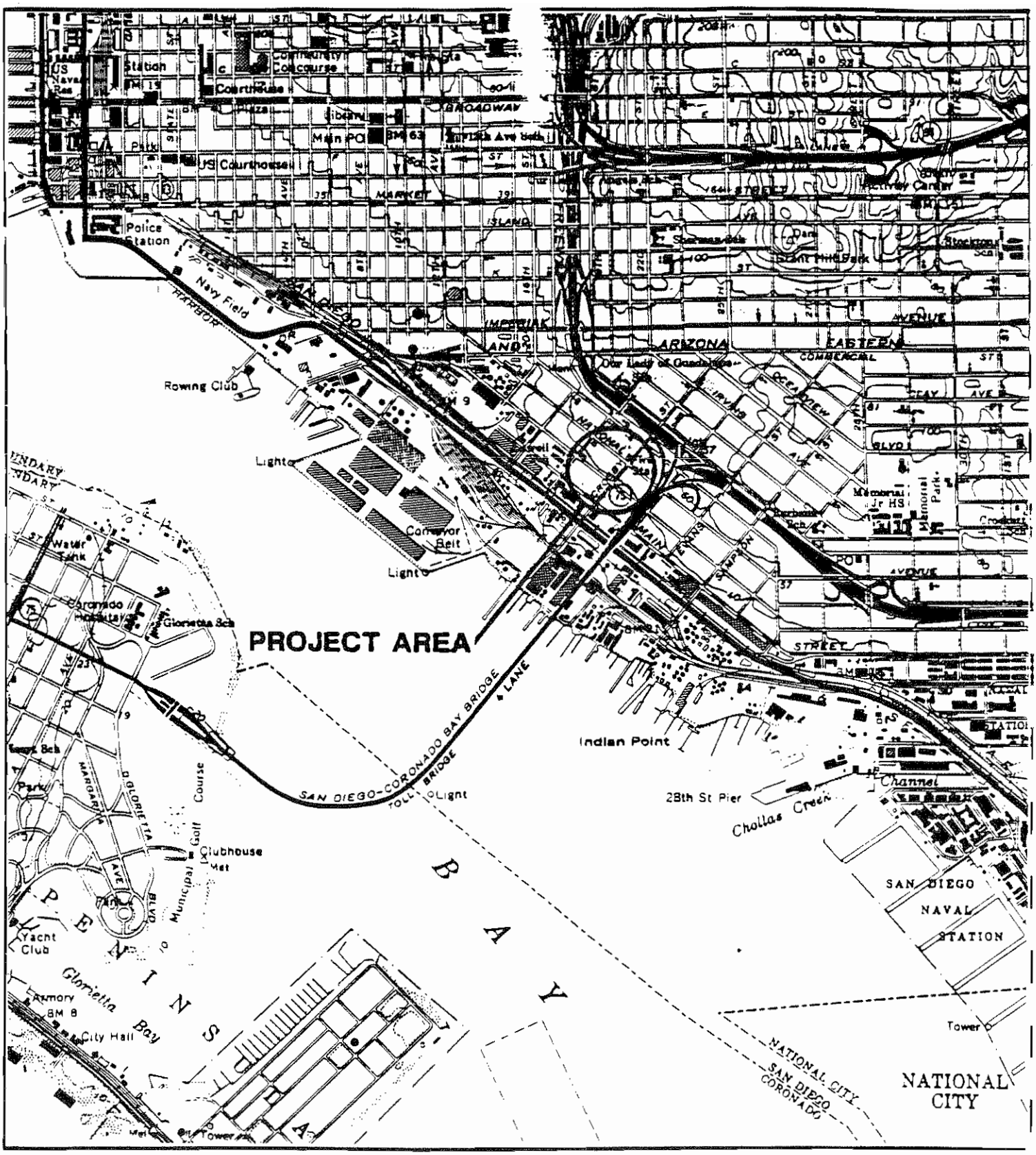
____ Although the project could significantly affect the quality of the human or natural environment, there will be a significant effect in this case because the mitigation measures described in Section VIII above have been added to the project. A FINDING OF NO SIGNIFICANT IMPACT (FONSI) and NEGATIVE DECLARATION should be prepared.

_X_ The proposed project MAY significantly affect the quality of the human or natural environmental, and an ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT should be required.

XIII. BASIC REASONS SUPPORTING DECISION

As proposed, the Barrio logan Redevelopment Plan may result in adverse environmental impacts within the project area and adjacent neighborhoods. Specific areas which may be subject to adverse impacts include:

- Hazards and Nuisances
- Energy Consumption
- Water Resources
- Domestic Character Changes
- Displacement
- Solid Waste
- Storm Water
- Water Supply
- Police
- Fire
- Emergency Medical
- Open Space
- Recreation
- Transportation/Circulation



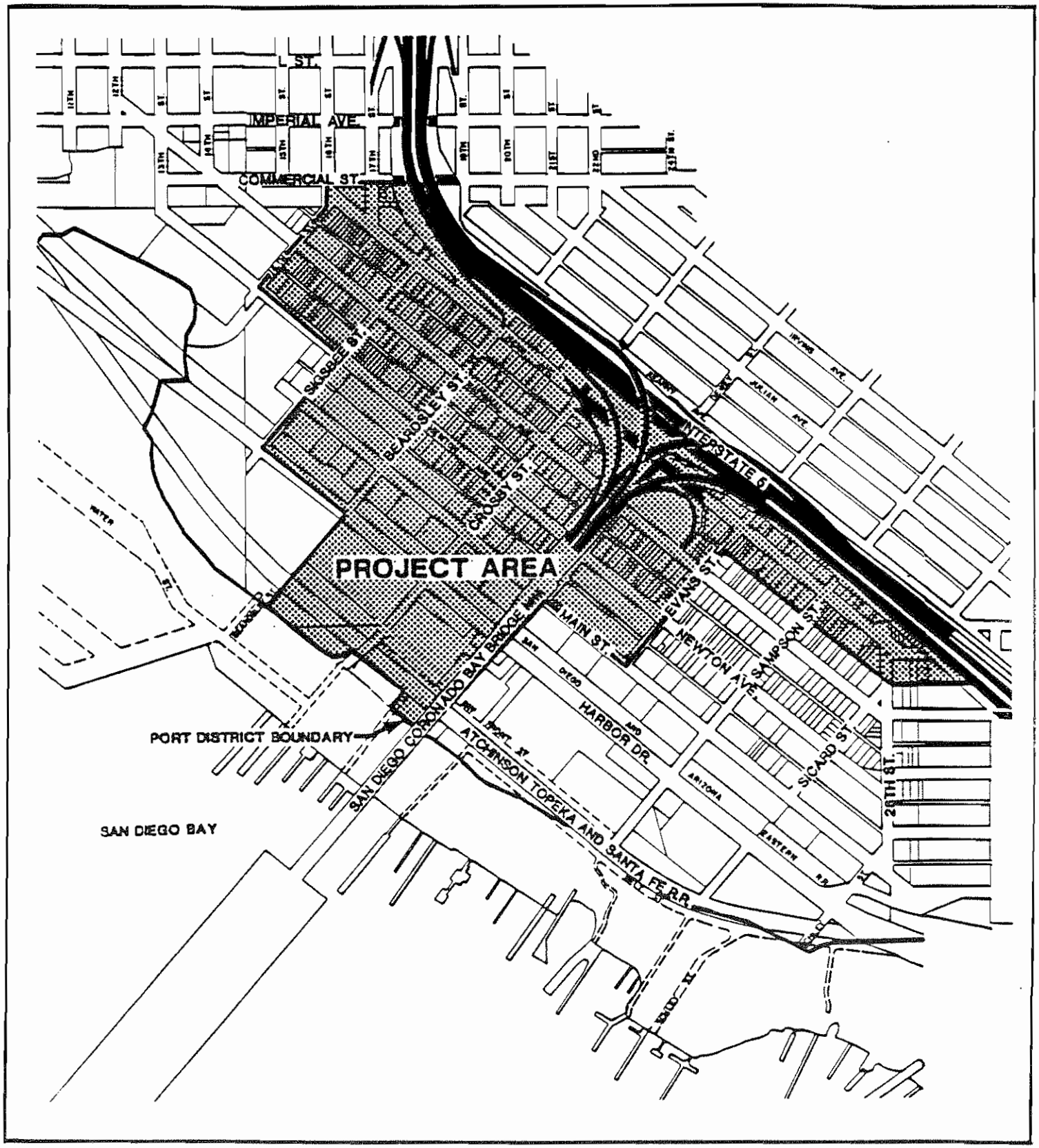
NOT TO SCALE

REGIONAL LOCATION MAP

MERCADO DEL BARRIO REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO

THE KEITH COMPANIES



NOT TO SCALE

LOCAL VICINITY/PROJECT BOUNDARIES MAP

THE KEITH COMPANIES

MERCADO DEL BARRIO
REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO

City of San Diego
Planning Department
Development and Environmental Planning
202 C Street
Mail Station 4-A
San Diego, California 92101
(619) 236-6460

INITIAL STUDY (CEQA)
DEP NUMBER 90-0133

SUBJECT: Barrio Logan Redevelopment Plan EIS/EIR. COUNCIL APPROVAL of the Barrio Logan Redevelopment Plan for approximately 133± acres located south of the downtown sector of the City of San Diego. Applicant: City of San Diego Redevelopment Agency.

I. PURPOSE AND MAIN FEATURES:

It is the purpose and intent of the Barrio Logan Redevelopment Plan, in compliance with California Community Redevelopment Law, to: 1) eliminate existing blighted conditions, including substandard lots, incompatible land uses, obsolete and dilapidated buildings, and substandard and deteriorated public improvements; 2) rehabilitate buildings and preserve any significant historic properties; 3) plan and redesign for the development of areas which are stagnant or underutilized; 4) include participation of owners and tenants in the revitalization of their properties; 5) provide low and moderate income housing; and 6) provide new commercial and office opportunities. It is also the purpose of this Plan to provide an official document to guide future development of this portion of the City of San Diego, for use by the City Council, Mayor, Planning Commission, Redevelopment Agency, related government agencies, property owners, developers, residents, businesses within this community, and private organizations concerned with planning and civic improvement.

Two City initiated studies, Barrio Educational Cultural Activity (BECA) and Barrio Logan Planning and Feasibility Study, served as the genesis of the development of the Barrio Logan Redevelopment Plan. Also, a private development proposal arose directly from the recommendations from the Feasibility Study. This private proposal represents a specific financial commitment, however, certain financial shortfalls were identified and an Urban Development Action Grant (UDAG)

and federal Section 108 loan guarantee request applications were made through the City of San Diego in July 1989. The private development proposal, augmented with UDAG and Section 108 funding, would serve as a catalyst for additional private development initiatives identified in the Barrio Logan Redevelopment Project.

The Plan would provide for new commercial and office development which will result in increased economic vitality through the generation of additional jobs and the revitalization of blighted areas. Housing development accomplished through redevelopment techniques will enhance housing programs already initiated in the Centre City to the northwest of the project area, and Dells/Imperial Redevelopment areas to the northeast of the project area. Use of tax increment funds will help create a balanced mix of new housing stock, including low and moderate income housing, and rehabilitation of existing dwelling units. The Plan may also be utilized to assist in the elimination of incompatible land uses, which are primarily located in the residential area, thus strengthening the residential character of the community.

The Plan would also serve to assist in the coordination of public infrastructure improvements involving multiple public jurisdictions for the benefit of the entire project area, including improvements on and adjacent to property owned by the San Diego Unified School District, the Community College District, the San Diego Unified Port District, the Metropolitan Transit Development Board, and the City of San Diego. Redevelopment would also allow for the implementation of Community Plan goals for the provision of new transit and parking facilities.

II. ENVIRONMENTAL SETTING:

The project area of the Barrio Logan Redevelopment Plan includes approximately 133.0± acres in the western portion of the City of San Diego and adjacent to the eastern side of San Diego Bay. The project area reflects a pattern of residential and commercial uses interspersed with a variety of industrial uses. There is evidence of inconsistent land uses and varying lot sizes which are symptomatic of blighted conditions. Residential stock is old and in a state of decline. Commercial development is minimal and service commercial uses are lacking. Residential and commercial uses are more prevalent in the area southeast of the Coronado Bay Bridge. Industrial uses

predominate the project area, however, they do not appear to be labor intensive. Industrial uses reflect in industrial character of harbor related uses and the industrial sector to the south of downtown San Diego. Many of these industrial activities involve the use and/or storage hazardous materials.

The project area is bounded on the northeast by the Interstate 5 Freeway (I-5), on the southeast by the Coronado Bay Bridge, Evans Street, and Logan Avenue to 26th Street (including both sides to the alley), on the southwest by Port District Boundary and Harbor Drive, and on the northwest by 16th and Sigsbee Streets. I-5 forms a distinct barrier between Barrio Logan and the adjacent residential community of Logan Heights. The Coronado Bay Bridge functions as a visual barrier to those areas south of the project area. Harbor Drive is an industrial corridor which physically separates the heavy industrial uses associated with harbors, but serves as an arterial which facilitates industrial land uses in the project area. As one of the few direct accesses to the waterfront, Crosby Street is subject to extensive use by industrial traffic. Designated off-street parking is very limited with most parking occurring along streets or on vacant dirt lots.

Multimodal transportation services provided in the project area include the San Diego Trolley line and bus routes operating along Loan Avenue, National Avenue and Main Street. These public transportation services provide good access south of the project area and to the City Centre area of San Diego. The Atchinson Topeka and Santa Fe (ATSF) Railroad line is located adjacent to the Port District Boundary along the southwestern portion of the project area.

Residential uses in the project area include approximately 15.3± acres (11.5 percent) of the project area. Currently, there are approximately 217 dwelling units in the project area, both single family and multi-family residential dwellings. These residences are characterized by wood and stucco construction, with approximately 90 percent of the buildings requiring some level of maintenance or rehabilitation.

Commercial uses account for approximately 5.4± acres (4.1 percent) of the total project area. The two largest commercial parcels (0.9± acres) include a vacant gas station and a recently constructed motel, both located on Logan Avenue. Other commercial uses in the project area include restaurants, neighborhood markets, pawn shops, convenience stores, bakery, auto

parts stores, car sales, service station equipment sales, and office related uses. Commercial uses are scattered throughout the project area, with concentrations occurring along Logan Avenue and adjacent to major intersections. Approximately 60 percent of these buildings require some level of maintenance or rehabilitation.

Approximately 41.0± acres (30.8 percent) of the project area is made up of industrial types of land uses. Industrial land uses are intermixed throughout the project area and are present on over 90 percent of the blocks. The highest concentration of industrial uses are on the blocks adjacent to Harbor Drive, National Avenue, and between Crosby Street and the Coronado Bay Bridge. Approximately 70 percent of these buildings require some level of maintenance or rehabilitation.

Public/Quasi-Public land uses occupy approximately 69.4± acres (52.2 percent) of the project area. Approximately 48.9± acres are used for freeways, streets, alleys and railroads. Other uses, include: Lowell Elementary School; Chicano Park; San Diego Gas & Electric; Logan Heights Family Health Centre, Fire Station No. 7; Harbor View Education Center; and churches. Lowell Elementary School (4.1 ± acres) and Chicano Park (7.4± acres) are the largest of the publicly owned parcels in the project area. Approximately 90 percent of these buildings are in sound condition.

Vacant parcels of land account for approximately 1.9± acres (1.4 percent) of the project area. The project area appears to contain more vacant parcels than is indicated above. This is due to a number of these parcels being utilized for some form of outdoor storage.

III. ENVIRONMENTAL ANALYSIS:

This Initial Study checklist is designed to identify the potential for significant environmental impacts which could be associated with a project. All answers of "yes" and "maybe" indicate that there is a potential for significant environmental impacts and these determinations are explained in Section IV.

	Yes	Maybe	No
A. Geology/Soils. Will the proposal result in:			
1. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?			X
2. Any increase in wind or water erosion of soils, either on or off the site?			X
B. Air. Will the proposal result in:			
1. Air emissions which would substantially deteriorate ambient air quality?		X	
2. The exposure of sensitive receptors to substantial pollutant concentrations?		X	
3. The creation of objectionable odors?			X
4. The creation of dust?			X
5. Any alteration of air movement in the area of the project?			X
6. A substantial alteration in moisture, or temperature, or any change in climate, either locally or regionally?			X
C. Hydrology/Water Quality. Will the proposal result in:			
1. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?			X
2. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?		X	

	Yes	Maybe	No
3. Alterations to the course or flow of flood waters?			X
4. Discharge into surface or ground waters, or in any alteration of surface or ground water quality, including, but not limited to temperature, dissolved oxygen or turbidity?			X
5. Discharge into surface or ground waters, significant amounts of pesticides, herbicides, fertilizers, gas, oil or other noxious chemicals?		X	
6. Change in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?			X
7. Exposure of people or property to water related hazards such as flooding?		X	
8. Change in the amount of surface water in any water body?			X
D. Biology. Will the proposal result in:			
1. A reduction in the number of any unique, rare, endangered, sensitive or fully protected species of plants or animals?			X
2. A substantial change in the diversity of any species of animals or plants?			X
3. Introduction of invasive species of plants into the area?			X
4. Interference with the movement of any resident or migratory fish or wildlife species?			X
5. An impact on a sensitive habitat, including, but not limited to streamside vegetation, oak woodland, vernal pools, coastal salt marsh, lagoon, wetland, or coastal sage scrub or chaparral?			X

	Yes	Maybe	No
6. Deterioration of existing fish or wildlife habitat?			X
E. Noise. Will the proposal result in:			
1. A significant increase in the existing ambient noise levels?		X	
2. Exposure of people to noise levels which exceed the City's adopted noise ordinance?		X	
3. Exposure of people to current or future transportation noise levels which exceed standards established in the Transportation Element of the General Plan?		X	
F. Light, Glare and Shading. Will the proposal result in:			
1. Substantial light or glare?			X
2. Substantial shading of other properties?			X
G. Land Use. Will the proposal result in:			
1. A land use which is inconsistent with the adopted community plan land use designation for the site?			X
2. A conflict with the goals, objectives and recommendations of the community plan in which it is located?			X
3. A conflict with adopted environmental plans for the area?			X
4. Land uses which are not compatible with aircraft accident potential as defined by a SANDAG (ALUC) Airport Land Use Plan?			X
H. Natural Resources. Will the proposal result in:			
1. The prevention of future extraction of sand and gravel resources?			X
2. The conversion of agricultural land to nonagricultural use or impairment of the agricultural productivity of agricultural land?			X

	Yes	Maybe	No
I. Recreational Resources: Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?		X	
J. Population. Will the proposal alter the planned location, distribution, density, or growth rate of the population of an area?		X	
K. Housing. Will the proposal affect existing housing in the community, or create a demand for additional housing?		X	
L. Transportation/Circulation. Will the proposal result in:			
1. Traffic generation in excess of specific/community plan allocation?		X	
2. An increase in projected traffic which is substantial in relation to the capacity of the street system?		X	
3. An increased demand for off-site parking?		X	
4. Effects on existing parking?		X	
5. Substantial impact upon existing or planned transportation systems?		X	
6. Alterations to present circulation movements including effects on existing public access to beaches, parks, or other open space areas?		X	
7. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?		X	
M. Public Services. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:			
a. Fire protection?		X	
b. Police protection?		X	
c. Schools?		X	
d. Parks or other recreational facilities?		X	

	Yes	Maybe	No
e. Maintenance of public facilities, including roads?		X	
f. Other governmental services?		X	
N. Utilities. Will the proposal result in a need for new systems, or require substantial alterations to existing utilities, including:			
a. Power?			X
b. Natural gas?			X
c. Communications systems?			X
d. Water?		X	
e. Sewer?		X	
f. Storm water drainage?		X	
g. Solid waste disposal?		X	
O. Energy. Will the proposal result in the use of excessive amounts of fuel or energy?		X	
P. Water Conservation. Will the proposal result in:			
1. Use of excessive amounts of water?		X	
2. Landscaping which is predominantly non-drought resistant vegetation?			X
Q. Neighborhood Character/Aesthetics. Will the proposal result in:			
1. The obstruction of any vista or scenic view from a public viewing area?			X
2. The creation of a negative aesthetic site or project?			X
3. Project bulk, scale, materials or style which will be incompatible with surrounding development?			X
4. Substantial alteration to the existing character of the area?		X	
5. The loss of any distinctive or landmark tree(s), or a stand of mature trees?			X

	Yes	Maybe	No
6. Substantial change in topography or ground surface relief features?			X
7. The loss, covering or modification of any unique geologic or physical features such as a natural canyon, sandstone bluff, rock outcrop or hillside with a slope in excess of 25 percent?			X
R. Cultural/Scientific Resources. Will the proposal result in:			
1. Alteration of or the destruction of a prehistoric or historic archaeological site?			X
2. Adverse physical or aesthetic effects to a prehistoric or historic building, structure, object or site?			X
3. Adverse physical or aesthetic effects to an architecturally significant building, structure, or object?			X
4. Any impact to existing religious or sacred uses within the potential impact area?			X
5. The loss of paleontological resources?			X
S. Human Health/Public Safety. Will the proposal result in:			
1. Creation of any health hazard or potential health hazard (excluding mental health)?		X	
2. Exposure of people to potential health hazards?		X	
3. A future risk of an explosion or the release of hazardous substances (including but not limited to gas, oil, pesticides, chemicals, radiation or explosives)?		X	

	Yes	Maybe	No
T. Mandatory Findings of Significance.			
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	X		
2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)			X
3. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)		X	
4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		X	

IV. ENVIRONMENTAL EVALUATION

B. Air

1. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. Short-term impacts, such as construction activities, may substantially deteriorate ambient air quality in the project area and local vicinity. Long-term impacts, such as increased traffic volumes, may substantially contribute to the deterioration of the ambient air quality.

2. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. Short-term impacts, such as construction activities, may subject current and future residents and school children to substantial pollutant concentrations. Long-term impacts, such as increased traffic volumes, may subject residents and school children to substantial pollutant concentrations.

C. Hydrology/Water Quality

2. Potentional development projects may involve the closure of streets in the Plan area, which may change the drainage and surface runoff patterns.

5. Currently, many of the sites in the project area use and/or store hazardous materials. Surface runoff from these sites may carry these pollutants, adversely impacting surface and/or ground waters.

7. Closure of streets within the project area for potential development projects, may alter storm water runoff patterns which may expose persons or property to flooding.

E. Noise

1. Short-term impacts related to the proposed project would involve construction activities which may significantly increase existing ambient noise levels. Long-term impacts related to the proposed project would involve increased traffic volumes and human activities which may significantly increase ambient noise levels.

2. Short-term impacts related to the proposed project would involve construction activities which may expose persons to noise levels which would exceed the City's adopted noise ordinance. Long-term impacts related to the proposed project would involve increased traffic volumes and human activities which may expose persons to noise levels which would exceed the City's adopted noise ordinance.

3. Long-term impacts related to the proposed project would involve increased traffic volumes which may expose persons to noise levels which would exceed standards established in the Transportation Element of the General Plan.

I. Recreation Resources

As proposed, the Barrio Logan Redevelopment Plan would allow for increased commercial and residential development in the subject area. Increases in daytime (employees and patrons of local businesses) and resident populations may create increased demands on existing recreational opportunities in the local area which exceed their capacities.

J. Population

Population densities and growth rates in the local area may be altered due to new commercial and residential development occurring as a result of approval of the proposed Redevelopment Plan.

K. Housing

Implementation of the proposed Redevelopment Plan may involve the displacement of existing residences and construction of new multi-family residential dwellings, potentially impacting housing characteristics in the local community. Additionally, new commercial development in the project area will create new employment opportunities which may create a demand for additional housing.

L. Transportation/Circulation

1. Long-term impacts related to the proposed project would involve increased traffic volumes which may exceed those allocation levels specified in the Barrio Logan/Harbor 101 Community Plan.

2. Long-term impacts related to the proposed project would involve increased traffic volumes which may exceed capacities of the local circulation system.

3. Long-term impacts related to the proposed project would involve increased traffic volumes which may impact existing parking in adjacent areas.

4. Long-term impacts related to the proposed project would involve increased traffic volumes which may impact existing parking in the project area.

5. Long-term impacts related to the proposed project would involve increased traffic volumes which may impact existing and planned transportation systems

6. Closure of streets within the project area for potential development projects during construction and operation phases of the Redevelopment Plan may alter circulation movements, impacting access to parks, schools and other open space opportunities.

7. Long-term impacts related to the proposed project would involve increased traffic volumes which may expose motor vehicles, bicyclists or pedestrians to increased traffic hazards.

M. Public Service

a. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing fire services, and create a need for the addition of personnel and/or equipment.

b. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing police services, and create a need for the addition of personnel and/or equipment.

c. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing school facilities, and create a need for the addition of personnel, equipment and/or facilities.

d. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing and recreation facilities, and create a need for the addition of personnel, equipment and/or facilities.

e. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on maintenance of public facilities, including roadways, and create a need for the addition of personnel and/or equipment.

f. Approval of the Barrio Logan Redevelopment Plan [Buld allow for the intensification of land uses in the project area. This may have an impact on other existing governmental services, and create a need for the addition of personnel and/or equipment.

N. Utilities

d. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing water resources and distribution systems, and require substantial alterations to existing water facilities.

e. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing sanitary sewage collection systems and treatment facilities, and require substantial alterations to existing sewage facilities.

f. Potential development projects may involve the closure of streets in the Plan area, which may change the drainage and surface runoff patterns, expose persons and property to flooding, and require substantial alterations to existing storm water drainage facilities.

g. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may have an impact on existing solid waste collection services and disposal facilities, and require substantial alterations to existing collection services and expansion of disposal facilities.

O. Energy

Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may result in significant increases in energy demands for the project area (e.g., natural gas, electrical power, gasoline, etc.).

P. Water Conservation

1. Approval of the Barrio Logan Redevelopment Plan would allow for the intensification of land uses in the project area. This may result in significant increases in water demands for the project area.

Q. Neighborhood Character/Aesthetics

4. Implementation of the proposed Redevelopment Plan may result in the displacement of existing residences and businesses, and replace them with commercial development and multi-family residential dwellings. Although the purpose of the Redevelopment Plan would be to improve the quality of the local community, these changes would alter the existing character of the project area.

S. Human Health/Public Safety

1. Implementation of the proposed Redevelopment Plan

would allow for new commercial and residential development, which may result in the creation of health hazards for new populations from existing industrial activities which use and/or store hazardous materials.

2. Implementation of the proposed Redevelopment Plan would allow for new commercial and residential development, which may expose new populations to health hazards from existing industrial activities which use and/or store hazardous materials.

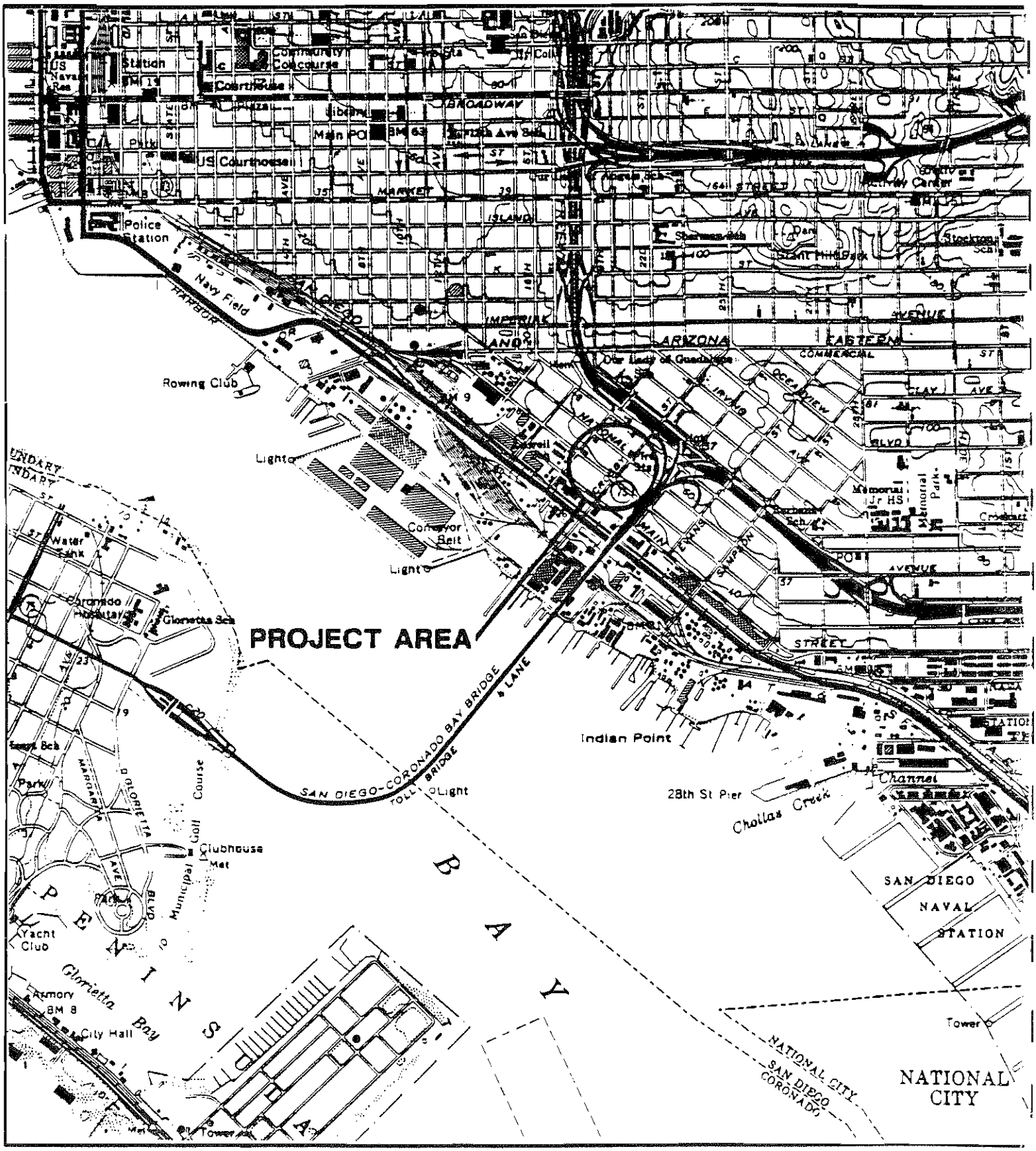
3. Implementation of the proposed Redevelopment Plan would allow for new commercial and residential development, which may expose new populations to future risk of explosions or the release of hazardous substances from existing industrial activities which use and/or store hazardous materials.

T. Mandatory Findings of Significance

1. Implementation of the proposed Redevelopment Plan does have the potential to result in the degradation of the environmental quality (e.g., air quality, hydrology, noise, recreation, transportation/circulation, public services, utilities and human health/public safety) of the project area and adjacent communities.

3. Implementation of the proposed Redevelopment Plan may have the potential to result in the creation of environmental impacts (e.g., air quality, hydrology, noise, recreation, population, housing, transportation/circulation, public services, utilities and human health/public safety) which are individually limited, but may be cumulatively considerable.

4. Implementation of the proposed Redevelopment Plan may have the potential to result in the creation of environmental impacts (e.g., air quality, hydrology, noise, recreation, population, housing, transportation/circulation, public services, utilities and human health/public safety) which may cause substantial adverse effects on human beings, either directly or indirectly.



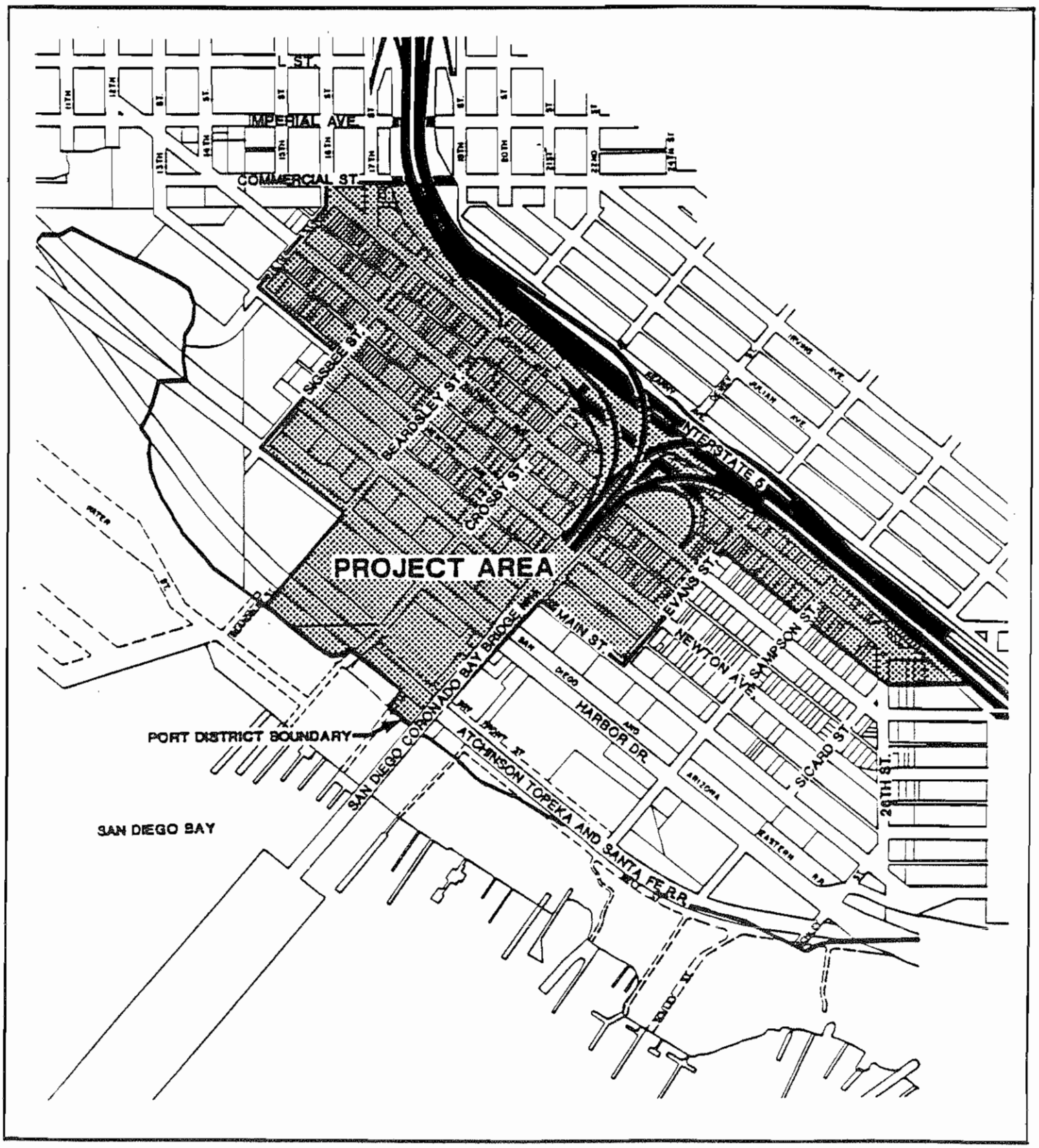
NOT TO SCALE

REGIONAL LOCATION MAP

MERCADO DEL BARRIO REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO

THE KEITH COMPANIES



NOT TO SCALE

LOCAL VICINITY/PROJECT BOUNDARIES MAP

THE KEITH COMPANIES

MERCADO DEL BARRIO
REDEVELOPMENT PLAN EIR

CITY OF SAN DIEGO

SECTION 8
LIST OF PREPARERS/PERSONS AND ORGANIZATIONS CONSULTED

EIR PREPARERS

The Keith Companies
2995 Red Hill Avenue
Costa Mesa, California 92626
(714) 641-0600

Principal-in-Charge	Thomas Holm, A.I.C.P.
Project Manager	Paul Calderwood
Environmental Analysts	Dan Lowery
	Adnan Hindiyeh
	Alicia DeRieux
	Dorene Coudayre
	Michelle Coonan
Graphics	Jacqueline Gold
Word Processing	Beth Hall
Project Coordination	Debby Rogoff

ERC Environmental and Energy Services, Co.
5510 Morehouse Drive
San Diego, California 92121

Project Director	David A. Potter, A.I.C.P.
Project Manager	Shawna Anderson
Environmental Analysts	Suzanne Aucella
	Melissa Porter

PERSONS AND ORGANIZATIONS CONSULTED

City of San Diego

Redevelopment Agency	Rudy Gonzalez
	Sara Isgur
	Kurt Chilcott
	Keith Scott
Planning Department	Ted Shaw
	Anne E. Lowry
	Ella Paris
Police Department	Capt. Sanders
Fire Department	Sam Oates, FPB
Water Utilities	Jay Bhola
	Hossien Jaybari
San Diego Unified School District	J.V. Ward
	B. Silva
San Diego Community College District	Damon Schamu

APPENDIX B

RESPONSES TO NOTICE OF PREPARATION

Ted Shaw

THE CITY OF
SAN DIEGO
CITY ADMINISTRATION BUILDING • 202 C STREET • SAN DIEGO, CA 92101 - 3864

ICE OF
ANNING
EPARTMENT
36-6460

April 20, 1990

Mr. Roger W. Milroy
Gannett Fleming, Inc.
Scottsdale Executive Park
Suite A-105
7975 North Hayden Road
Scottsdale, AZ 85258

Dear Mr. Milroy:

SUBJECT: STATUS OF ENVIRONMENTAL REVIEW FOR THE SANTA FE TOFC FACILITY, DEP NO. 90-0223

Thank you for your letter of April 10, 1990. The Environmental Analysis Section (EAS) acknowledges that the requested archaeological survey to be prepared by ERC Environmental and Energy Services Co. is underway. EAS will review the archaeological survey for adequacy and incorporate any recommended mitigating measures into the environmental document.

The traffic data contained in the briefing report of March 29, 1990 and the proposed routing of truck traffic on 28th Street and Harbor Drive appear to adequately address traffic issues. Conditions concerning TOFC traffic will be included in the environmental document and coastal development permit.

The geotechnical report prepared by C.H. Wood, contained in the briefing report, presents evidence that soil contamination exists on the site in the form of oil and gas odors. Our letter of April 3, 1990, requested that a site contamination study be prepared. The study should include an analysis of on-site soils for hazardous materials and should include an analysis of potential site contamination from hazardous materials located off-site. The study should identify any necessary remedial actions that would be incorporated as project design features.

The site contamination/hazardous materials issue must be addressed completely. The proposed mitigation for fuel spills and other hazardous materials upset by the use of clarification tanks and

containment basins are quite detailed. However, the study should cover off possible remediation of existing site conditions as well as certify that the proposed hazardous materials containment system is adequate. Please provide six copies of the report to EAS for review.

The Initial Study will be extended until such time that the requested site contamination study has been submitted and reviewed by EAS staff.

Please contact Doug McHenry at (619) 236-7785 should you have any questions.

Sincerely,

Mary Ladiana

Mary Ladiana, Senior Planner
City Planning Department

ML:kyb

cc: James Gravesande, Gannett Fleming, Inc.
Shelly Kilbourn, Project Manager
Ella Paris, City Architect's Office
Ted Shaw, Development and Environmental Planning (City Projects)
Councilmember Bob Filner's Office
Robert Green, Development and Environmental Planning
Sara N. Isgur, Property Department (Economic Development)
Paul Gagliardo, Engineering and Development Department
Jim Bryant, Metropolitan Transit Development Board

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF CONSERVATION
DIVISION OF ADMINISTRATION
DIVISION OF MINES AND GEOLOGY
DIVISION OF OIL AND GAS
DIVISION OF RECYCLING

1416 Ninth Street
SACRAMENTO, CA 95814
TDD (916) 324-2555
ATSS 454-2555

(916) 445-8733

April 20, 1990

Mr. Ted Shaw
San Diego City Planning Department
Development and Environmental Planning
202 C Street, Mail Station 4-A
San Diego, California 92101

Dear Mr. Shaw:

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for Barrio Logan Redevelopment Plan, **SCH# 90010287**

Thank you for forwarding the NOP for the above-referenced project. The Department of Conservation's Division of Mines and Geology (DMG) has special expertise in evaluating geologic and seismic hazards, and we offer the following comments for consideration.

The Initial Study indicates that the proposed project will not expose people to geologic or seismic hazards, and this conclusion is supported by the geologic hazards mapping studies prepared for San Diego by Leighton and Associates (1983). Redevelopment plans generally have the beneficial effect of replacing older, seismically unsafe structures with newer, safer ones. However, there is a possibility that surface rupture hazards exist within the Redevelopment Plan area.

DMG is in the process of mapping active traces of the Rose Canyon Fault as part of the Alquist-Priolo (A-P) Special Studies Zones Program. The Rose Canyon Fault Zone is an extensively studied, but poorly understood belt of en echelon faulting that extends northward more than 50 kilometers from within San Diego Bay to the continental shelf area off of Carlsbad. Mapped fault traces trend toward the Redevelopment area, but there is no available evidence to suggest that they traverse the area. The lack of evidence may in part be because past development has obscured it. At present, the closest trace of the Fault planned to be included in an A-P Zone is more than 1 mile northwest of the Redevelopment area, north of Market Street (Jerome Treiman, DMG, personal communication). However, it is conceivable that construction work for future projects within the Redevelopment area could uncover evidence of Holocene faulting related to the Rose Canyon Fault. There are two immediate implications resulting from our present understanding of this Fault Zone: that surface rupture

hazards may exist within the Redevelopment area; and, that design and construction according to the Uniform Building Code (UBC) seismic zone 3 may be inadequate for this area of San Diego.

Although an in-depth evaluation of potential surface rupture hazards is not warranted for the Draft EIR, we recommend that the Redevelopment Plan include a provision requiring that significant excavations for new construction projects within the Redevelopment area be inspected by an engineering geologist for evidence of Holocene faulting. Should evidence of faulting be found, more detailed studies would be necessary to evaluate the potential for surface rupture at the site. Considering the proximity of the Redevelopment area to what are now considered active traces of the Rose Canyon Fault, the City may wish to consider having new structures designed to the requirements of the UBC seismic zone 4.

If you have any questions regarding these comments, or would like additional information, please contact Zoe McCrea, Division of Mines and Geology Environmental Review Officer, at (916) 322-2562.

Sincerely,

Dennis J. O'Bryant

Dennis J. O'Bryant
Environmental Program Coordinator

DJO:TM:efh

cc: Zoe McCrea, Division of Mines and Geology
Timothy McCrink, Division of Mines and Geology

TATE OF CALIFORNIA—RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
' O. Box 6598
.OS ANGELES
90055-1598

PLANNING DEPT.
APR 18 1990
RECEIVED

EDMUND G. BROWN JR., Governor

April 10, 1990

City of San Diego, Planning Department
202 "C" Street, MS 4-A
San Diego, CA 92101
Attention: Ted Shaw

Subject: Notice of Preparation of DEIR for Barrio Logan Redevelopment Plan, SCH 90010287

Your referenced document has been reviewed by our Department staff. Recommendations, as they relate to water conservation and flood damage prevention, are attached.

The Department recommends that you consider implementing a comprehensive program to use reclaimed water for irrigation purposes in order to free fresh water supplies for beneficial uses that require high quality water.

For further information, you may wish to contact John Pariewski at 213-620-3951.

Thank you for the opportunity to review and comment on this report.

Sincerely,

Charles R. White, Chief
Planning Branch
Southern District

Attachments

cc: Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

DEPARTMENT OF WATER RESOURCES RECOMMENDATIONS

FOR WATER CONSERVATION AND WATER RECLAMATION

To reduce water demand, implement the water conservation measures described here.

Required

The following State laws require water-efficient plumbing fixtures in structures:

- Health and Safety Code Section 17921.3 requires low-flush toilets and urinals in virtually all buildings as follows:

  "After January 1, 1983, all new buildings constructed in this state shall use water closets and associated flushometer valves, if any, which are water-conservation water closets as defined by American National Standards Institute Standard A112.19.2, and urinals and associated flushometer valves, if any, that use less than an average of 1-1/2 gallons per flush. Blowout water closets and associated flushometer valves are exempt from the requirements of this section."

- Title 20, California Administrative Code Section 1604(f) (Appliance Efficiency Standards) establishes efficiency standards that give the maximum flow rate of all new showerheads, lavatory faucets, and sink faucets, as specified in the standard approved by the American National Standards Institute on November 16, 1979, and known as ANSI A112.18.1M-1979.

- Title 20, California Administrative Code Section 1606(b) (Appliance Efficiency Standards) prohibits the sale of fixtures that do not comply with regulations. No new appliance may be sold or offered for sale in California that is not certified by its manufacturer to be in compliance with the provisions of the regulations establishing applicable efficiency standards.

- Title 24 of the California Administrative Code Section 2-5307(b) (California Energy Conservation Standards for New Buildings) prohibits the installation of fixtures unless the manufacturer has certified to the CEC compliance with the flow rate standards.

- Title 24, California Administrative Code Sections 2-5352(i) and (j) address pipe insulation requirements, which can reduce water used before hot water reaches equipment or fixtures. These requirements apply to steam and steam-condensate return piping and recirculating hot water piping in attics, garages, crawl spaces, or unheated spaces other than between floors or in interior walls. Insulation of water-heating systems is also required.

- Health and Safety Code Section 4047 prohibits installation of residential water softening or conditioning appliances unless certain conditions are satisfied. Included is the requirement that, in most instances, the installation of the appliance must be accompanied by water conservation devices on fixtures using softened or conditioned water.

- Government Code Section 7800 specifies that lavatories in all public facilities constructed after January 1, 1985, be equipped with self-closing faucets that limit flow of hot water.

To be implemented where applicable

Interior:

1. Supply line pressure: Water pressure greater than 50 pounds per square inch (psi) be reduced to 50 psi or less by means of a pressure-reducing valve.

2. Drinking fountains: Drinking fountains be equipped with self-closing valves.

3. Hotel rooms: Conservation reminders be posted in rooms and restrooms.* Thermostatically controlled mixing valve be installed for bath/shower.

4. Laundry facilities: Water-conserving models of washers be used.

5. Restaurants: Water-conserving models of dishwashers be used or spray emitters that have been retrofitted for reduced flow. Drinking water be served upon request only.*

6. Ultra-low-flush toilets: 1-1/2-gallon per flush toilets be installed in all new construction.

Exterior:*

1. Landscape with low water-using plants wherever feasible.

2. Minimize use of lawn by limiting it to lawn-dependent uses, such as playing fields. When lawn is used, require warm season grasses.

3. Group plants of similar water use to reduce overirrigation of low-water-using plants.
4. Provide information to occupants regarding benefits of low-water-using landscaping and sources of additional assistance.

---

*The Department of Water Resources or local water district may aid in developing these materials or providing other information.

5. Use mulch extensively in all landscaped areas. Mulch applied on top of soil will improve the water-holding capacity of the soil by reducing evaporation and soil compaction.

6. Preserve and protect existing trees and shrubs. Established plants are often adapted to low-water-using conditions and their use saves water needed to establish replacement vegetation.

7. Install efficient irrigation systems that minimize runoff and [illegible] and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors, and automatic irrigation systems are a few methods of increasing irrigation efficiency.

8. Use pervious paving material whenever feasible to reduce surface water runoff and to aid in ground water recharge.

9. Grade slopes so that runoff of surface water is minimized.

10. Investigate the feasibility of using reclaimed waste water, stored rainwater, or grey water for irrigation.

11. Encourage cluster development, which can reduce the amount of land being converted to urban use. This will reduce the amount of impervious paving created and thereby aid in ground water recharge.

12. Preserve existing natural drainage areas and encourage the incorporation of natural drainage systems in new developments. This aids ground water recharge.

13. To aid in ground water recharge, preserve flood plains and aquifer recharge areas as open space.

FLOOD DAMAGE PREVENTION

In flood-prone areas, flood damage prevention measures required to protect a proposed development should be based on the following guidelines:

1. It is the State's policy to conserve water; any potential loss to ground water should be mitigated.

2. All building structures should be protected against a 100-year flood.

3. In those areas not covered by a Flood Insurance Rate Map or Flood Boundary and Floodway Map, issued by the Federal Emergency Management Agency, the 100-year flood elevation and boundary should be shown in the Environmental Impact Report.

4. At least one route of ingress and egress to the development should be available during a 100-year flood.

5. The slope and foundation designs for all structures should be based on detailed soils and engineering studies, especially for hillside developments.

6. Revegetation of disturbed or newly constructed slopes should be done as soon as possible (utilizing native or low-water-using plant material).

7. The potential damage to the proposed development by mudflow should be assessed and mitigated as required.

8. Grading should be limited to dry months to minimize problems associated with sediment transport during construction.

County of San Diego

NORMAN W. HICKEY
CHIEF ADMINISTRATIVE OFFICER
(619) 531-6226
(Location Code 730)

CHIEF ADMINISTRATIVE OFFICE

1600 PACIFIC HIGHWAY, SAN DIEGO, CALIFORNIA 92101-2472

April 20, 1990

Ted Shaw, Associate Planner
City of San Diego
Planning Department
Development and Environmental Planning
202 C Street
Mail Station 4-A
San Diego, CA 92101

RE: Comments Regarding Proposed Draft Environmental Impact Report/Environmental Impact Statement for the Barrio Logan Redevelopment Plan

Dear Mr. Shaw:

On behalf of the Chief Administrative Officer of the County of San Diego, I am responding to the Notice of Preparation of an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the proposed City of San Diego Barrio Logan Redevelopment Plan. The County is a responsible agency since it provides regional services to the proposed redevelopment project area. Our comments are as follows:

1. The California Environmental Quality Act provides a means for evaluating the economic and fiscal effects of projects. The EIR/EIS should include data reflecting the fiscal impact which may occur as a result of this project.

2. The project description should include a discussion of the project as a redevelopment area. This discussion should evaluate the appropriateness of the site as a redevelopment area and its conformance to criteria in the California Community Redevelopment Law which define blight (Health and Safety Code Sections 33031 and 33032).

3. The EIR/EIS should contain a description of the regional services provided by the County, including social services, public health, welfare, courts, criminal justice and other services provided both within the project area and throughout San Diego County. Unless a pass-through of the County's share of property tax

growth is part of the project proposal, loss of annual tax increment would undermine the County's ability to provide regional services.

4. The EIR/EIS should also include the environmental impacts that would result from the loss of the County's share of property tax growth. We are aware that certain agencies have indicated this type of information will be brought to light if a Fiscal Review Committee is established. However, we feel this information should be presented as part of the EIR.

If you have any questions on these comments, please contact me, or Carol Landsman of my staff, at 531-5200.

Sincerely,

RICH ROBINSON, Director
Office of Special Projects

RR:me

cc: Bob Griego, Deputy Chief Administrative Officer
Lari Sheehan, Deputy Chief Administrative Officer
Rod Calvao, Auditor and Controller

CITY OF SAN DIEGO

MEMORANDUM

DATE: April 11, 1990

TO: Associate Planner Shaw, Development Planning Division, Planning

FROM: Associate Civil Engineer Bhola, Engineering Division, Water Utilities

SUBJECT: **Barrio Logan Redevelopment Plan**

We have reviewed the Notice of Preparation of the draft Environmental Impact Report for the Barrio Logan Redevelopment Plan. Our comments are that the area water and sewer mains and facilities will be upgraded in case there is such a need established based on projected flows. This is Water Utilities Department policy and funds are available to participate in such upgrades of existing mains and facilities.

Jag Bhola

JAG BHOLA

JB:bs

cc: T. Varga

The San Diego Community College District

3375 Camino del Rio South, San Diego, CA 92108 (619) 584-6500

Plant and Equipment Services
584-6546

March 29, 1990

RECEIVED
APR 0 5 1990
ECO. DEV./PROP. DEPT

City of San Diego
Planning Department
Development and Environmental Planning
202 "C" Street, MS:4-A
San Diego, CA 92101

To Whom It May Concern

SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT INITIAL STUDY (CEQA)
DEP NUMBER 90-0133

The San Diego Community College District (District) is in receipt of the subject. The District received this document on or near March 21, 1990. However, as there was no cover letter attached, we do not know:

1. Who the responsible persons at the City are?
2. What the date of the Notice is?
3. When the City must have a response?
4. Whether this is a draft or a final Notice?

In addition, page 3 is missing from the document.

Further, the District would ask, with reference to (I) Purpose., that the City's Plan make explicit how the goals of the Barrio Educational Cultural Activities Center (BECA), are to be realized. The Initial Study states that BECA is one of the factors that served as the genesis of the Plan (pg 1).

With reference to (III) Environmental Analysis, we ask that specific mention of impacts on the District be made (pg 4) and again specific mention of impacts and the mitigation of these impacts, with respect to the District be made (pg 15).

SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT INITIAL STUDY (CEQA) DEP NUMBER 90-0133

We expect you to keep us informed on the development of this EIR/EIS as the District will be affected by the Plan and by the adoption of the project.

Damon Schamu

Damon Schamu,
Director, Facilities Services

c: Chancellor Wenrich
Matthews
Adams
Shafi
Isgur

DS:jl

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

16 DEC 1988

RECEIVED
DEC 20 1988
ENVIRONMENTAL QUALITY DIVISION

Captain W. K. Goodermote, CEC, USN
Officer in Charge, Broadway Complex Project
Western Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Dear Captain Goodermote:

The U.S. Environmental Protection Agency (EPA) has reviewed the Notice of Intent (NOI) and request for scoping information for the PROPOSED REDEVELOPMENT OF NAVY LAND KNOWN AS THE BROADWAY COMPLEX, City and County of San Diego, California.

Our scoping comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's Regulations for Implementing NEPA (40 CFR 1500-1508), and Section 309 of the Clean Air Act. Our comments are enclosed.

We appreciate the opportunity to comment on this scoping proposal. Please send us four copies of the Draft Environmental Impact Statement (DEIS) at the same time it is officially filed with the EPA's Washington, D.C. office. If you have any questions, please call Mr. David R. Tomsovic of my staff at 415-974-8177 (FTS 454-8177).

Sincerely,

Jacqueline Wyland, Chief
Office of Federal Activities

Enclosure: 6 pages

cc: Planning Department, City of San Diego
California Department of Health Services, Long Beach
Regional Water Quality Control Board, San Diego
San Diego Air Pollution Control District
California Air Resources Board, Sacramento
San Diego Association of Governments

U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON NOTICE OF INTENT (NOI) TO PREPARE A DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR THE PROPOSED REDEVELOPMENT OF NAVY LAND KNOWN AS THE BROADWAY COMPLEX, CITY AND COUNTY OF SAN DIEGO, CALIFORNIA. ENCLOSURE 1.

Water Quality Comments - Clean Water Act

For each alternative, the DEIS should do the following.

1. Discuss how the proposed project will comply with State and local water quality management plans and State-adopted, EPA-approved water quality standards.

Discuss whether the proposed project will impact beneficial uses that depend on the protection of water quality. Beneficial uses for San Diego Bay and the Pacific Ocean that are dependent on water quality are listed below (including a description of each beneficial use as adopted by the State Water Resources Control Board).

San Diego Bay

* *Shellfish Harvesting* (SHELL) - The collection of shellfish for commercial or sports purposes.
* *Fish Migration* (MIGR) - Provides a migration route and temporary aquatic environment for anadromous and other fish species.
* *Marine Habitat* (MAR) - Provides for preservation of marine ecosystems including propagation and sustenance of fish, marine mammals, shellfish, waterfowl and vegetation such as kelp.
* *Preservation of Rare and Endangered Species* (RARE) - Provides aquatic habitat necessary, at least in part, for survival of certain species established as rare or endangered.
* *Saline Water Habitat* (SAL) - Provides an inland saline water habitat for aquatic and wildlife resources.
* *Ocean Commercial and Sport Fishing* (COMM) - Commercial collection of fish and shellfish, and sport fishing in ocean, bays, estuaries and similar non-freshwater areas.
* *Water Contact Recreation* (REC-1) - All recreational uses involving actual body contact with water (swimming, wading, skin-diving, surfing, sport fishing) where ingestion of water is reasonably possible.

Ocean Waters (Which Can Be Impacted by Discharges from the City of San Diego's Point Loma Wastewater Treatment Plant)

In addition to the beneficial uses noted above (with the exception of SAL), the Pacific Ocean also has the beneficial use of:

* *Preservation of Areas of Special Biological Significance* (ASBS) - Areas of special biological significance are those areas designated by the State Water Resources Control Board as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable.

2. Discuss the sewage and wastewater treatment requirements of the proposed project and the impacts on the City of San Diego's Point Loma Wastewater Treatment Plant, which is presently operating at or near its design capacity. We request that the DEIS:

Discuss the present capacity of the City of San Diego's sewage treatment and conveyance system and the impacts of increased flows on the existing system, especially on the system's ability to meet National Pollutant Discharge Elimination System (NPDES) or State-issued permit conditions. Discuss any compliance problems that the City of San Diego experiences with the current sewage treatment and conveyance system (e.g., enforcement actions, consent decrees, etc.) and the potential impact of the proposed project on compliance problems.

3. Coordinate water quality planning, compliance with water quality standards, and mitigation measures with the Regional Water Quality Control Board (RWQCB) in San Diego, to help ensure that water quality and beneficial uses are protected.

4. Work with the RWQCB to ensure that project activities are consistent with California's new non-point source water management program. In 1987, the United States Congress amended the Clean Water Act by adding Section 319. Section 319 requires States to assess non-point source water pollution problems, develop non-point source pollution management programs, and implement controls to improve water quality.

Contact the RWQCB to determine what control measures should be implemented for project activities (construction, operations) that could result in non-point source water pollution problems. Examples of non-point pollution sources include: erosion during the construction phase; accidental spill or discharge of oils or hazardous materials during the construction phase; and runoff of hydrocarbons and heavy metals from parking lots and other project features following project buildout. Appropriate non-point source pollution control measures should be implemented for project activities during the construction and operation phases.

5. Identify appropriate mitigation measures to protect water quality both during and after project construction. These could include protective measures in the design of roads and parking lots to control the runoff of pollutants (e.g., hydrocarbons, heavy metals, sediments). A construction-phase spill prevention plan for oils and hazardous materials would also be a useful mitigation measure.

We ask that the U.S. Navy work with the RWQCB to determine which mitigation measures (e.g., Best Management Practices) they would recommend to protect water quality during both the construction phase and the operations phases.

16 DEC 1990

Hazardous Substance Comments - Comprehensive Environmental Response, Compensation and Liability Act

Preface

The Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (CERCLA/SARA), established requirements and procedures for dealing with the release or potential release of hazardous substances into the environment. These procedures and requirements are applicable to facilities owned or operated by the Federal Government (CERCLA Section 120). Implementing regulations are codified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 CFR Part 300].

Among the provisions of CERCLA/SARA that are applicable to Federal facilities are Section 103(c), requiring that the EPA be notified of "...any known, suspected, or likely releases of such (hazardous) substances from such facility;" Section 120(c), requiring inclusion on the Federal Agency Hazardous Waste Compliance Docket of any Federal facility reporting hazardous waste activities or releases from such sites; and Section 120(d), requiring Federal facilities on the Docket to submit a Preliminary Assessment. If this submittal indicates the need for further action at the site, the Federal facility must comply with CERCLA/SARA and the National Contingency Plan (NCP) in selecting and implementing a final response action at the site.

If the Department of Defense or its predecessor, the War Department, disposed of any hazardous substances on the Broadway Complex, or discovers evidence of such disposal in the future, it must notify the EPA and comply with all applicable requirements of CERCLA/SARA and the NCP. For a definition of hazardous substances, please refer to CERCLA Section 101(14).

Site Specific

We recommend that the DEIS discuss whether any hazardous substances or hazardous materials are known or suspected to be on the proposed project site. Discuss whether they could pose a threat to public health, safety or the environment as a result of contamination of air, soils, or surface or ground water. Materials of concern include asbestos, polychlorinated biphenyls (PCBs), petroleums or volatile liquids in underground storage tanks, paints, solvents, heavy metals and pesticides.

We ask that the DEIS reference any studies (as they pertain to the Broadway Complex) which the Department of Defense has performed or contracted under the Defense Environmental Restoration Program (DERP) or the Installation Restoration Program (IRP) and the pertinent findings of such studies. For example:

* Are there any underground storage tanks (USTs) on site? What was stored in the USTs (petroleums, waste oils, volatile organic liquids)? Have any USTs leaked? If so, what is the extent of soil/ground water contamination? What studies have be done to characterize UST leaks? (If the leaks involved only petroleum, it would not be regulated as a CERCLA hazardous substance; however, volatile organic liquids would be a CERCLA hazardous substance).
* Do buildings on site contain asbestos? Was surplus or waste asbestos disposed on site?
* Are there transformers or electrical equipment on site that contain PCBs? Were transformers or electrical equipment containing PCBs drained on site?
* Were waste paints or solvents stored or disposed on site? If so, they could be a source of lead and heavy metals contamination.
* Were pesticides ever used, mixed or stored on site? If so, pesticide mixing and cleaning operations could be a source of CERCLA hazardous substances contamination.
* Are there any septic tanks on site? Were hazardous substances disposed of in septic tanks?

Please note that these materials would not be regulated as CERCLA "hazardous substances" unless they are released into the environment or otherwise threaten public health or natural resources (air, soils, surface or ground water).

PCBs would not become a CERCLA issue unless they leak or are released into the environment (a leak or release is also regulated under the Toxic Substances Control Act). Asbestos would become a CERCLA concern only if buildings containing asbestos materials were improperly demolished, resulting in the release of asbestos into the environment (otherwise, the removal of asbestos from buildings would be regulated under the Clean Air Act). If the USTs contained only petroleum, they would be excluded from CERCLA requirements under Section 101(14). However, leaks or contamination from USTs would be a major CERCLA concern if hazardous substances such as volatile organic liquids were stored in the USTs. The potential contamination of ground water by CERCLA hazardous subs[illegible]

If any USTs are found to contain hazardous substances or to have released hazardous substances into the environment, the tanks and any environmental contamination caused by their leaking (soils, ground water, surface water) must be thoroughly investigated and cleaned up or otherwise remediated by the U.S. Navy in accordance with all CERCLA rules, regulations, criteria and guidance.

Among the statutory requirements of CERCLA/SARA and the NCP, the U.S. Navy must perform a remedial investigation that thoroughly characterizes the extent of any contamination, and a feasibility study evaluating alternative methods of remediation. These documents must be released for public comment prior to selecting and implementing remedial actions.

We ask that the U.S. Navy contact the RWQCB and the California Department of Health Services (Toxic Substances Control Division, Long Beach office) to determine whether they have any statutory or regulatory concerns on the proposed project, as its relates to hazardous substances, hazardous waste and toxic materials.

Air Quality Comments - Clean Air Act

The proposed project has the potential to adversely impact air quality because it will generate additional traffic. San Diego is a nonattainment area for both ozone and carbon monoxide, and has already been ordered by the EPA to begin preparing a new Air Quality Plan to meet air quality standards. Accordingly, the DEIS should include a thorough air quality analysis. In particular, the DEIS should fully analyze: 1) existing air quality conditions in the area; 2) the impacts of each alternative on air quality; 3) conformity of each of the alternatives with the San Diego State Implementation Plan (SIP); and 4) air quality mitigation to offset any increase in emissions from the project.

More specifically, for each alternative the DEIS should do the following.

1. Discuss existing air quality conditions in the area in terms of National Ambient Air Quality Standards (NAAQS) and State of California air quality standards for ozone (O3) and carbon monoxide (CO). Ozone and carbon monoxide damage the human respiratory, nervous and circulatory systems. Describe the violations of Federal and State air quality standards, associated human health damage, and the sources of pollution.

2. Describe the impacts to air quality based on increases in vehicle trips and mileage associated with the full buildout of the project. Emission projections should be made for hydrocarbons (HC), oxides of nitrogen (NOx), and CO. Discuss both direct and indirect effects. Discuss how these emissions will impact violations of Federal and State air quality standards and thus human health.

3. Ensure that the proposed project fully conforms with the State Implementation Plan (SIP). The Clean Air Act (CAA) prohibits proceeding with any Federal action that does not conform to the SIP (see 42 U.S.C. Section 7506). In order to ensure SIP conformity as required by the CAA, the DEIS must provide alternatives and mitigation that will completely avoid any increase in vehicle emissions.

4. Discuss the type of mitigation measures (and their effectiveness) that will be used to protect air quality from project operations. We ask that the U.S. Navy work with the San Diego Air Pollution Control District to determine which mitigation measures they would recommend to protect air quality during the construction and operations phases of the proposed project.

5. Coordinate air quality planning, compliance with air quality standards, conformity with the SIP, and mitigation measures with the San Diego Air Pollution Control District and the San Diego Association of Governments, to help ensure that regional air quality is protected.

SAN DIEGO CITY SCHOOLS

EDUCATION CENTER • 4100 Normal St., San Diego, CA 92103-2682 •

BUSINESS SERVICES DIVISION

Ted

FYI

Saea

April 24, 1990

RECEIVED

APR 2 6 1990

ECO. DEV./PROP. DEP

Mr. Walter Hauschildt
Development Coordinator
The City of San Diego
1200 Third Avenue, Suite 1620
M.S. 51E
San Diego, CA 92101-4199

Dear Walter:

The San Diego Unified School District is in receipt of the City of San Diego Planning Department's "Notice of Preparation of a Draft Environmental Impact Report/Environmental Impact Statement" for the Barrio Logan Redevelopment Plan (Mercado del Barrio). Thank you for having it delivered to my office.

I have reviewed the CEQA Initial Study (DEP #90-0133) and the Environmental Assessment documents for the proposed redevelopment project and do not object to the findings and conclusions reached in those two documents. This letter is intended to serve as the District's review and response to your Notice of Preparation for the Mercado del Barrio project.

Should you have questions, feel free to call me at 293-8612.

Sincerely,

J.V. Ward

J.V. Ward
Business Services Administrator

JVW:feb
c: Zoller
Knott
Hurley
Dyer

L L00424

STATE OF CALIFORNIA-BUSINESS, TRANSPORTATION AND HOUSING AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92186-5406

May 4, 1990

11-SD-005/075
(Barrio Logan)

Ted Shaw
City of San Diego
DEPD
MS 4A

Dear Mr. Shaw:

Notice of Preparation of an EIR/EIS for the Barrio Logan Redevelopment Plan, SCH 90010287

Caltrans District 11 will appreciate the opportunity to review this EIR. Our review will focus on the following:

1. Transportation/Circulation
2. Noise
3. Air Quality
4. Cumulative Impacts
5. Mitigation Measures

Our contact person for traffic information is Richard Coward, District Project Services Branch Manager, (619) 237-7377.

Sincerely,

JESUS GARCIA
District Director

By M. Owen

JAMES T. CHESHIRE, Chief
for Environmental Planning Branch

MO:ec

APPENDIX C

TRAFFIC STUDY

TRAFFIC STUDY

FOR

BARRIO LOGAN REDEVELOPMENT PLAN

Prepared for:

ERCE
5510 Morehouse Drive
San Diego, CA 92121
619/458-9044

Prepared by:

Basmaciyan-Darnell, Inc.
964 Fifth Avenue
Suite 200
San Diego, CA 92101
619/544-1488

April 3, 1991

910117/0117Brro.Rpt/91-3/3

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SECTION I

INTRODUCTION

GENERAL PROJECT DESCRIPTION

This study has been prepared to analyze the traffic impacts associated with the implementation of the Barrio Logan Redevelopment Plan. The purpose of the Barrio Logan Redevelopment Plan is to rehabilitate the Barrio Logan area through rezoning and other improvements. The plan would provide for moderate and low income housing and would add significant commercial and office land uses to the Barrio area.

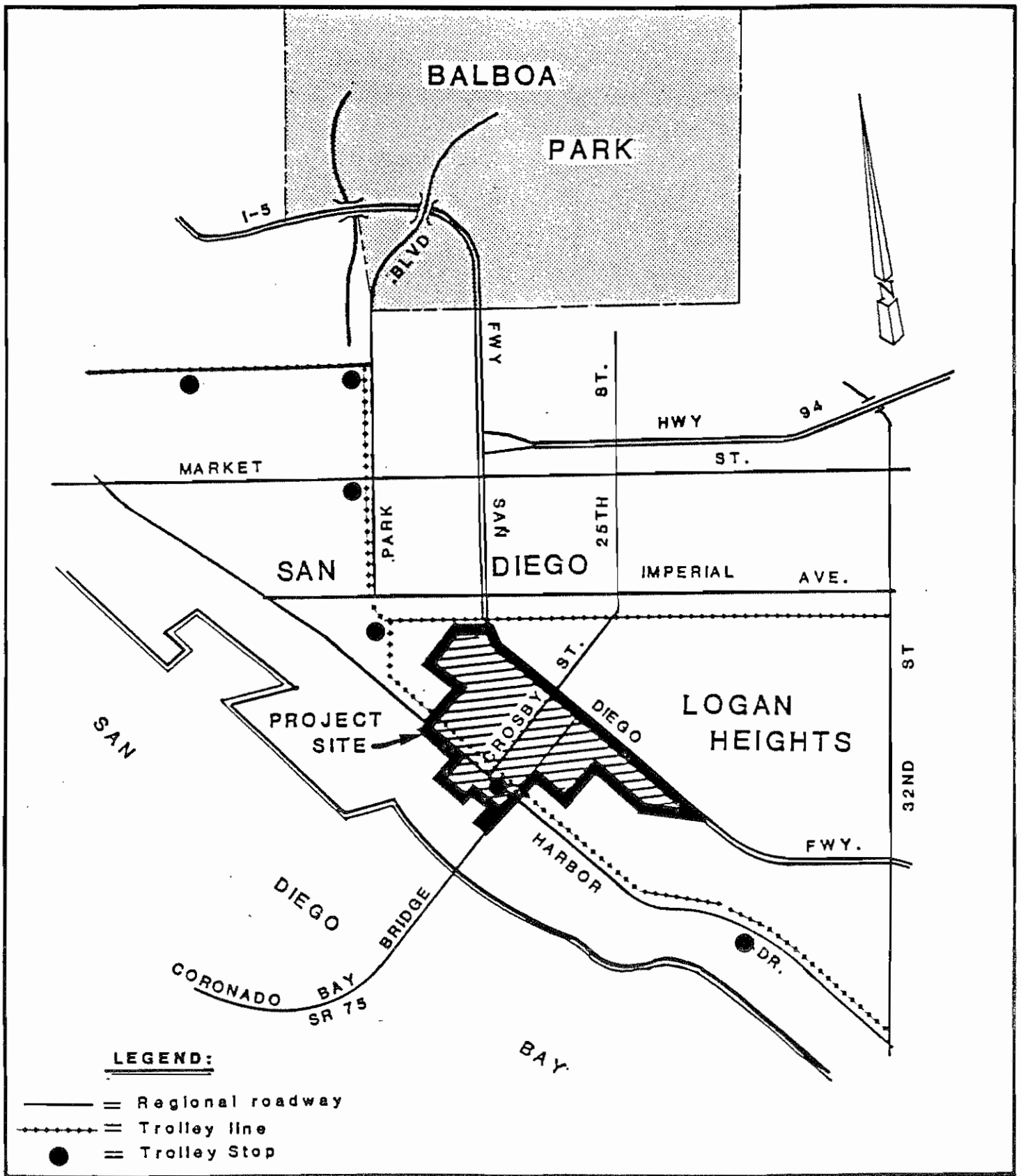
Barrio Logan is located near the center of the San Diego metropolitan area. The study area is generally bounded by Interstate 5 (I-5) to the east, 16th Street to the north, Harbor Drive to the west and 26th Street to the south. Figure 1 shows the location of the project and significant streets in the area. Figure 1 also depicts San Diego Trolley lines. Regional roadways serving the study area include I-5, Harbor Drive, National Avenue and Crosby Street.

Existing traffic conditions in the study area have been evaluated, as well as future traffic conditions resulting from implementation of the Barrio Logan Redevelopment Plan. In addition, two alternative roadway improvement concepts have been analyzed to determine to what extent they might mitigate future traffic conditions. Where applicable, other mitigation measures are proposed.

STUDY METHODOLOGY

In order to determine the future traffic conditions of the study area, a three-step analysis was performed. First, to form an accurate picture of existing operating conditions, data was collected on peak hour turning movements and daily volumes at key intersections and roadway segments in the study area. The second step was to determine the vehicle trips generated by the proposed Barrio Logan Redevelopment project and to assign these trips to likely travel routes on the surrounding roadway network. Finally, alternative roadway improvements were studied to determine their mitigative effect, if any, on future traffic conditions.

Guidance for intersection and roadway level of service (LOS) evaluation is provided by the 1985 Highway Capacity Manual and standards set forth by the City of San Diego. Level of service



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BASMACIYAN-DARNELL, INC.

FIGURE 1

VICINITY MAP

is a qualitative measure of roadway performance expressed as grades ranging from A to F. LOS A refers to a free-flowing condition, while LOS F indicates operational breakdown. In urban areas, LOS D is generally considered the maximum acceptable level of service.

REPORT CONTENT ORGANIZATION

This report is presented in five sections, the first of which is this Introduction. Section II describes existing traffic conditions in the study area. In Section III, the analysis and assumptions associated with project trip generation and distribution are discussed. Section IV provides an analysis of future conditions, together with evaluation of roadway network improvement alternatives. Section V summarizes the key findings and conclusions of this study and proposes mitigation measures.

SECTION II

EXISTING CONDITIONS

The study area consists of approximately 133 acres located within the Barrio Logan/Harbor 101 community planning area and is characterized by a mixture of older residential, commercial and industrial land uses. Some parcels in the study area contain incompatible land uses, such as salvage yards located on residential properties. Some buildings and public works in the study area have fallen into disrepair.

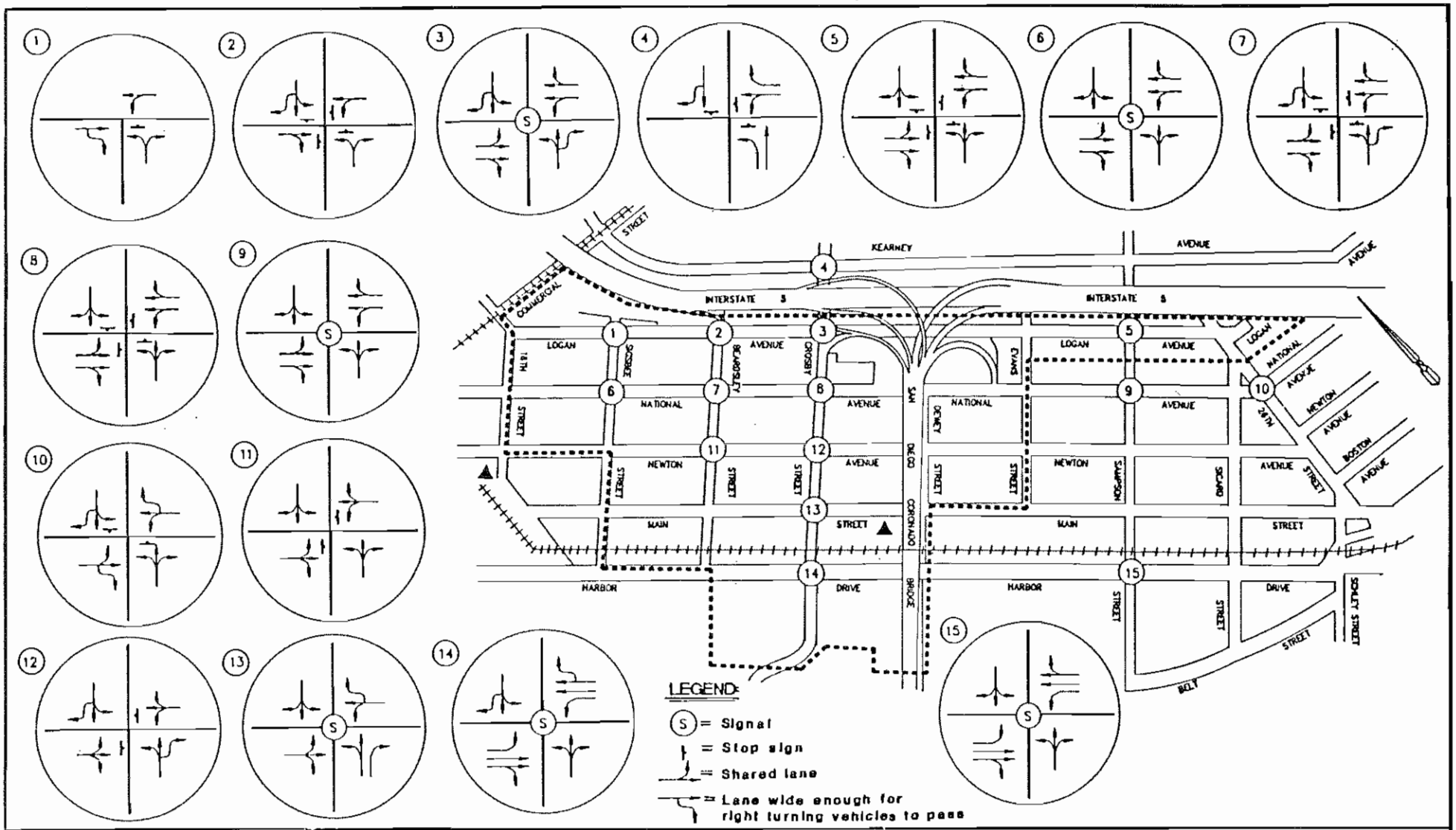
Figure 2 shows the local street system serving the Barrio Logan area and depicts existing lane configurations and traffic controls at 15 key intersections in and around the Barrio Logan Redevelopment Plan area. As shown in Figure 2, six of the intersections have signal control.

EXISTING ROADWAY CHARACTERISTICS

The following paragraphs describe the salient features of key study area roadways. Table 1 summarizes roadway and right-of-way widths for the study area street system.

Logan Avenue is a two-lane collector street serving the northeastern portion of the community. From its southern terminus at I-5, Logan Avenue extends north and west, terminating at 16th Street. Logan Avenue has 52 feet of pavement within an 80-foot right-of-way and is striped for four travel lanes between Evans Street and Sampson Street. All other segments have two travel lanes. Logan Avenue is divided by centerline striping and its intersection with Sampson Street is signalized. Roadside parking is permitted along both sides of the street. Existing Average Daily Traffic (ADT) volumes on Logan Avenue range from 2,400 vehicles per day (vpd) between Sampson Street and 26th Street to 8,800 vpd south of Crosby Street.

National Avenue is a collector street that extends westward from its terminus at 43rd Street, turns northwest at 26th Street, and bends due north at Imperial Avenue, where it becomes 12th Street. Through the study area, National Avenue has 52 feet of pavement within 80 feet of right-of-way and is striped for four lanes north of Crosby Street and two lanes south of Crosby Street. Curbside parking is available on both sides of the street. Signals control traffic at National Avenue's intersections with



BASMACIYAN-DARNELL, INC.

FIGURE 2

EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROL

TABLE 1

SUMMARY OF EXISTING STREET
CURB-TO-CURB AND RIGHT-OF-WAY WIDTHS

ROADWAY SEGMENT	EXISTING STREET WIDTH	EXIST. RIGHT-OF-WAY WIDTH
Beardsley Street: Logan Ave./Harbor Dr.	40 feet	60 feet
Crosby Street: S/O Harbor Dr./E/O Kearny Ave.	40 feet	60 feet
Dewey Street: Harbor Dr./National Ave.	40 feet	60 feet
Evans Street: Logan Ave./Main St.	40 feet	60 feet
Harbor Drive: Sigsbee St./Sicard St.	80 feet	100 feet
Logan Avenue: 16th St./26th St.	52 feet	80 feet
Main Street: Sigsbee St./26th St.	52 feet	80 feet
National Avenue: 16th St./S/O 26th St.	52 feet	80 feet
Newton Avenue: Sigsbee St./26th St.	52 feet	80 feet
Sampson Street: N/O Logan Ave./Harbor Dr.	40 feet	60 feet
Sicard Street: National Ave./Main St.	40 feet	60 feet
Sigsbee Street: Logan Ave./Harbor Dr.	40 feet	60 feet
16th Street: Logan Ave./Newton Ave.	40 feet	60 feet
26th Street: Logan Ave./Main St.	40 feet	60 feet

Sigsbee Street and Sampson Street. Existing ADT volumes on National Avenue range from 2,700 vpd between 16th Street and Sigsbee Street to 10,300 vpd south of 26th Street.

Newton Avenue is a two-lane collector street serving the central part of the study area on the same axis as National Avenue and Logan Avenue. Newton Avenue has 52 feet of pavement within an 80-foot right-of-way. There is no centerline striping on Newton Avenue. On-street parking (including a large number of diagonal spaces) is available along both sides of the street throughout the study area. Newton Avenue currently has light daily volumes, with a maximum of 1,200 vpd between Sigsbee Street and Beardsley Street.

Main Street's northern terminus is just northwest of Sigsbee Street and its southern end point is east of I-5 in National City. Through the study area, Main Street has two travel lanes on 52 feet of pavement. The right-of-way is 80 feet and the roadway is divided by centerline striping. On-street parking is available along both sides of the street. Main Street's intersection with Crosby Street is signalized. The maximum existing ADT volume on Main Street is 2,700 vpd between Sigsbee Street and Crosby Street.

Harbor Drive is a major regional facility connecting San Diego's Gaslamp Quarter to northern National City. Through the study area, Harbor Drive is a four-lane facility separated by a raised center median with left turn pockets at major intersections. Currently, the roadway has 80 feet of pavement within a 100-foot right-of-way. On-street parking is prohibited and driveway access is limited. Harbor Drive has signalized intersections with Crosby Street and Sampson Street. Existing ADT volumes range from 10,900 vpd between Crosby Street and Sampson Street to 14,400 vpd south of Sampson Street.

Sigsbee Street is a two-lane street that connects Harbor Drive to Logan Avenue. Sigsbee Street has 40 feet of pavement within a 60-foot right-of-way and is divided by centerline striping. On-street parking is available on both sides of Sigsbee Street. The maximum ADT volume on Sigsbee Street is 2,300 vpd between Newton Avenue and National Avenue.

Beardsley Street extends north and east from its terminus at Harbor Drive to its northern end point at Logan Avenue. Northeast of Logan Avenue, Beardsley Street is connected to the I-5 southbound exit ramp. Beardsley Street has two lanes on 40 feet of pavement within a right-of-way of 60 feet. There is no centerline striping on Beardsley Street. On-street parking is

permitted on both sides of the street. The maximum existing ADT volume on Beardsley Street is 5,000 vpd between National Avenue and Logan Avenue.

Crosby Street is a regional roadway connecting the industrial and military areas along the Barrio Logan waterfront to I-5 and other major facilities. Through the study area, Crosby Street has one lane in each direction and has 40 feet of pavement within a 60-foot right-of-way. The roadway is divided by centerline striping and shoulder parking is allowed on both sides of the street. Crosby Street has heavy ADT volumes, with a maximum of 10,800 vpd between Logan Avenue and Kearney Avenue. (At the Kearney Avenue intersection, Crosby Street is striped for two eastbound lanes. However, the lanes are of substandard width. Traffic was observed straddling the striping, reducing capacity.)

Dewey Street is a minor local roadway connecting National Avenue to Main Street. With 40 feet of pavement and 60 feet of right-of-way, Dewey Street is a two-way facility with no centerline striping. Parking is allowed on the southwestern side of the roadway.

Evans Street has two travel lanes, 40 feet of pavement and 60 feet of right-of-way. This minor local facility links Main Street to Logan Avenue. On-street parking is available on both sides of the street.

Sampson Street is a collector linking harbor industrial sites to residential areas in Logan Heights. This two-lane facility has 40 feet of pavement within a 60-foot right-of-way. On-street parking is allowed on both sides of the street and the roadway is separated by centerline striping.

On-Street Parking

On-street parking is generally provided on all streets within the study area. The exception is Harbor Drive, where parking is prohibited. Diagonal parking exists on much of Newton Avenue (north of Crosby Street and between Sampson Street and Dewey Street) and on Main Street between Dewey Street and Evans Street. The existing parking supply within the Barrio Logan Redevelopment Plan area is insufficient, as evidenced by the high utilization of on-street parking.

Summary of Existing Roadway Levels of Service

Figure 3 shows existing ADT volumes throughout the study area. The data was compiled from 24-hour machine counts conducted by the City of San Diego, San Diego Association of Governments

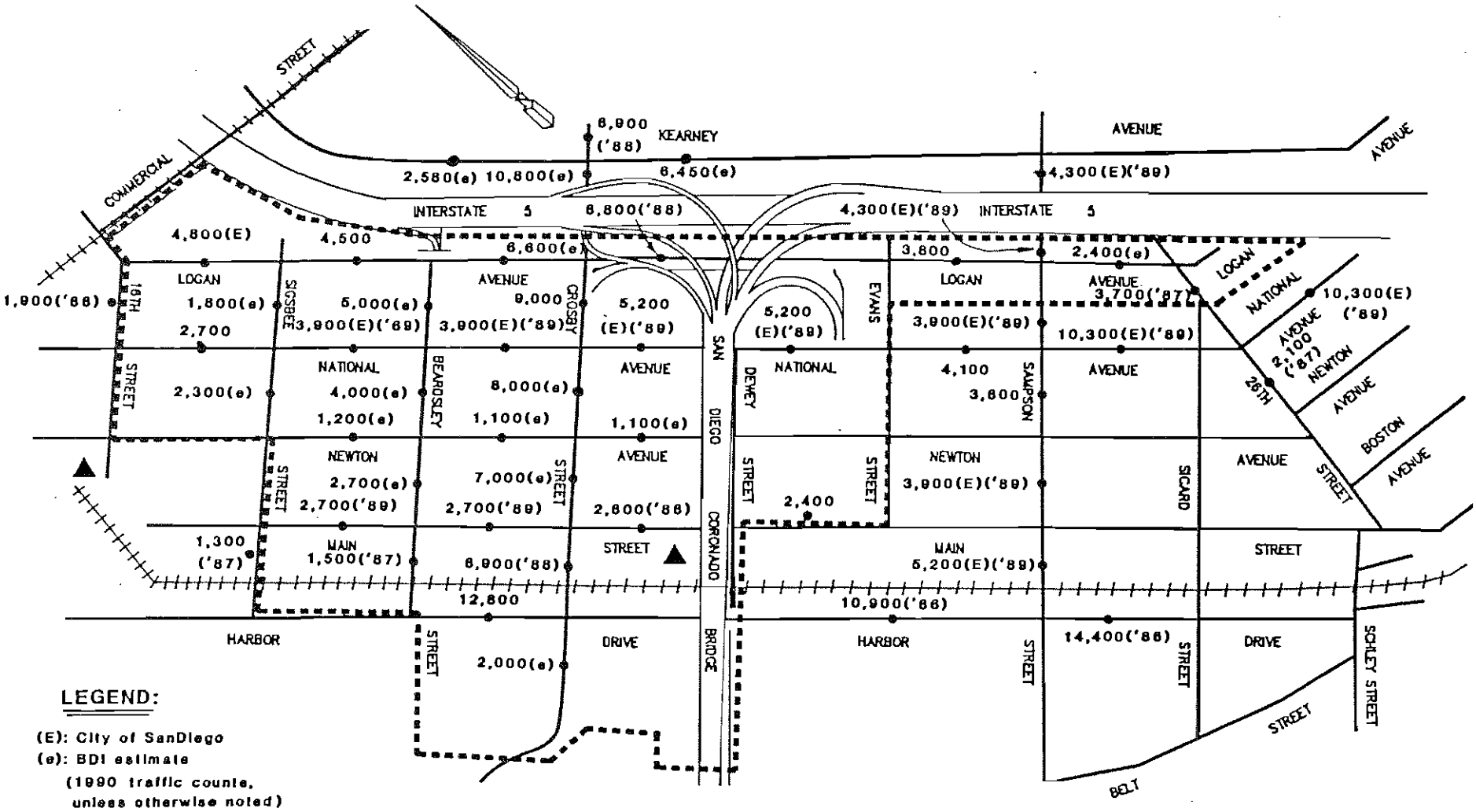


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FIGURE 3

EXISTING AVERAGE WEEKDAY DAILY TRAFFIC VOLUMES

(SANDAG) estimates based upon old City counts, and Basmaciyan-Darnell, Inc. (BDI) estimates based upon City data and existing turning movements.

Table 2 compares existing ADT volumes to the recommended maximum daily volumes listed in the City of San Diego Street Design Manual (reproduced in Appendix A of this report). Some roadways in the study area do not correspond to City classifications, particularly the 52-foot sections of Logan Avenue and National Avenue that are striped for four travel lanes. In these cases, the recommended maximum was estimated to be 7,500 vpd. Review of Table 2 shows that existing volumes exceed City recommended maximums at the following locations:

Beardsley Street:
- from National Avenue to Logan Avenue

Crosby Street:
- from west of Harbor Drive to east of Kearney Avenue

Logan Avenue:
- from Beardsley Street of south of Crosby Street

National Avenue:
- from Crosby Street to Evans Street
- from Sampson Street to south of 26th Street

Sampson Street:
- from Harbor Drive to Main Street

Summary of Existing Intersection Levels of Service

Existing peak hour traffic operations were analyzed at 15 intersections in and around the Barrio Logan Redevelopment Plan area; Figure 2 (previously presented) shows the locations, lane configurations, and traffic control of these intersections. BDI used a recent City of San Diego morning peak hour turning movement count at the Logan Avenue/I-5 southbound (Beardsley Street) intersection and a subconsultant morning peak hour count at Harbor Drive/Crosby Street for analysis in this report. Counts at Main Street/Crosby Street and at Logan Avenue/Crosby Street were taken from BDI's traffic study for Pacific Treatment Modification (published in March of 1990). All other counts were undertaken by BDI personnel during February of 1991. Summaries of all counts are contained in Appendix B of this report.

Figure 4 presents the results of the peak hour counts. In order to determine existing level of service, the volumes shown in Figure 4 were analyzed based on the lane configurations and traffic control at the given intersection. For signalized intersections, the Intersection Capacity Utilization (ICU) methodology

TABLE 2

COMPARISON OF EXISTING AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC

ROADWAY SEGMENT	EXIST. STREET CLASS(a)	REC. MAX. ADT(b)	EXIST. ADT	EXIST. V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	1,500	0.30
Main St./Newton Ave.	2C	5,000	2,700	0.54
Newton Ave./National Ave.	2C	5,000	4,000	0.80
National Ave./Logan Ave.	2C	5,000	5,000	1.00
Crosby Street:				
W/o Harbor Dr.	2C	5,000	2,000	0.40
Harbor Dr./Main St.	2C	5,000	6,400	1.28
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	8,000	1.60
National Ave./Logan Ave.	2C	5,000	9,000	1.80
Logan Ave./Kearny Ave.	2C	5,000	10,800	2.16
Kearny Ave./E/O	2C	5,000	6,900	1.38
Harbor Drive:				
N/o Crosby Street	4M	30,000	12,800	0.43
Crosby St./Sampson St.	4M	30,000	10,900	0.36
S/o Sampson St.	4M	30,000	14,400	0.48
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	4,600	0.92
Sigsbee St./Beardsley St.	2C	5,000	4,500	0.90
Beardsley St./Crosby St.	2C	5,000	6,600	1.32
Crosby St./S/O Crosby St.	2C	5,000	8,800	1.76
Evans St./Sampson St.	4C(d)	7,500	3,800	0.51
Sampson St./26th St.	4C(d)	7,500	2,400	0.32

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Existing ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

TABLE 2 -- CONTINUED

ROADWAY SEGMENT	EXIST. STREET CLASS(a)	REC. MAX. ADT(b)	EXIST. ADT	EXIST. V/C(c)
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	2,700	0.54
Beardsley St./Crosby St.	2C	5,000	2,700	0.54
Crosby St./Dewey St.	2C	5,000	2,600	0.52
Dewey St./Evans St.	2C	5,000	2,400	0.48
National Avenue:				
16th St./Sigsbee St.	4C(d)	7,500	2,700	0.36
Sigsbee St./Beardsley St.	4C(d)	7,500	3,900	0.52
Beardsley St./Crosby St.	4C(d)	7,500	3,900	0.52
Crosby St./Dewey St.	2C	5,000	5,200	1.04
Dewey St./Evans St.	2C	5,000	5,200	1.04
Evans St./Sampson St.	2C	5,000	4,100	0.82
Sampson St./26th St.	2C	5,000	10,300	2.06
26th St./S/O 26th St.	2C	5,000	10,300	2.06
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	1,200	0.24
Beardsley St./Crosby St.	2C	5,000	1,100	0.22
Crosby St./Dewey St.	2C	5,000	1,100	0.22
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	5,200	1.04
Main St./Newton Ave.	2C	5,000	3,900	0.78
Newton Ave./National Ave.	2C	5,000	3,600	0.72
National Ave./Logan Ave.	2C	5,000	3,900	0.78
Logan Ave./E/O Logan Ave.	2C	5,000	4,300	0.86
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	1,300	0.26
Newton Ave./National Ave.	2C	5,000	2,300	0.46
National Ave./Logan Ave.	2C	5,000	1,600	0.32
16th Street:				
National Ave./Logan Ave.	2C	5,000	1,900	0.38
26th Street:				
Newton Ave./National Ave.	2C	5,000	2,100	0.42
National Ave./Logan Ave.	2C	5,000	3,700	0.74

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Existing ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

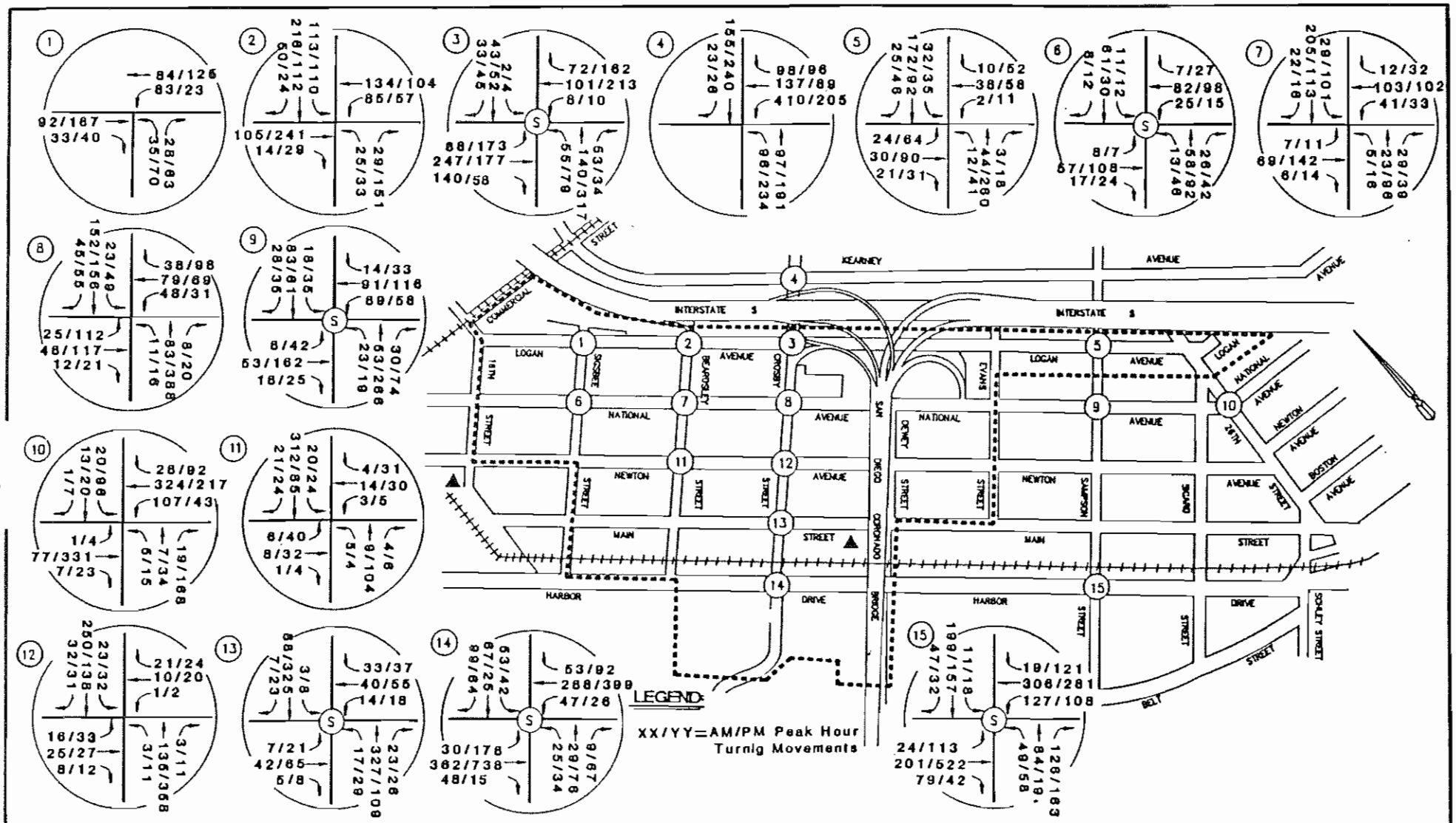

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FIGURE 4

EXISTING AM/PM PEAK HOUR TURNING MOVEMENTS

was used. For four-way intersections with stop or yield controls at one or two of the legs or for three-legged intersections with a stop or yield control at the minor street approach, the NCAP software application was used. For four-way, stop-controlled intersections, HCM procedures were used. For four-legged intersections with three stop signs (e.g., Crosby Street/Kearney Avenue), BDI extrapolated from the four-way, stop-controlled analysis methodology. (Note: this methodology was developed for, and used in, the Coral Gate traffic study that was published in April, 1989.) Level of service criteria for signalized and unsignalized intersections are provided in Appendix B.

Table 3 presents the results of existing intersection analysis. As shown in Table 3, peak hour operations at all intersections were satisfactory, except at Crosby Street/Kearney Avenue, where the level of service was found to be worse than C. Appendix B contains worksheets documenting this analysis.

Summary of Existing Traffic Signal Warrant Analysis

The nine unsignalized intersections in the study area were analyzed using Caltrans' daily warrants to determine if existing volumes justified traffic signal installation. Table 4 presents the findings of this analysis. As shown in this table, none of the nine unsignalized intersections meet signal warrants under existing conditions.

Truck Classification

BDI conducted truck classification counts during the afternoon peak hour at Newton Avenue/Crosby Street and at Main Street/Sampson Street to determine the number and type of trucks using the study area roadways. At Main Street/Sampson Street, 7.7 percent of all traffic in both directions on Main Street were trucks, while Sampson Street had 8.6 percent trucks. Newton Avenue had 2.5 percent trucks while Crosby Street had 3.0 percent trucks. Truck percentages were entered into the NCAP software worksheets for the purposes of intersection analysis. Worksheets documented truck classification are contained in Appendix B of this report.

Existing Transit Service

Public transportation in the Barrio Logan area is provided by the San Diego Trolley South Line and a number of San Diego Transit/Metropolitan Transit System bus routes. The following paragraphs summarize local transit opportunities.

TABLE 3

SUMMARY OF EXISTING
INTERSECTION LEVELS OF SERVICE

Intersection Capacity Utilization Analysis

INTERSECTION	AM PEAK HR. ICU	AM PEAK HR. LOS	PM PEAK HR. ICU	PM PEAK HR. LOS
Logan Avenue at:				
Crosby Street	0.45	A	0.55	A
National Avenue at:				
Sigsbee Street	0.40	A	0.41	A
Sampson Street	0.40	A	0.51	A
Main Street at:				
Crosby Street	0.50	A	0.51	A
Harbor Drive at:				
Crosby Street	0.42	A	0.52	A
Sampson Street	0.45	A	0.62	B

Highway Capacity Manual
Unsignalized Intersection Analysis

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:			
Sigsbee Street	EB to NB left-turn	A	A
	EB to SB right-turn	A	A
	NB to WB left-turn	A	A
Beardsley Street	ALL	>C(a)	>C(a)
Sampson Street	ALL	>C(a)	>C(a)

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 3 -- CONTINUED

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
National Avenue at:			
Beardsley Street	ALL	>C(a)	>C(a)
Crosby Street	ALL	>C(a)	>C(a)
26th Street	NB (26th Street)	A	A
	SB (26th Street)	B	B
	WB to SB left-turn	A	A
	EB to NB left-turn	A	A
Newton Avenue at:			
Beardsley Street	NB (Newton Ave.)	A	A
	SB (Newton Ave.)	A	A
	WB to SB left-turn	A	A
	EB to NB left-turn	A	A
Crosby Street	NB (Newton Ave.)	A	A
	SB (Newton Ave.)	A	A
	WB to SB left-turn	A	A
	EB to NB left-turn	A	A
Crosby Street at:			
Kearny Avenue			

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 4

SUMMARY OF
EXISTING TRAFFIC SIGNAL WARRANT ANALYSIS

UNSIGNALIZED INTERSECTION	SIGNAL WARRANTED(a)
Logan Avenue at:	
Sigsbee Street	No
Sampson Street	No
Beardsley Street	No
National Avenue at:	
Beardsley Street	No
Crosby Street	No
26th Street	No
Newton Avenue at:	
Beardsley Street	No
Crosby Street	No
Kearney Avenue at:	
Crosby Street	No

(a) Based on Caltrans' Daily Volume Traffic Signal Warrants

San Diego Trolley South Line operates Monday through Friday and connects San Diego's Centre City to the International Border. Northbound service to the Barrio Logan station (near the Harbor Drive/Crosby Street intersection) begins at 5:30 AM and ends at 1:30 AM, with stops every 15 minutes between 6:15 AM and 10:30 PM. Southbound service is from 4:22 AM until 12:26 AM. Between 5:56 AM and 9:26 PM, the Trolley stops at Barrio Logan every 15 minutes.

Average Trolley ridership at this stop is 1,184 people every day. The Metropolitan Transit Development Board (MTDB) has indicated that as of March, 1991, peak period Trolley frequency will increase to 7.5 minutes.

San Diego Transit Route 11 operates seven days a week and connects South Spring Valley to San Diego State University via Logan Heights, San Diego's Centre City, and Normal Heights. Service generally begins at 5:00 AM and ends at 11:30 PM with frequency ranging from five to 30 minutes.

San Diego Transit Route 13 links Logan Heights to the Santee area by way of Southeast San Diego, East San Diego, and San Diego State University. This route operates roughly between 5:00 AM and 11:00 PM Monday through Friday. Stop frequency for this route is every 30 minutes.

(Note: The MTDB is planning to reroute this line to the Euclid Avenue Trolley station and discontinue service south of that point. New Route 55 will operate along the discontinued portion of Route 13. These changes are expected to occur in June, 1991.)

San Diego Transit Route 29 runs from San Ysidro to the Point Loma submarine base, with stops in Chula Vista, National City, Logan Heights, and Downtown San Diego. The route operates seven days a week (including holidays). Regular weekday service begins around 5:00 AM and ends at 2:00 AM. Route 29 buses run every 30 minutes.

Metropolitan Transit System Route 901 extends from Imperial Beach northward along the Silver Strand to Downtown San Diego. This line provides regular weekday service (including holidays) with buses running from approximately 5:00 AM to 1:30 AM. Service is generally every 30 minutes. Routes 902 and 903 connect Coronado to San Diego's Centre City along the same routes during peak commuting periods Monday through Friday.

Metropolitan Transit System Route 932 links San Ysidro to Downtown San Diego through Chula Vista and National City. This line operates seven days a week (including holidays). For normal weekday service, buses run every 30 minutes from around 5:30 AM until 11:15 PM.

SECTION III

FUTURE CONDITIONS

The Barrio Logan Redevelopment Plan is expected to add significant residential, commercial, and office land uses to the study area. In order to determine the traffic impacts of the proposed development, BDI initiated the following analysis:

1. The study area was divided into a series of traffic analysis zones to facilitate trip generation and distribution.

2. Existing land uses within each zone were determined. This data was used to calculate existing trip generation.

3. Proposed trip generation was calculated based upon the land uses proposed under the Barrio Logan Redevelopment Plan.

4. Existing traffic volumes were subtracted from the proposed traffic numbers in order to determine the net increase resulting from Barrio Logan Redevelopment.

5. The net traffic from each zone was distributed onto the surrounding street system based on the zone's access to local and regional transportation facilities, commercial centers, and other attractors.

6. Distributed Barrio Logan Redevelopment traffic was combined with existing volumes on the study area street system. These combined volumes represent future traffic conditions.

The following paragraphs summarize the methodology and assumptions used in the foregoing analysis. Additional figures and tables documenting the analysis are contained in Appendix C of this report.

ZONE ASSIGNMENT AND TRIP GENERATION

Figure 5 depicts the twenty-one traffic analysis zones developed for the future conditions analysis. As shown in this figure, TAZs are generally confined to a single city block. The largest zone is TAZ 21, which encompasses the industrial area near the waterfront.

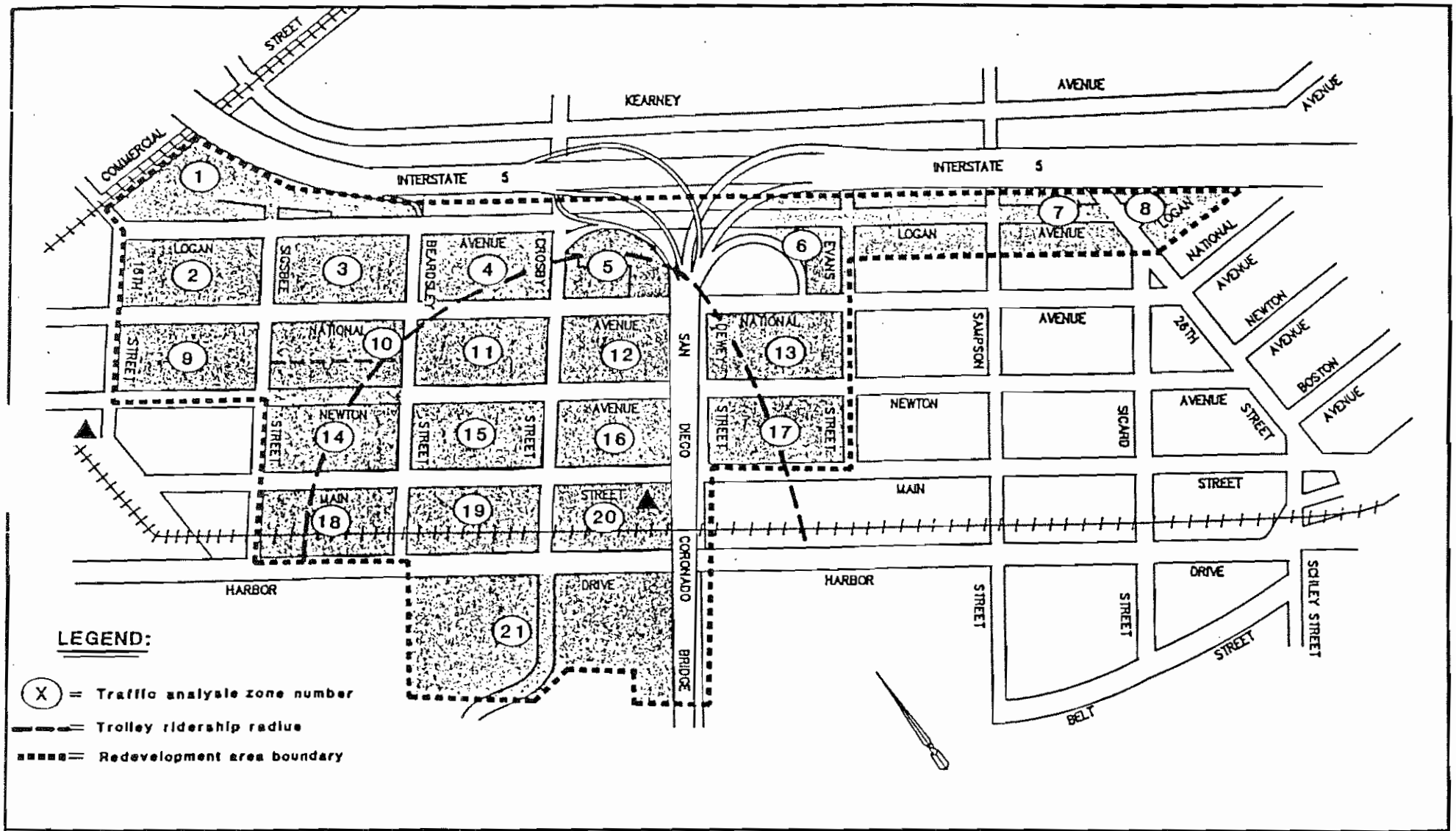

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FIGURE 5

TRAFFIC ANALYSIS ZONES

Existing Trip Generation

Existing land use totals for the entire Barrio Logan Redevelopment Plan area were provided by the City of San Diego and are summarized in Table 5. To estimate existing trip generation from each traffic analysis zone, it was necessary to further quantify existing land uses on a zone-by-zone basis. The existing land use plan from the Barrio Logan Redevelopment Plan Environmental Impact Report (reproduced in Appendix C) was used for this purpose. Based on this graphical depiction of land use distributions, land use totals were assigned to each zone on a pro-rata basis.

Table 6 summarizes estimated existing trip generation by zone for each of the twenty-one traffic analysis zones. Trip generation rates for each land use type were developed in consultation with the City of San Diego Engineering and Development Department and are based on rates given in the City's Revised Recommended Trip Generation Rates Summary (August, 1990) and Recommended Peak Hour Percentages table (August, 1990).

Proposed Trip Generation

Proposed land use totals used to calculate the total tripmaking potential of the redevelopment area are summarized in Table 7. As with existing conditions, future land uses were assigned to each of the twenty-one traffic analysis zones. The proposed land use plan included in Appendix C was used to estimate the distribution of future development among zones.

Table 8 summarizes estimated proposed project trip generation by zone. Trip generation rates for each land use type were again development in consultation with City staff and are based on City of San Diego published trip generation rates. In some cases, it was necessary to estimate trip generation rates, particularly for mixed-use land use categories. A daily trip rate of 40 trips per thousand square feet was developed for the "commercial/retail/office" category based on the assumption that development would represent a mix of neighborhood commercial, strip commercial and commercial office uses. Peak hour trip generation rates for this category were estimated assuming this same mix. Trip generation rates for the "mixed-use" category were developed assuming a 75 percent strip commercial/25 percent office mix. The trip generation rates used for Mercado Development corresponds to the City's recommended rates for regional shopping. All residential was assumed to be high-density, multi-family for the purpose of estimating trip generation.

TABLE 5

BARRIO LOGAN REDEVELOPMENT PLAN
EXISTING LAND USE SUMMARY

LAND USE	INTENSITY
Residential 20% single-family 80% multi-family	317 DUs
Commercial	120,000 SF
Industrial	41 AC

DU = Dwelling Unit
SF = Square Feet
AC = Acre

TABLE 6

BARRIO LOGAN REDEVELOPMENT AREA
TRIP GENERATION
EXISTING LAND USES

Traffic Zone: Land Use	Existing Intensity	Trip Generation Rate	Existing ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Existing Peak Hour Trips AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 1:											
Industrial	1.23 AC	130 /AC	160	9.90 %	1.10 %	2.40 %	9.60 %	16	2	4	
Subtotal:			160					16	2	4	15
ZONE 2:											
Commercial	9600 SF	40 /KSF	384	1.80	1.20	4.50	4.50	7	5	17	17
Industrial	1.64 AC	130 /AC	213	9.90	1.10	2.40	9.60	21	2	5	[illegible]
Residential	13 DU	7 /DU	91	1.60	6.40	7.00	3.00	1	6	6	
Subtotal:			688					29	13	29	40
ZONE 3:											
Commercial	7200 SF	40 /KSF	288	1.80	1.20	4.50	4.50	5	3	13	13
Industrial	0.82 AC	130 /AC	107	9.90	1.10	2.40	9.60	11	1	3	10
Residential	54 DU	7 /DU	378	1.60	6.40	7.00	3.00	6	24	26	
Subtotal:			773					22	29	42	35
ZONE 4:											
Commercial	19200 SF	40 /KSF	768	1.80	1.20	4.50	4.50	14	9	35	35
Industrial	1.23 AC	130 /AC	160	9.90	1.10	2.40	9.60	16	2	4	15
Residential	16 DU	7 /DU	112	1.60	6.40	7.00	3.00	2	7	8	
Subtotal:			1,040					31	18	46	53
ZONE 5:											
Industrial	0.82 AC	130 /AC	107	9.90	1.10	2.40	9.60	11	1	3	10
Subtotal:			107					11	1	3	
ZONE 6:											
Commercial	30000 SF	40 /KSF	1,200	1.80	1.20	4.50	4.50	22	14	54	[illegible]
Industrial	0.82 AC	130 /AC	107	9.90	1.10	2.40	9.60	11	1	3	
Residential	44 DU	7 /DU	308	1.60	6.40	7.00	3.00	5	20	22	9
Subtotal:			1,615					37	35	78	
ZONE 7:											
Commercial	14400 SF	40 /KSF	576	1.80	1.20	4.50	4.50	10	7	26	[illegible]
Industrial	0.41 AC	130 /AC	53	9.90	1.10	2.40	9.60	5	1	1	
Residential	19 DU	7 /DU	133	1.60	6.40	7.00	3.00	2	9	9	4
Subtotal:			762					18	16	37	

TABLE 6 — Continued

Traffic Zone: Land Use	Existing Intensity	Trip Generation Rate	Existing ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Existing Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 8:											
Industrial	0.82 AC	130 /AC	107	9.90	1.10	2.40	9.60	11	1	3	10
Residential	10 DU	7 /DU	70	1.60	6.40	7.00	3.00	1	4	5	2
Subtotal:			177					12	6	7	12
ZONE 9:											
Commercial	9600 SF	40 /KSF	384	1.80	1.20	4.50	4.50	7	5	17	17
Industrial	2.46 AC	130 /AC	320	9.90	1.10	2.40	9.60	32	4	8	31
Residential	6 DU	7 /DU	42	1.60	6.40	7.00	3.00	1	3	3	1
Subtotal:			746					39	11	28	49
ZONE 10:											
Commercial	4800 SF	40 /KSF	192	1.80	1.20	4.50	4.50	3	2	9	9
Industrial	1.23 AC	130 /AC	160	9.90	1.10	2.40	9.60	16	2	4	15
Residential	25 DU	7 /DU	175	1.60	6.40	7.00	3.00	3	11	12	5
Subtotal:			527					22	15	25	29
ZONE 11:											
Industrial	0.82 AC	130 /AC	107	9.90	1.10	2.40	9.60	11	1	3	10
Residential	35 DU	7 /DU	245	1.60	6.40	7.00	3.00	4	16	17	7
Subtotal:			352					14	17	20	18
ZONE 12:											
Industrial	1.64 AC	130 /AC	213	9.90	1.10	2.40	9.60	21	2	5	20
Residential	10 DU	7 /DU	70	1.60	6.40	7.00	3.00	1	4	5	2
Subtotal:			283					22	7	10	23
ZONE 13:											
Commercial	4800 SF	40 /KSF	192	1.80	1.20	4.50	4.50	3	2	9	9
Industrial	0.41 AC	130 /AC	53	9.90	1.10	2.40	9.60	5	1	1	5
Residential	60 DU	7 /DU	420	1.60	6.40	7.00	3.00	7	27	29	13
Subtotal:			665					15	30	39	26
ZONE 14:											
School	403 ST	1.4 /ST	564	15.60	10.40	1.50	3.50	88	59	8	20
Subtotal:			564					88	59	8	20

TABLE 6 — Continued

Traffic Zone: Land Use	Existing Intensity	Trip Generation Rate	Existing ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Existing Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 15:											
Commercial	7200 SF	40 /KSF	288	1.80	1.20	4.50	4.50	5	3	13	13
Industrial	1.23 AC	130 /AC	160	9.90	1.10	2.40	9.60	16	2	4	15
Residential	25 DU	7 /DU	175	1.60	6.40	7.00	3.00	3	11	12	5
Subtotal:			623					24	16	29	34
ZONE 16:											
Industrial	2.05 AC	130 /AC	267	9.90	1.10	2.40	9.60	26	3	6	26
Subtotal:			267					26	3	6	26
ZONE 17:											
Industrial	2.87 AC	130 /AC	373	9.90	1.10	2.40	9.60	37	4	9	36
Subtotal:			373					37	4	9	36
ZONE 18:											
Industrial	2.87 AC	130 /AC	373	9.90	1.10	2.40	9.60	37	4	9	36
Subtotal:			373					37	4	9	36
ZONE 19:											
Industrial	2.87 AC	130 /AC	373	9.90	1.10	2.40	9.60	37	4	9	36
Subtotal:			373					37	4	9	36
ZONE 20:											
Commercial	13200 SF	40 /KSF	528	1.80	1.20	4.50	4.50	10	6	24	24
Industrial	2.46 AC	130 /AC	320	9.90	1.10	2.40	9.60	32	4	8	31
Subtotal:			848					41	10	31	54
ZONE 21:											
Industrial	12.3 AC	130 /AC	1,599	9.90	1.10	2.40	9.60	158	18	38	154
Subtotal:			1,599					158	18	38	154
			12,913					1,475	634	1,015	1,628

KSF = Thousand Square Feet
SF = Square Feet
DU = Dwelling Unit
ST = Elementary School Students
AC = Acres

TABLE 7

BARRIO LOGAN REDEVELOPMENT PLAN
PROPOSED LAND USE SUMMARY

LAND USE	INTENSITY
Residential (53 DU/AC)	742 DUs
Mixed Use (Commercial/Residential)	568,458 SF 228 DUs
Commercial/Retail/Office	696,960 SF
Mercado District	568,458 SF 228 DUs
Light Industrial	1,219,680 SF

DU = Dwelling Unit
SF = Square Feet
AC = Acre

TABLE 8

BARRIO LOGAN REDEVELOPMENT AREA
TRIP GENERATION
PROPOSED LAND USES

Traffic Zone: Land Use	Proposed Intensity	Trip Generation Rate	Proposed ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Proposed Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 1:											
Comm/Retail/Off	174,240 SF	40 /KSF	6,970	4.05 %	1.30 %	4.27 %	5.83 %	282	91	298	406
Subtotal:			6,970					282	91	298	406
ZONE 2:											
Mixed Use	79584 SF	35 /KSF	2,785	4.50	1.25	4.03	5.98	125	35	112	167
Residential	32.00 DU	6 /DU	192	1.60	6.40	7.00	3.00	3	12	13	6
Industrial	73181 SF	14 /KSF	1,025	9.90	1.10	2.40	9.60	101	11	25	98
Subtotal:			4,002					230	58	150	271
ZONE 3:											
Mixed Use	90953 SF	35 /KSF	3,183	4.50	1.25	4.03	5.98	143	40	128	190
Residential	118.00 DU	6 /DU	708	1.60	6.40	7.00	3.00	11	45	50	21
Subtotal:			3,891					155	85	178	212
ZONE 4:											
Mixed Use	96638 SF	35 /KSF	3,382	4.50	1.25	4.03	5.98	152	42	136	202
Residential	121.00 /DU	6 /DU	726	1.60	6.40	7.00	3.00	12	46	51	22
Subtotal:			4,108					164	89	187	224
ZONE 5:											
Mercado Comm.	68215 SF	30 /KSF	2,046	1.40	0.60	4.50	4.50	29	12	92	92
Mercado Res.	27 DU	6 /DU	162	1.6	6.4	7	3	3	10	11	5
Subtotal:			2,208					31	23	103	97
ZONE 6:											
Comm/Retail/Off	188180 SF	40 /KSF	7,527	4.05	1.30	4.27	5.83	305	98	321	439
Mixed Use	130745 SF	35 /KSF	4,576	4.50	1.25	4.03	5.98	206	57	184	274
Residential	53 DU	6 /DU	318	1.60	6.40	7.00	3.00	5	20	22	10
Subtotal:			12,421					516	175	528	722
ZONE 7:											
Comm/Retail/Off	118483 SF	40 /KSF	4,739	4.05	1.30	4.27	5.83	192	62	202	276
Mixed Use	68215 SF	35 /KSF	2,388	4.50	1.25	4.03	5.98	107	30	96	143
Residential	27 DU	6 /DU	162	1.60	6.40	7.00	3.00	3	10	11	5
Subtotal:			7,289					302	102	310	424

TABLE 8 — Continued

Traffic Zone: Land Use	Proposed Intensity	Trip Generation Rate	Proposed ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Proposed Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 8:											
Comm/Retail/Off	97574 SF	40 /KSF	3,903	4.05	1.30	4.27	5.83	158	51	167	228
Subtotal:			3,903					158	51	167	228
ZONE 9:											
Industrial	158558 SF	14 /KSF	2,220	9.90	1.10	2.40	9.60	220	24	53	213
Subtotal:			2,220					220	24	53	213
ZONE 10:											
Mixed Use	17054 SF	35 /KSF	597	4.50	1.25	4.03	5.98	27	7	24	36
Residential	89 DU	6 /DU	534	1.60	6.40	7.00	3.00	9	34	37	16
Subtotal:			1,131					35	42	61	52
ZONE 11:											
Mixed Use	39792 SF	35 /KSF	1,393	4.50	1.25	4.03	5.98	63	17	56	83
Residential	171 DU	6 /DU	1,026	1.60	6.40	7.00	3.00	16	66	72	31
Subtotal:			2,419					79	83	128	114
ZONE 12:											
Mercado Comm.	125061 SF	30 /KSF	3,752	1.40	0.60	4.50	4.50	53	23	169	169
Mercado Res.	50 DU	6 /DU	300	1.60	6.40	7.00	3.00	5	19	21	9
Subtotal:			4,052					57	42	190	178
ZONE 13:											
Residential	200 DU	6 /DU	1,200	1.60	6.40	7.00	3.00	19	77	84	36
Subtotal:			1,200					19	77	84	36
ZONE 14:											
School	600 ST	1.4 /ST	840	15.60	10.40	1.50	3.50	131	87	13	29
Subtotal:			840					131	87	13	29
ZONE 15:											
Mixed Use	45477 SF	35 /KSF	1,592	4.50	1.25	4.03	5.98	72	20	64	95
Residential	159 DU	6 /DU	954	1.60	6.40	7.00	3.00	15	61	67	29
Subtotal:			2,546					87	81	131	124

TABLE 8 -- Continued

Traffic Zone: Land Use	Proposed Intensity	Trip Generation Rate	Proposed ADT	% AM Peak In	% AM Peak Out	% PM Peak In	% PM Peak Out	Proposed Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
ZONE 16:											
Mercado Comm.	136430 SF	30 /KSF	4,093	1.40	0.60	4.50	4.50	57	25	184	184
Mercado Res.	55 DU	6 /DU	330	1.60	6.40	7.00	3.00	5	21	23	10
Subtotal:			4,423					63	46	207	19
ZONE 17:											
Mercado Comm.	170537 SF	30 /KSF	5,116	1.40	0.60	4.50	4.50	72	31	230	23
Mercado Res.	69 DU	6 /DU	414	1.60	6.40	7.00	3.00	7	26	29	1
Subtotal:			5,530					78	57	259	24[illegible]
ZONE 18:											
Industrial	134165 SF	14 /KSF	1,878	9.90	1.10	2.40	9.60	186	21	45	180
Subtotal:			1,878					186	21	45	18
ZONE 19:											
Industrial	146362 SF	14 /KSF	2,049	9.90	1.10	2.40	9.60	203	23	49	19
Subtotal:			2,049					203	23	49	197
ZONE 20:											
Comm/Retail/Off	118483 SF	40 /KSF	4,739	4.05	1.30	4.27	5.83	192	62	202	27[illegible]
Mercado Comm.	68215 SF	30 /KSF	2,046	1.40	0.60	4.50	4.50	29	12	92	92
Mercado Res.	27 DU	6 /DU	162	1.60	6.40	7.00	3.00	3	10	11	[illegible]
Subtotal:			6,948					223	84	306	37[illegible]
ZONE 21:											
Industrial	707414 SF	14 /KSF	9,904	9.90	1.10	2.40	9.60	980	109	238	95
Subtotal:			9,904					980	109	238	951
			89,932					4,200	1,449	3,685	5,467

KSF = Thousand Square Feet
SF = Square Feet
DU = Dwelling Unit
ST = Elementary School Students
AC = Acres

Net Increase in Traffic

Table 9 shows the difference of proposed trip generation and existing trip generation. In developing Table 9, a five percent reduction was first applied to estimated proposed project trips for those zones located within a quarter-mile radius of the Barrio Logan Trolley Station. This quarter-mile radius is shown in the shaded area on Figure 5, previously referenced, and includes traffic zones 4, 5 and 10 through 21. This trip reduction was agreed to in discussions with City staff to reflect the potential for greater than typical transit usage in the study area, thereby replacing some vehicle trips that would have occurred to and from zones within the study area. A five percent reduction most likely understates the transit mode split which would be achieved in Barrio Logan.

As shown in Table 9, the daily net increase in traffic resulting from Barrio Logan Redevelopment is 72,520. These trips were distributed to the surrounding roadway network in order to determine future traffic conditions. The process of this distribution is described in the following paragraphs.

TRIP DISTRIBUTION

The distribution of Barrio Logan Redevelopment trips (proposed project-minus-existing) was done on a zone-by-zone basis, based on the likely travel routes between the TAZ and transportation facilities, commercial areas, and other attractors. Figures depicting trip distribution for all twenty-one TAZs are contained in Appendix C of this report.

To determine the general, regional distribution of project trips, a select zone assignment was performed using the SANDAG Series VII regional traffic model. The plot showing results of this select zone assignment for regional zone 197, which generally represents the Barrio Logan community, are included in Appendix C. From this regional model information, the following directional distribution of future project-related trips was derived:

- North on Harbor Drive - 20 percent
- North via Logan Ave./National Ave. - 5 percent
- South (I-5/Harbor Dr./National Ave.) - 30 percent
- North on I-5 - 30 percent
- East - 15 percent

The net increase in trips generated by each zone within the study area as determined in the trip generation analysis was assigned to the most likely travel routes based on these directional

TABLE 9

BARRIO LOGAN REDEVELOPMENT AREA
ESTIMATED NET INCREASE IN TRIP GENERATION
DUE TO PROPOSED LAND USES

Traffic Zone	Proposed - Existing Peak Hour Trips (a) AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	Proposed-Existing ADT (a)
Zone 1:	252	84	279	371	6,461
Zone 2:	189	42	114	217	3,114
Zone 3:	125	52	127	166	2,924
Zone 4:	125	66	132	160	2,863
Zone 5:	19	21	95	82	1,991
Zone 6:	453	132	424	-613	10,185
Zone 7:	269	81	257	368	6,162
Zone 8:	138	42	151	204	3,531
Zone 9:	170	12	23	153	1,363
Zone 10:	12	25	33	20	547
Zone 11:	61	62	102	90	1,946
Zone 12:	32	33	170	146	3,566
Zone 13:	3	43	41	8	475
Zone 14:	36	24	4	8	234
Zone 15:	59	61	95	84	1,795
Zone 16:	33	40	191	158	3,935
Zone 17:	37	50	237	195	4,881
Zone 18:	140	16	34	135	1,411
Zone 19:	156	17	38	151	1,574
Zone 20:	171	70	260	301	5,752
Zone 21:	773	85	188	749	7,810
Total=	3,254	1,058	2,994	4,379	72,520

(a) Total estimated future ("proposed") trip generation was reduced by 5% for zones located within one quarter mile of the trolley station. Net trip increases were then calculated by subtracting existing trip totals from these "adjusted" proposed trip totals.

percentages. It was assumed that all trips would leave the community. Consideration was initially given to distributing some trips between zones within the study area. After further evaluation, however, it was determined that the potential error associated with neglecting these intra-community trips would be small. Research has shown that, for all trip purposes, only approximately ten percent of the trips are of a duration fewer than five minutes (generally the travel time required to traverse the study area). This means that most trips generated by project zones would leave the study area. Furthermore, intrazonal trip demand within the study area can be served to a great extent by walk trips, since most zones are within a quarter-mile radius of other study area zones. The result of assuming that all project-generated trips leave the study area would therefore be to slightly overstate traffic impacts on regional roadways at the community fringe, a somewhat "worst-case" analysis.

The distribution percentages shown in Appendix C were applied to the projected project-related increase in trips (from the trip generation analysis) to determine the daily and peak hour volume increases which could be expected as a result of Barrio Logan Redevelopment. Spreadsheets were developed to assist in performing trip distribution and are included in Appendix C.

In developing total future daily and peak hour estimates, it was necessary to quantify the increase in through trips within the study area, namely Harbor Drive, attributable to regional growth (growth not associated with Barrio Logan Redevelopment). To accomplish this, two sources of information were reviewed. First, the travel forecast performed for the Navy Broadway Complex traffic study was obtained from the City of San Diego Engineering and Development Department. The unadjusted traffic forecast projected daily volume increases of nearly 400 percent on Harbor Drive. Harbor Drive in the vicinity of the Barrio Logan Redevelopment project, however, was not included in the detailed study area for the Navy Broadway Complex traffic study, and the forecast volume appears somewhat unrealistic.

A second source used was the SANDAG 2010 regional traffic model, included in Appendix C. Using these 2010 regional projections, screenlines were drawn north and south of Barrio Logan and projected future trips crossing these screenlines were totaled. These totals were then compared to existing trips crossing the same screenlines. A comparison of screenline volumes revealed an increase in regional trips of approximately 40 percent over existing. Based on this information, existing daily volumes and peak hour through volumes on Harbor Drive adjacent to the study area were increased by 40 percent to reflect expected regional

growth. These factored, existing volumes were then added to increased project traffic volumes to obtain total future volume projections.

Combined future (existing-plus-project) average weekday traffic volumes are shown on Figure 6. Figure 7 shows future morning/afternoon peak hour turning movement volumes throughout the study area. Through movements along Crosby Street, the Barrio's freeway access, are expected to be significant.

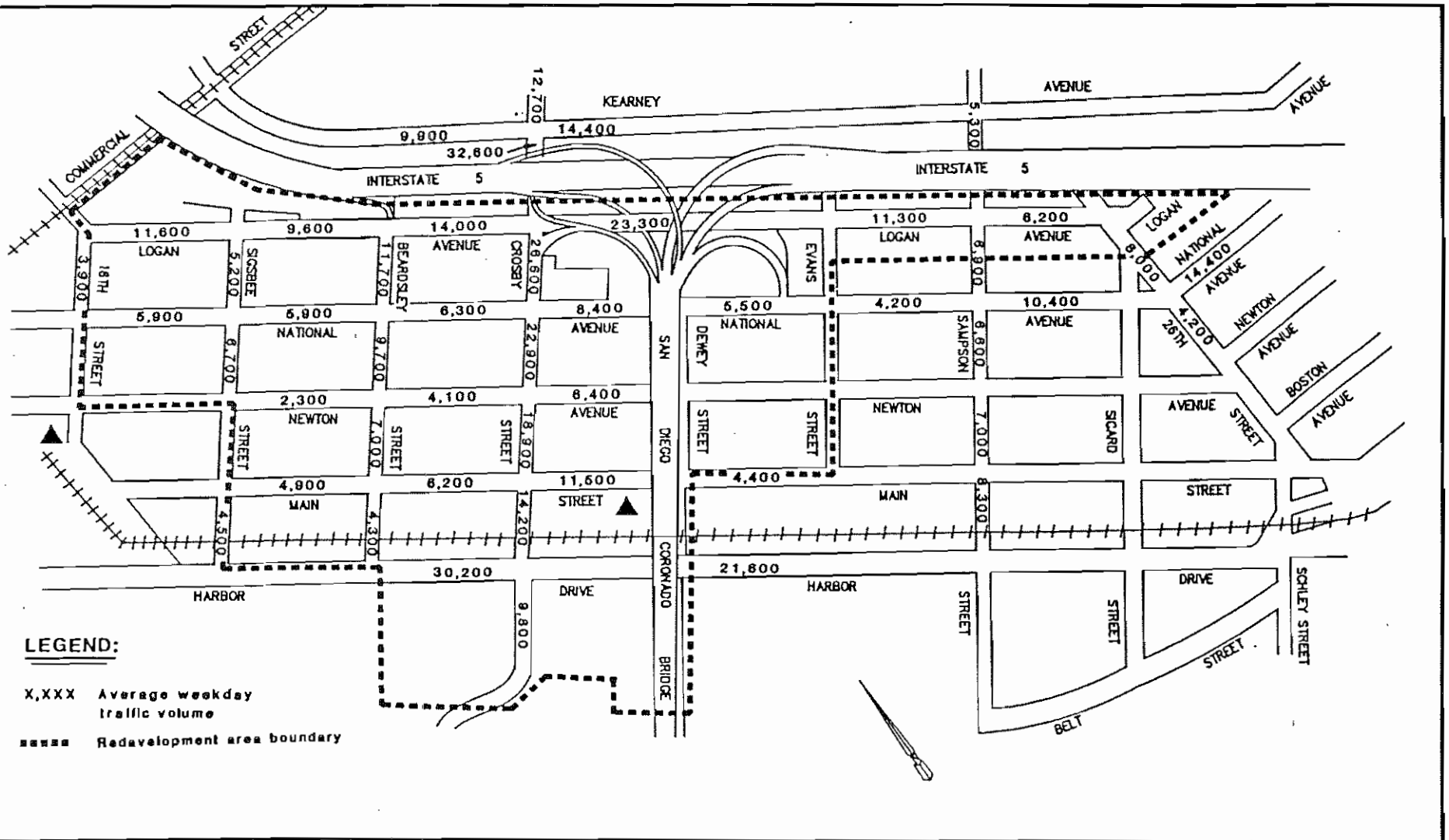

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FIGURE 6

FUTURE AVERAGE WEEKDAY TRAFFIC VOLUMES

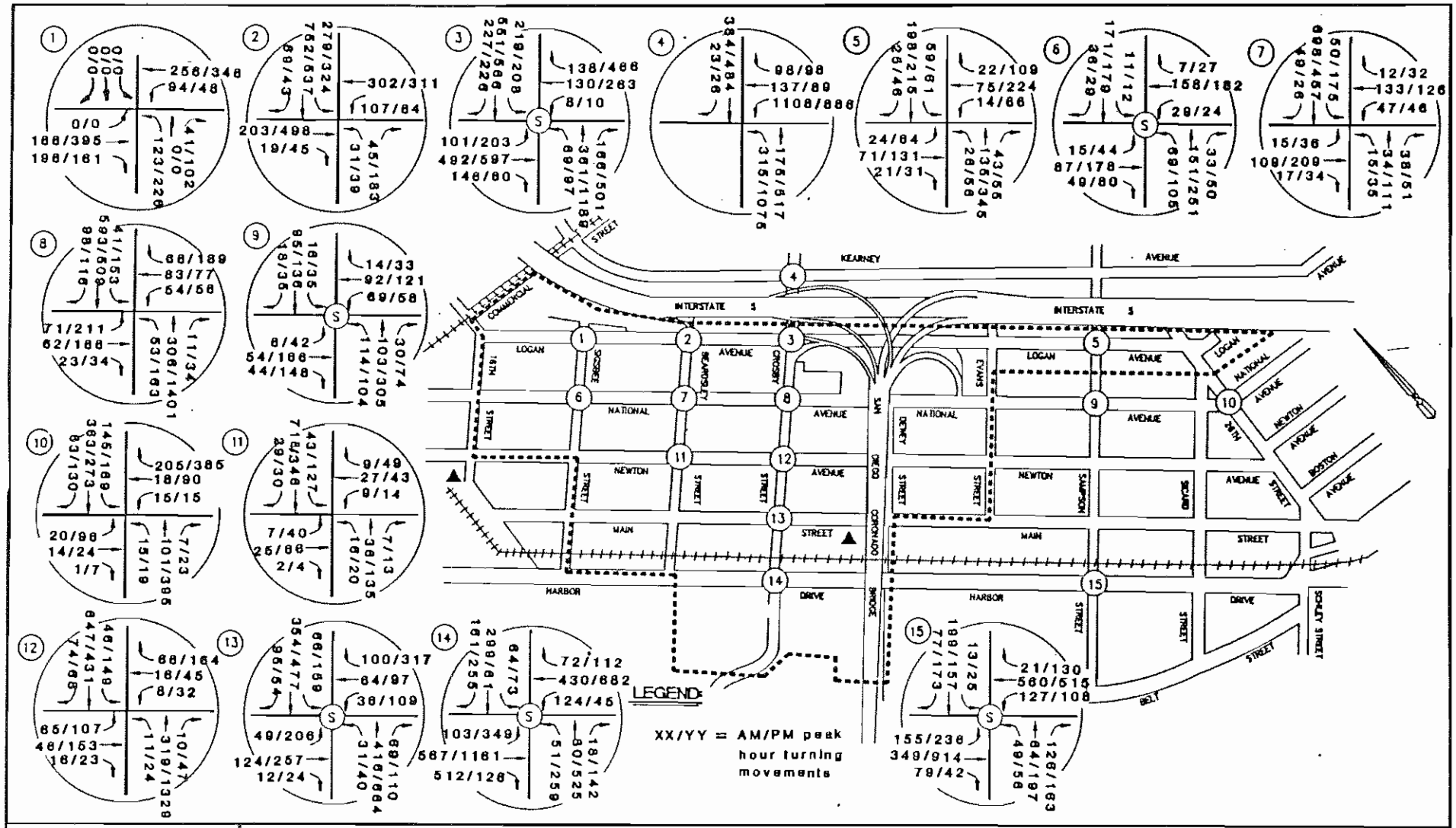

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FIGURE 7

FUTURE AM/PM PEAK HOUR TURNING MOVEMENTS

SECTION IV

IMPACTS

The following paragraphs describe the impacts of future traffic volumes on the existing roadway network. Two alternative roadway configuration concepts are also analyzed to determine whether improvements would help the roadway network accommodate increased traffic volumes more efficiently. The couplets were analyzed based on the assumption that the couplet concept can process future volumes while minimizing disruptive street widenings. A standard mitigation discussion (without the couplet) is provided in Section V of this report.

FUTURE CONDITIONS IMPACTS ANALYSIS

The daily and peak hour volumes shown in Figures 6 and 7 (previously presented) were analyzed based upon existing roadway and intersection configurations. The results of this analysis are presented in the following paragraphs.

Summary of Future Roadway Level of Service

Table 10 presents a comparison of projected future ADT volumes and recommended maximum daily traffic. As shown in this table, substantial future traffic will be added to the local street system, particularly along Crosby Street. Between Logan Avenue and Kearney Avenue, Crosby Street would have a future ADT volume of 32,600, more than six (6) times the recommended maximum. Throughout the study area, 31 of the 46 street segments analyzed will have ADT volumes in excess of the recommended maximum.

Future Traffic Signal Warrant Analysis

BDI analyzed unsignalized intersections throughout the study area using Caltrans daily signal warrant worksheets to determine whether future volumes justified installation of traffic signals. Table 11 summarizes the results of this analysis. It was found that seven of the nine unsignalized intersections would warrant signalization based on future conditions.

While many intersections are expected to require future signalization as a result of the signal warrant analysis performed here, it cannot be stated with absolute certainty that these locations will ultimately meet signal warrants. Not only is there an inherent degree of imprecision in long range volume estimates, but warrants performed using daily volumes versus peak volumes may yield different results. Therefore, it is extremely important that all intersections in the community be monitored as

TABLE 10

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	4,300	0.86
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	9,700	1.94
National Ave./Logan Ave.	2C	5,000	11,700	2.34
Crosby Street:				
W/o Harbor Dr.	2C	5,000	9,800	1.96
Harbor Dr./Main St.	2C	5,000	14,200	2.84
Main St./Newton Ave.	2C	5,000	18,900	3.78
Newton Ave./National Ave.	2C	5,000	22,900	4.58
National Ave./Logan Ave.	2C	5,000	26,600	5.32
Logan Ave./Kearny Ave.	2C	5,000	32,600	6.52
Kearny Ave./E/O	2C	5,000	12,700	2.54
Harbor Drive:				
N/O Crosby Street	4M	30,000	30,200	1.01
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	11,500	2.32
Sigsbee St./Beardsley St.	2C	5,000	9,600	1.92
Beardsley St./Crosby St.	2C	5,000	14,000	2.82
Crosby St./S/O Crosby St.	2C	5,000	22,300	4.46
Evans St./Sampson St.	4C(d)	7,500	11,300	1.51
Sampson St./26th St.	4C(d)	7,500	6,200	0.82

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

TABLE 10 -- CONTINUED

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	2C	5,000	6,200	1.24
Crosby St./Dewey St.	2C	5,000	11,500	2.32
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(d)	7,500	5,900	0.79
Sigsbee St./Beardsley St.	4C(d)	7,500	5,900	0.79
Beardsley St./Crosby St.	4C(d)	7,500	6,300	0.84
Crosby St./Dewey St.	2C	5,000	8,400	1.68
Dewey St./Evans St.	2C	5,000	5,500	1.14
Evans St./Sampson St.	2C	5,000	4,200	0.84
Sampson St./26th St.	2C	5,000	10,400	2.08
26th St./S/O 26th St.	2C	5,000	14,400	2.88
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,300	0.46
Beardsley St./Crosby St.	2C	5,000	4,100	0.82
Crosby St./Dewey St.	2C	5,000	6,400	1.28
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.06
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,500	0.90
Newton Ave./National Ave.	2C	5,000	6,700	1.34
National Ave./Logan Ave.	2C	5,000	5,200	1.04
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	2C	5,000	8,000	1.60

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.

TABLE 11

SUMMARY OF
FUTURE TRAFFIC SIGNAL WARRANT ANALYSIS

UNSIGNALIZED INTERSECTION	SIGNAL WARRANTED(a)
Logan Avenue at:	
Sigsbee Street	Yes
Sampson Street	No(b)
Beardsley Street	Yes
National Avenue at:	
Beardsley Street	Yes
Crosby Street	Yes
26th Street	Yes
Newton Avenue at:	
Beardsley Street	No
Crosby Street	Yes
Kearney Avenue at:	
Crosby Street	Yes

(a) Based on Caltrans' Daily Volume Traffic Signal Warrants
(b) Conditions may eventually warrant signalization.

TABLE 12

SUMMARY OF FUTURE INTERSECTION LEVELS OF SERVICE

Intersection Capacity Utilization Analysis

INTERSECTION	AM PEAK HR. ICU	AM PEAK HR. LOS	PM PEAK HR. ICU	PM PEAK HR. LOS
Kearney Avenue at:				
Crosby Street	0.82	D	1.32	F
Logan Avenue at:				
Sigsbee Street	0.42	A	0.58	A
Beardsley Street	0.95	E	1.04	F
Crosby Street	0.87	D	1.51	F
National Avenue at:				
Sigsbee Street	0.45	A	0.54	A
Beardsley Street	0.74	C	0.67	B
Crosby Street	0.73	C	1.27	F
Sampson Street	0.45	A	0.58	A
26th Street	0.63	B	0.72	C
Newton Avenue at:				
Crosby Street	0.71	C	1.17	F
Main Street at:				
Crosby Street	0.61	B	0.90	D
Harbor Drive at:				
Crosby Street	0.73	C	1.12	F
Sampson Street	0.54	A	0.73	C

Highway Capacity Manual
Unsignalized Intersection Analysis

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:			
Sampson Street	ALL	<C(a)	<C(a)
Newton Avenue at:			
Beardsley Street	NB (Newton Ave.)	C	C
	SB (Newton Ave.)	C	C
	WB to SB left-turn	A	A
	EB to NB left-turn	A	A

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

growth occurs and traffic patterns and demand change to determine actual future signal needs.

Summary of Future Intersection Level of Service

Assuming signalization of intersections satisfying daily warrants, BDI then reanalyzed all study area intersections based on the volumes shown in Figure 7 (previously presented). The results of this analysis are presented in Table 12. Review of Table 12 shows that six study area intersections would experience an unacceptable level of service during one of the peak hours under future traffic conditions. Crosby Street in particular will have operational problems, with LOS E or LOS F at the following intersections:

- Logan Avenue
- National Avenue
- Harbor Drive
- Newton Avenue
- Main Street

The Logan Avenue/Beardsley Street intersection, a four-way, stop-controlled intersection, would experience worse than LOS C conditions during both morning and afternoon peak hours. All other intersections would have acceptable LOS under future conditions.

ALTERNATIVE ROADWAY CONFIGURATION IMPACTS ANALYSIS

Two different roadway configuration alternatives have been studied to determine whether improvements would help the study area roadways and intersections accommodate future volumes more efficiently. Both involve the use of one-way couplets.

Alternative 1 involves making National Avenue one-way northbound and Newton Avenue one-way southbound between Sigsbee Street and Sampson Street. In Alternative 2, a one-way couplet is analyzed on Crosby Street and Beardsley Street, with Crosby Street one-way eastbound and Beardsley Street one-way westbound between Harbor Drive and Logan Avenue.

Alternative 1 Analysis

Figure 8 shows the Alternative 1 roadway configuration concept. The one-way couplet consists of Newton Avenue (one-way southbound between Sigsbee Street and Sampson Street) and National Avenue (one-way northbound between Sigsbee Street and Sampson Street). It was assumed that the one-way segments would be restriped for three lanes within existing pavement. This alternative was considered in an attempt to alleviate expected future traffic congestion, particularly during peak hours at intersections with heavily traveled Crosby Street and Beardsley Street. Establishing a one-way couplet here would serve to increase the traffic carrying capacity of the north/south corridor and potentially enhance levels of service at critical intersections by eliminating certain conflicting movements.

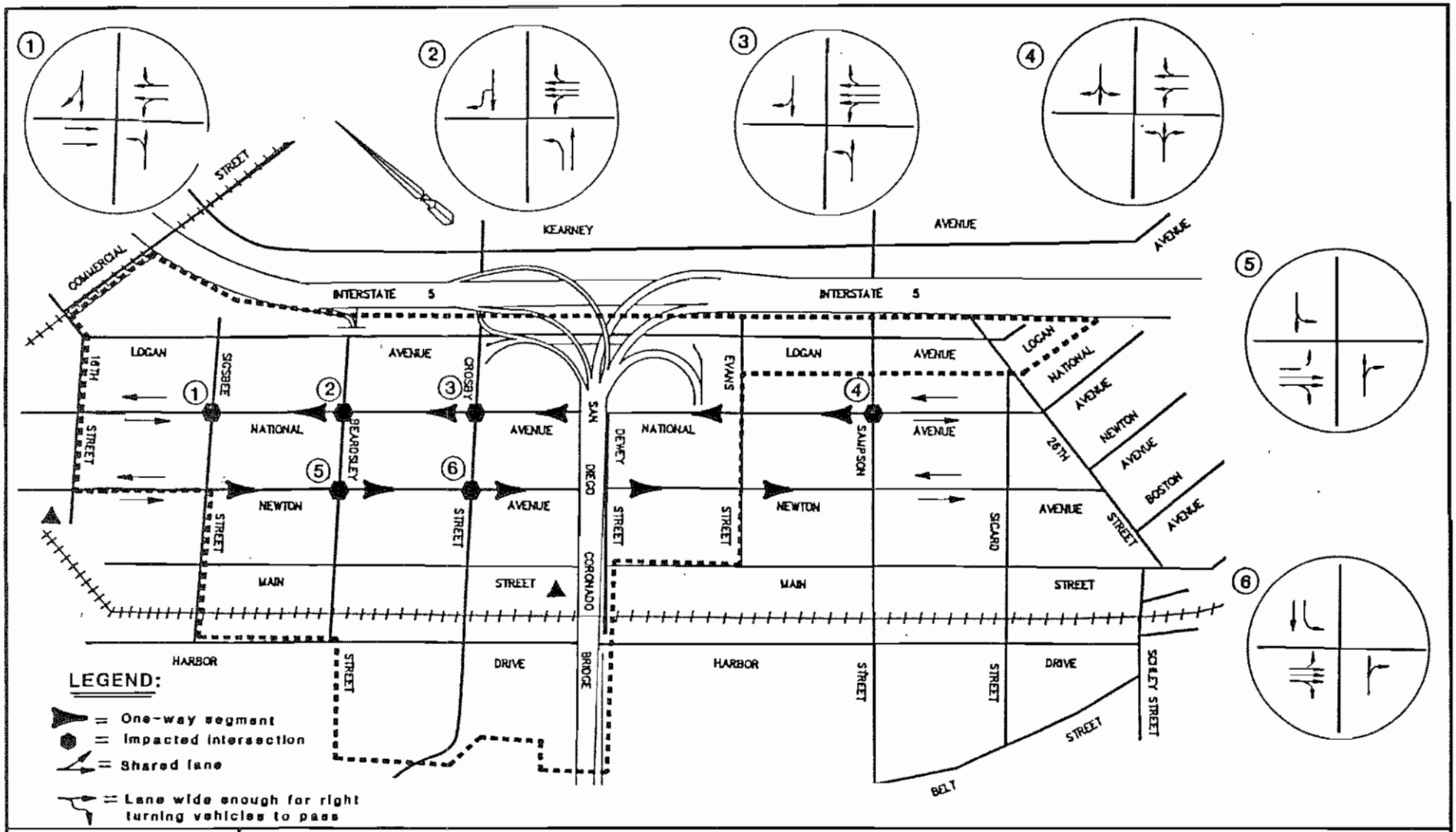

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FIGURE 8
ALTERNATIVE 1 ROADWAY CONFIGURATIONS
(NATIONAL AVENUE/NEWTON AVENUE ONE-WAY COUPLET)

Figure 8 also depicts intersections expected to be impacted by the Alternative 1 roadway configuration and assumed intersection configurations at these locations. Generally, it was assumed that the one-way approach would consist of three through lanes, with the right and left lanes shared by through and turning vehicles. Approaches to the one-way leg were reconfigured where turn lanes conflicted with one-way flow (e.g., wrong-way left turn pockets were converted to through lanes). The existing number of lanes approaching the one-way leg were retained.

To facilitate analysis of the one-way couplet, future ADT and peak hour volumes were manually reassigned to reflect the impacts of one-way flow on traffic patterns. These reassigned future volumes are presented on Figures 9 (average weekday daily traffic) and 10 (morning/afternoon peak hour turning movements). The volumes in these figures were analyzed to determine the impacts of Alternative 1.

Summary of Alternative 1 Roadway Level of Service

Table 13 summarizes the ADT volumes presented on Figure 9 (previously presented) and compares them to City of San Diego recommended daily maximums. As no standard currently exists for three-lane one-way streets, BDI, in consultation with City staff, estimated the recommended daily maximum volumes on the one-way segments to be 15,000 vpd.

As shown in Table 13, implementation of the Alternative 1 one-way couplet would improve volume-to-capacity ratios on National Avenue and Newton Avenue, but other study area roadways would continue to experience severely congested traffic conditions.

Summary of Alternative 1 Traffic Signal Warrant Analysis

Four of the six intersections impacted by the Alternative 1 roadway configuration are currently unsignalized. To determine whether signals are warranted under Alternative 1 conditions, these intersections were reanalyzed using Caltrans' daily signal warrants based on the ADTs previously presented in Figure 9. The results of this analysis are shown in Table 14. It was found that two of the four unsignalized intersections, National Avenue/Crosby Street and National Avenue/Beardsley Street, would satisfy Caltrans warrants. Based on this analysis, it was assumed that the National Avenue/Crosby Street intersection would be signalized for the purposes of intersection capacity analysis.

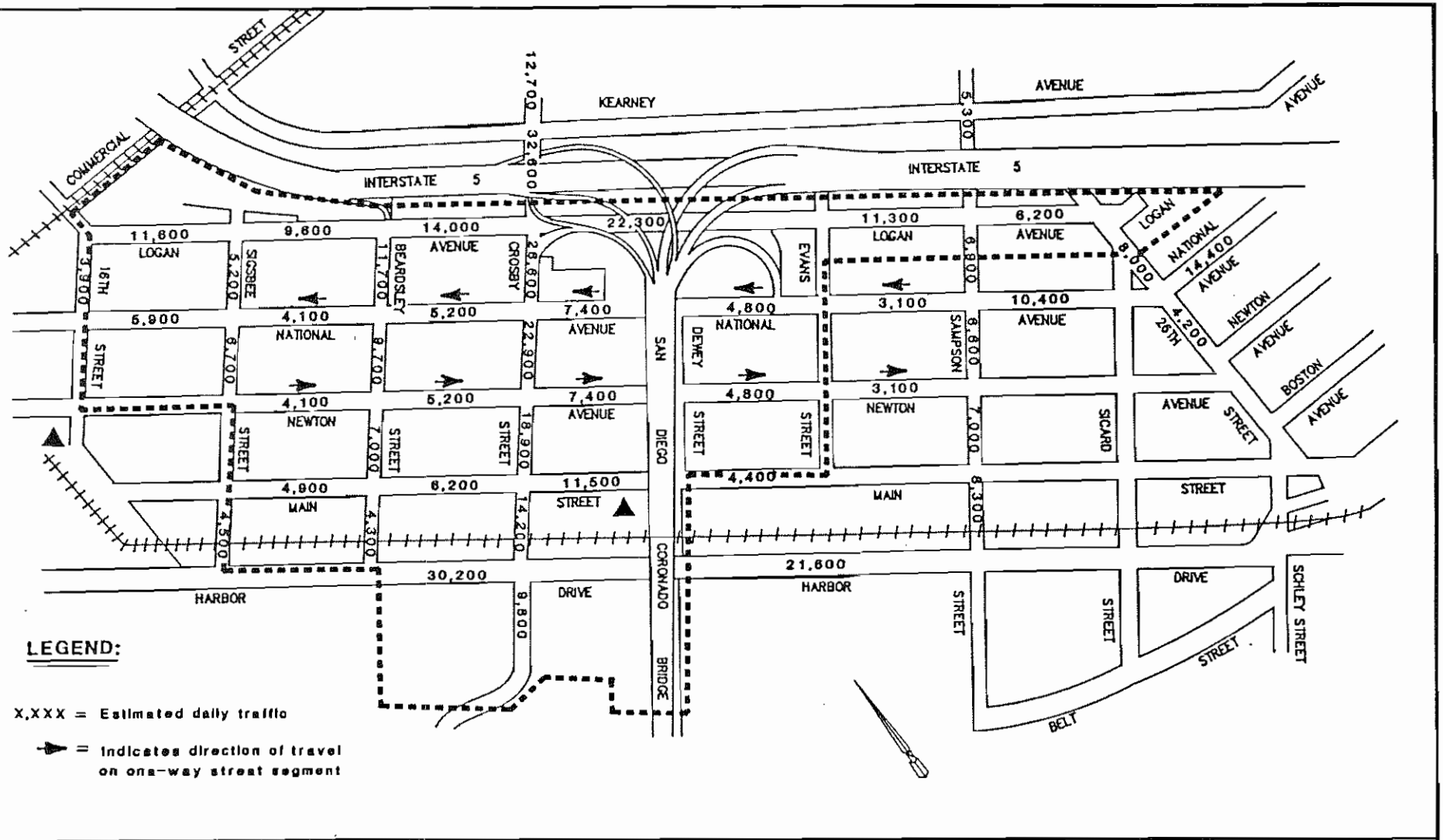

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FIGURE 9

ALTERNATIVE 1

ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC VOLUMES

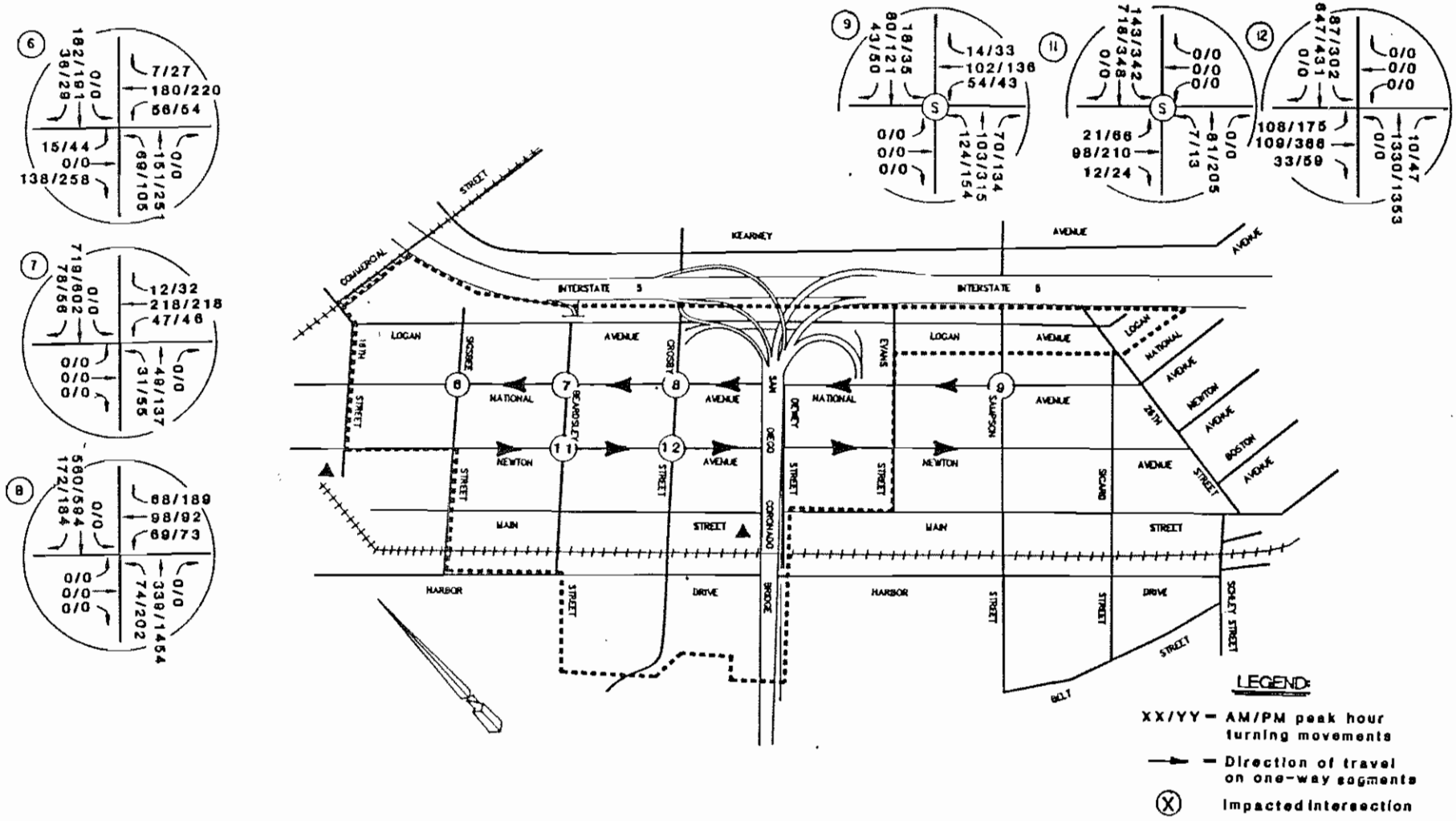

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FIGURE 10

ALTERNATIVE 1 AM/PM PEAK HOUR TURNING MOVEMENTS

TABLE 13

COMPARISON OF ESTIMATED FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC

ALTERNATIVE 1
NEWTON AVENUE ONE-WAY SOUTHBOUND
NATIONAL AVENUE ONE-WAY NORTHBOUND
BETWEEN SIGSBEE STREET AND SAMPSON STREET

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	4,300	0.86
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	9,700	1.94
National Ave./Logan Ave.	2C	5,000	11,700	2.34
Crosby Street:				
W/o Harbor Dr.	2C	5,000	9,800	1.96
Harbor Dr./Main St.	2C	5,000	14,200	2.84
Main St./Newton Ave.	2C	5,000	18,900	3.78
Newton Ave./National Ave.	2C	5,000	22,900	4.58
National Ave./Logan Ave.	2C	5,000	26,600	5.32
Logan Ave./Kearny Ave.	2C	5,000	32,600	6.52
Kearny Ave./E/O	2C	5,000	12,700	2.54
Harbor Drive:				
N/O Crosby Street	4M	30,000	30,200	1.01
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	11,600	2.32
Sigsbee St./Beardsley St.	2C	5,000	9,600	1.92
Beardsley St./Crosby St.	2C	5,000	14,000	2.80
Crosby St./S/O Crosby St.	2C	5,000	22,300	4.46
Evans St./Sampson St.	4C(d)	7,500	11,300	1.51
Sampson St./26th St.	4C(d)	7,500	6,200	0.83

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.
(e) Three-lane one-way street. Estimated maximum volume is 15,000 vpd.

TABLE 13 -- CONTINUED

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	2C	5,000	8,800	1.76
Crosby St./Dewey St.	2C	5,000	11,500	2.32
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(d)	7,500	5,900	0.79
Sigsbee St./Beardsley St.	3 (e)	15,000	4,100	0.27
Beardsley St./Crosby St.	3 (e)	15,000	5,200	0.35
Crosby St./Dewey St.	3 (e)	15,000	7,400	0.49
Dewey St./Evans St.	3 (e)	15,000	4,800	0.32
Evans St./Sampson St.	3 (e)	15,000	3,100	0.21
Sampson St./26th St.	2C	5,000	10,400	2.08
26th St./S/O 26th St.	2C	5,000	14,400	2.88
Newton Avenue:				
Sigsbee St./Beardsley St.	3 (e)	15,000	4,100	0.27
Beardsley St./Crosby St.	3 (e)	15,000	5,200	0.35
Crosby St./Dewey St.	3 (e)	15,000	7,400	0.49
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.03
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,500	0.90
Newton Ave./National Ave.	2C	5,000	6,700	1.34
National Ave./Logan Ave.	2C	5,000	5,200	1.04
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	2C	5,000	8,000	1.60

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.
(e) Three-lane one-way street. Estimated maximum volume is 15,000 vpd.

TABLE 14

SUMMARY OF
ALTERNATIVE 1 TRAFFIC SIGNAL WARRANT ANALYSIS

UNSIGNALIZED INTERSECTION	SIGNAL WARRANTED(a)
National Avenue at:	
Beardsley Street	No
Crosby Street	Yes
Newton Avenue at:	
Beardsley Street	No
Crosby Street	No

(a) Based on Caltrans' Daily Volume Traffic Signal Warrants

Summary of Alternative 1 Intersection Level of Service

Alternative 1 peak hour turning movement volumes were analyzed based upon the intersection configuration and traffic control assumptions described in previous paragraphs. Table 15 presents the results of this analysis. Review of Table 15 shows that several of the impacted intersections would continue to experience an unacceptable level of service under Alternative 1 conditions. At Crosby Street's intersections with National Avenue, Kearney Avenue, Harbor Drive and Newton Avenue, afternoon peak hour operations would have LOS F. At the Beardsley Street intersection with Newton Avenue, morning and afternoon peak hour operations would be characterized by worse than LOS C conditions.

Alternative 2 Analysis

Alternative 2 is a couplet consisting of Crosby Street (one-way eastbound) and Beardsley Street (one-way westbound). Figure 11 illustrates Alternative 2 roadway improvements and impacted intersections, including the assumed intersection configuration. The assumed intersection configurations were developed in the same manner as in Alternative 1,except Crosby Street and Beardsley Street would be limited to two travel lanes due to the existing 40-foot pavement width. BDI estimated the recommended daily capacity one two-lane one-way streets to be 7,500 vpd.

This alternative was considered in an attempt to alleviate expected future traffic congestion on Beardsley Street and Crosby Street, particularly at critical intersections during peak periods. Beardsley Street directly serves I-5 southbound, off traffic at Logan Avenue, while Crosby Street provides access to other I-5 ramps (southbound and northbound on and northbound off). Establishing a one-way couplet here would serve to increase the traffic carrying capacity of the corridor by eliminating side friction and left-turn conflicts on street segments and by limiting conflicting movements at intersections.

Future daily and peak hour volumes were again manually adjusted to reflect reassigned traffic patterns under this one-way couplet concept. Figure 12 depicts daily traffic volumes, while Figure 13 shows morning and afternoon peak hour turning movements at impacted intersections.

Summary of Alternative 2 Roadway Level of Service

Table 16 compares Alternative 2 ADT volumes to City of San Diego and BDI (estimated) recommended daily capacities. As shown in Table 16, volumes along Crosby Street would continue to exceed the recommended daily maximum for this roadway. The volume-to-

TABLE 15

SUMMARY OF ALTERNATIVE 1 INTERSECTION LEVELS OF SERVICE

Intersection Capacity Utilization Analysis

INTERSECTION	AM PEAK HR. ICU	AM PEAK HR. LOS	PM PEAK HR. ICU	PM PEAK HR. LOS
Kearney Avenue at:				
Crosby Street	0.82	D	1.32	F
Logan Avenue at:				
Crosby Street	0.87	D	1.51	F
National Avenue at:				
Sigsbee Street	0.43	A	0.51	A
Beardsley Street	0.72	C	0.65	B
Crosby Street	0.63	B	1.17	F
Sampson Street	0.37	A	0.55	A
26th Street	0.63	B	0.72	C
Newton Avenue at:				
Crosby Street	0.42	C	1.14	F
Main Street at:				
Crosby Street	0.61	B	0.90	D
Harbor Drive at:				
Crosby Street	0.73	C	1.12	F
Sampson Street	0.54	A	0.73	B

Highway Capacity Manual
Unsignalized Intersection Analysis

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:			
Beardsley Street	ALL	>C(a)	>C(a)
Sampson Street	ALL	>C(a)	>C(a)
Newton Avenue at:			
Beardsley Street	ALL	<C(a)	<C(a)

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

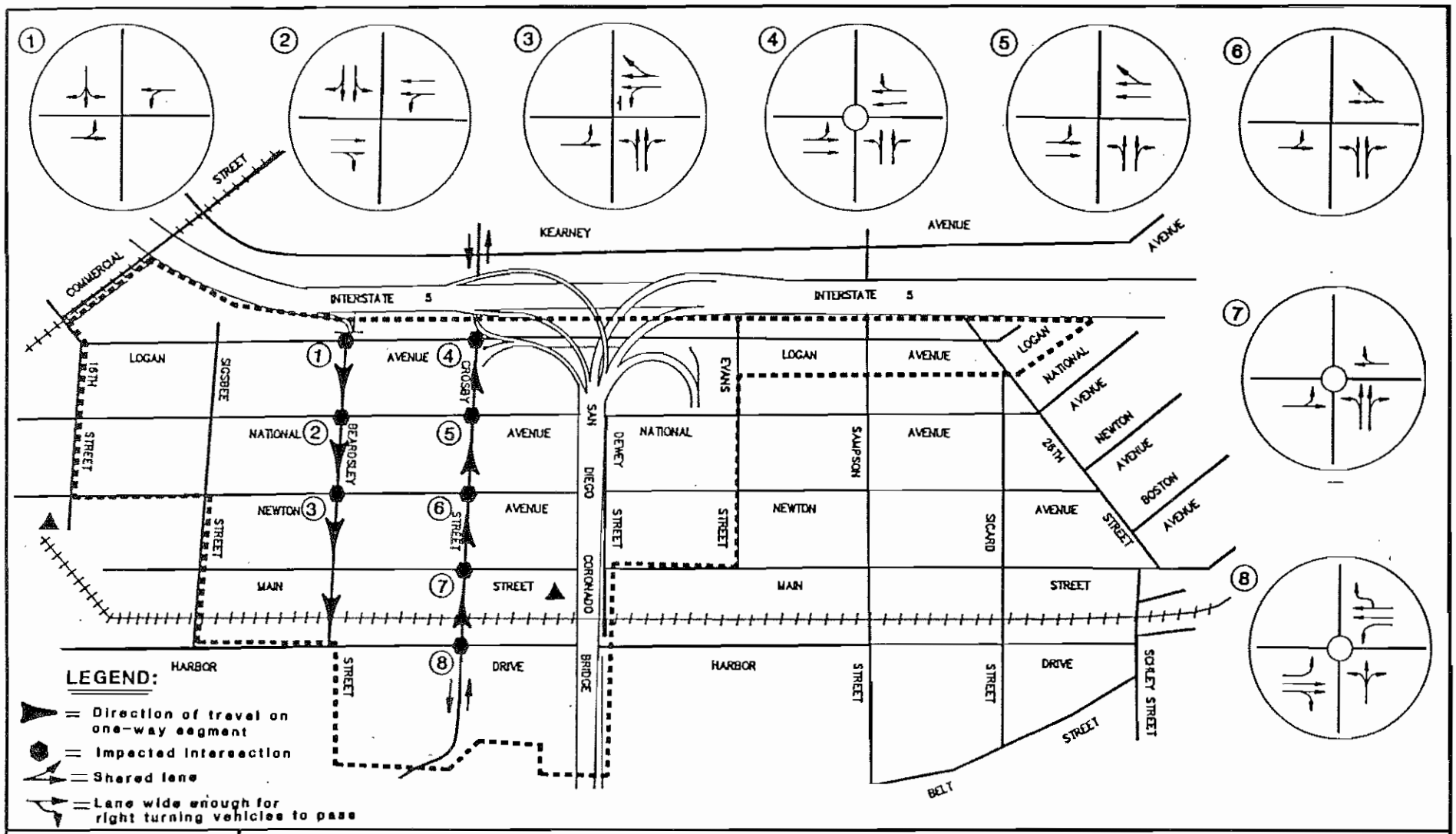

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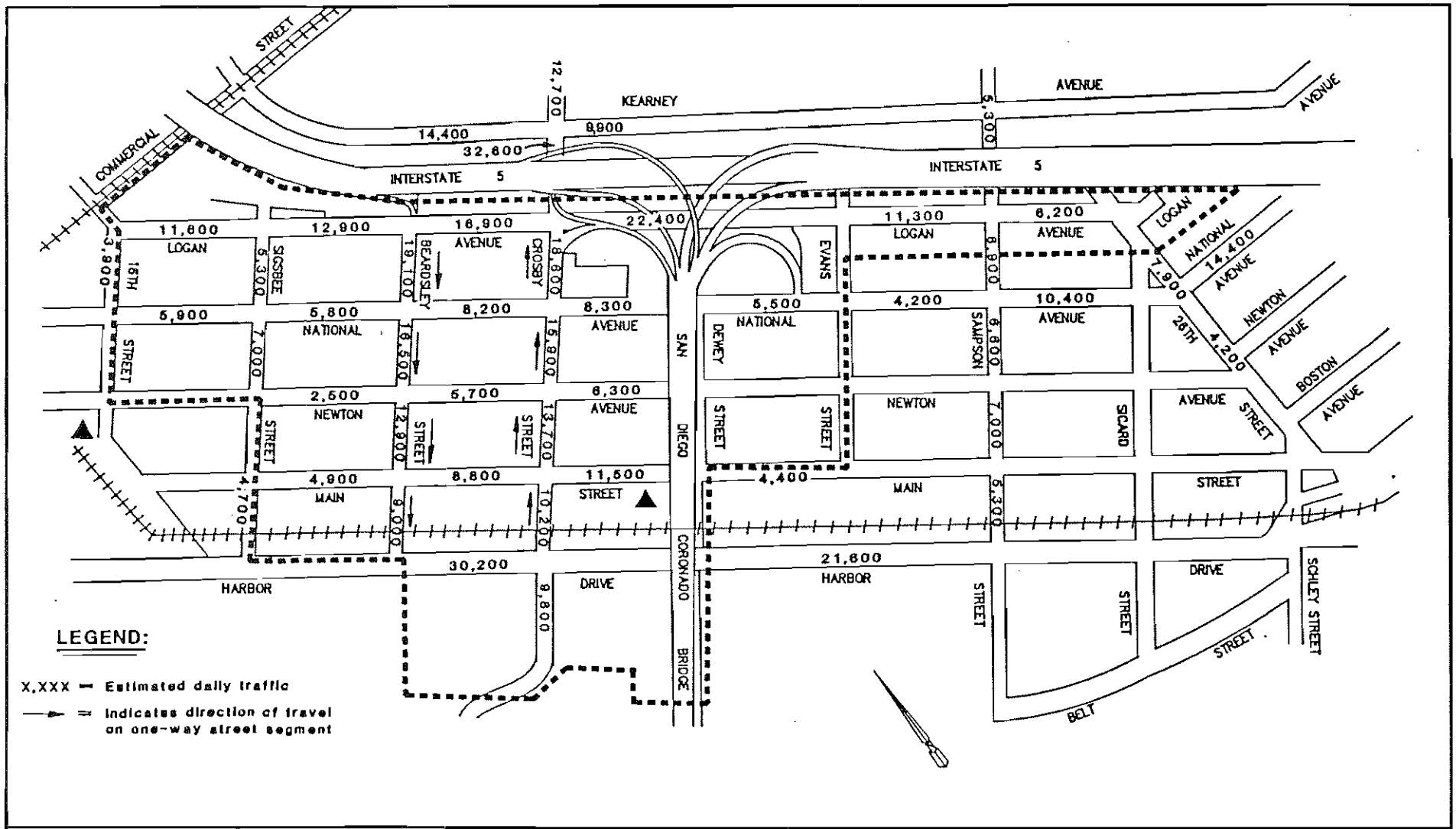
FIGURE 11
ALTERNATIVE 2
ROADWAY CONFIGURATION BEARDSLEY STREET/CROSBY STREET ONE-WAY COUPLET

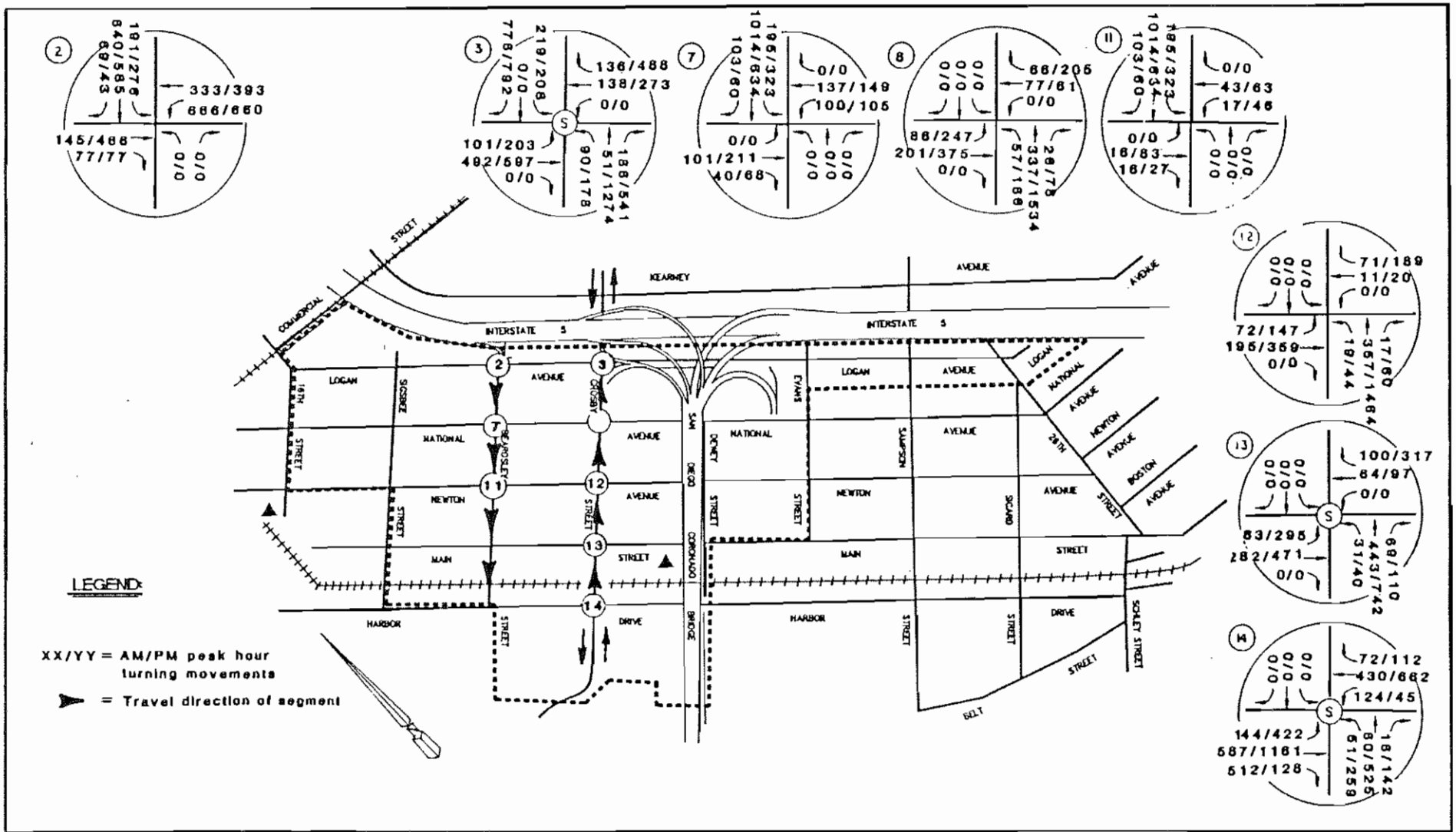


BASMACIYAN-DARNELL, INC.

FIGURE 12

ALTERNATIVE 2

ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC VOLUMES



BASMACIYAN DARNELL, INC.

FIGURE 13

ALTERNATIVE 2 AM/PM PEAK HOUR TURNING MOVEMENTS

TABLE 16

COMPARISON OF ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC

ALTERNATIVE 2
BEARDSLEY STREET ONE-WAY WESTBOUND
CROSBY STREET ONE-WAY EASTBOUND
BETWEEN LOGAN AVENUE AND HARBOR DRIVE

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2 (d)	7,500	9,000	1.20
Main St./Newton Ave.	2 (d)	7,500	12,900	1.72
Newton Ave./National Ave.	2 (d)	7,500	16,500	2.20
National Ave./Logan Ave.	2 (d)	7,500	19,100	2.55
Crosby Street:				
W/o Harbor Dr.	2C	5,000	9,800	1.96
Harbor Dr./Main St.	2 (d)	7,500	10,200	1.36
Main St./Newton Ave.	2 (d)	7,500	13,100	1.75
Newton Ave./National Ave.	2 (d)	7,500	15,900	2.12
National Ave./Logan Ave.	2 (d)	7,500	18,600	2.48
Logan Ave./Kearny Ave.	2C	5,000	32,600	6.52
Kearny Ave./E/O	2C	5,000	12,700	2.54
Harbor Drive:				
N/O Crosby Street	4M	30,000	31,000	1.03
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Kearney Avenue:				
N/O Crosby Street	1 (f)	5,000	9,900	1.98
S/O Crosby Street	1 (f)	5,000	14,400	2.88
Logan Avenue:				
16th St./Sigsbee St.	2C	5,000	11,600	2.32
Sigsbee St./Beardsley St.	2C	5,000	12,900	2.58
Beardsley St./Crosby St.	2C	5,000	16,900	3.38
Crosby St./S/O Crosby St.	2C	5,000	22,400	4.48
Evans St./Sampson St.	4C(e)	7,500	11,300	1.51
Sampson St./26th St.	4C(e)	7,500	6,200	0.83

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Two-lane one-way street. Estimated maximum volume is 7,500 vpd.
(e) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.
(f) One-way, one-lane roadway. Estimated maximum volume is 5,000 vpd.

TABLE 16 -- CONTINUED

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	2C	5,000	8,800	1.76
Crosby St./Dewey St.	2C	5,000	11,500	2.32
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(e)	7,500	5,900	0.79
Sigsbee St./Beardsley St.	4C(e)	7,500	5,800	0.77
Beardsley St./Crosby St.	4C(e)	7,500	8,200	1.09
Crosby St./Dewey St.	2C	5,000	8,300	1.66
Dewey St./Evans St.	2C	5,000	5,500	1.14
Evans St./Sampson St.	2C	5,000	4,200	0.84
Sampson St./26th St.	2C	5,000	10,400	2.08
26th St./S/O 26th St.	2C	5,000	14,400	2.88
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,500	0.50
Beardsley St./Crosby St.	2C	5,000	5,700	1.14
Crosby St./Dewey St.	2C	5,000	6,300	1.26
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.03
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,700	0.94
Newton Ave./National Ave.	2C	5,000	7,000	1.34
National Ave./Logan Ave.	2C	5,000	5,300	1.06
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	2C	5,000	7,900	1.58

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) Two-lane one-way street. Estimated maximum volume is 7,500 vpd.
(e) Roadway is substandard four-lane collector, with 52 feet curb to curb within 80 feet of right-of-way. Recommended maximum daily traffic volume is estimated, since no similar cross-section is recognized in the City of San Diego Street Design Manual.
(f) One-way, one-lane roadway. Estimated maximum volume is 5,000 vpd.

capacity ratios would be significantly reduced as compared to the future scenario. The couplet would have a similar impact on Beardsley Street; volumes would still exceed the recommended maximum, but the gap between volume and capacity would be reduced.

Summary of Alternative 2 Traffic Signal Warrant Analysis

Five unsignalized intersections are impacted by the improvements proposed under Alternative 2. BDI reanalyzed these intersections using Caltrans' daily signal warrants to determine whether Alternative 2 traffic conditions warranted signalization. Table 17 presents the results of this analysis. It was found that all five intersections satisfied Caltrans' daily warrants and signalization was therefore assumed for intersection capacity analyses.

Summary of Alternative 2 Intersection Level of Service

The eight impacted intersections were reanalyzed based on the revised peak hour volumes previously presented in Figure 13. This analysis assumed full signalization (as per the results of traffic signal warrant analysis) and the intersection geometrics depicted in Figure 11 (previously presented). The results of this analysis are shown in Table 18. Review of Table 18 indicates that a number of intersections along Crosby Street would continue to have an unacceptable level of service. However, operations at the Crosby Street intersections with Newton Avenue and National Avenue would be improved to LOS D or better.

Project Parking Requirements

Field observations revealed that the existing on-street parking supply in the study area is heavily utilized throughout the day. Therefore, it is essential that future development associated with the Barrio Logan Redevelopment plan provide adequate on-site parking facilities to accommodate project demand. Table 19 summarized the estimated parking that should be provided on-site to serve the project. Table 19 represents total redevelopment area parking need. Individual projects would need to be evaluated at the time of plan submittal for adequacy of proposed parking facilities on a site-by-site basis.

The parking requirements shown in Table 19 were developed based on parking standards recommended by the City of San Diego Engineering and Development Department and in accordance with the City's Multi-Family Parking Ordinance. A total of 13,687 on-site

TABLE 17

SUMMARY OF
ALTERNATIVE 2 TRAFFIC SIGNAL WARRANT ANALYSIS

UNSIGNALIZED INTERSECTION	SIGNAL WARRANTED(a)
Logan Avenue at:	
Beardsley Street	Yes
National Avenue at:	
Beardsley Street	Yes
Crosby Street	Yes
Newton Avenue at:	
Beardsley Street	Yes
Crosby Street	Yes

(a) Based on Caltrans' Daily Volume Traffic Signal Warrants

TABLE 18

SUMMARY OF ALTERNATIVE 2 INTERSECTION LEVELS OF SERVICE

Intersection Capacity Utilization Analysis

INTERSECTION	AM PEAK HR. ICU	AM PEAK HR. LOS	PM PEAK HR. ICU	PM PEAK HR. LOS
Kearney Avenue at:				
Crosby Street	0.82	D	1.32	F
Logan Avenue at:				
Sigsbee Street	0.42	A	0.58	A
Crosby Street	0.79	C	1.07	F
Beardsley Street	1.00	E	0.99	E
National Avenue at:				
Sigsbee Street	0.45	A	0.54	A
Beardsley Street	0.64	B	0.59	A
Crosby Street	0.32	A	0.81	D
Sampson Street	0.45	A	0.72	C
26th Street	0.63	B	0.72	C
Newton Avenue at:				
Beardsley Street	0.59	A	0.50	A
Crosby Street	0.38	A	0.86	D
Main Street at:				
Crosby Street	0.47	A	0.71	C
Harbor Drive at:				
Crosby Street	0.51	A	1.00	E
Sampson Street	0.54	A	0.73	C

Highway Capacity Manual
Unsignalized Intersection Analysis

INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	LEVEL OF SERVICE PM PEAK
Logan Avenue at:			
Sampson Street	ALL	<C(a)	<C(a)

(a) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 19

BARRIO LOGAN REDEVELOPMENT PLAN AREA
ESTIMATED PARKING DEMAND
PROPOSED USES

LAND USE	INTENSITY	RATE(e)	NUMBER OF SPACES REQUIRED
Multi-Family Residential(a)	1,198 DU	(b)	2,100
Mixed Use - Commercial	568,458 SF	1 space/225 SF(d)	2,527
Mercado - Commercial	568,458 SF	1 space/200 SF	2,843
Commercial/Retail/Office	696,960 SF	1 space/220 SF(c)	3,168
Industrial	1,219,680 SF	1 space/400 SF	3,049
		TOTAL	13,687 spaces

DU = Dwelling Unit SF = Square Feet

(a) For the purpose of estimating total project parking requirements, all residential units were assumed to have an average of 1.5 bedrooms. Parking estimate may slightly understate ultimate requirements, since parking replacement needed to compensate loss of on-street parking due to curb cuts could not be calculated (specific project designs are unavailable).
(b) See multi-family parking worksheets, Appendix C.
(c) Assumed 75 percent retail/25 percent office uses, consistent with assumptions used in the trip generation analysis.
(d) Assumed 80 percent retail/20 percent office uses, consistent with assumptions used in the trip generation analysis.
(e) Source (unless otherwise noted): Transportation Planning Division Parking Rates Used for Discretionary Review, April 20, 1989.

parking spaces are expected to be required to serve the Barrio Logan Redevelopment Plan area at buildout. Provision of fewer than the required on-site spaces would result in significant impacts to the area street system as unserved demand would compete for the now insufficient on-street parking supply.

It should be noted that the parking standards set forth in the Emergency Barrio Logan Planned District Ordinance (adopted May 15, 1990) would result in a potentially significant undersupply of on-site parking for the project. Some provisions of the emergency ordinance of concern are:

- No parking requirement for small, non-residential lots (fewer than 25,000 square feet).
- A minimum parking requirement of one space per 1,000 square feet for all non-residential uses (on lots exceeding 25,000 square feet).
- A maximum parking requirement of one space per 400 square feet for non-residential uses.

A listing of the City Engineering and Development Departments recommended parking rates and worksheets showing parking requirements for residential uses in accordance with the City's Multi-Family Parking Ordinance are provided in Appendix C.

SECTION V

CONCLUSIONS AND RECOMMENDATIONS

SUMMARY OF FINDINGS

- The proposed Barrio Logan Redevelopment Plan would add residential, commercial and office land uses to the Barrio Logan area, an older neighborhood located southeast of San Diego's Centre City. The study area is generally bounded by 16th Street to the west, I-5 to the north, 26th Street to the east and Harbor Drive to the south.

- The study area roadway network consists primarily of two-lane collector roads with some substandard four-lane facilities. Public transit is provided by the San Diego Trolley and five bus lines.

- Existing ADT volumes throughout the study area are generally below the City of San Diego's recommended daily maximum. However, Crosby Street has existing ADT volumes that exceed City maximums, particularly near Kearney Avenue. National Avenue also has several links with ADT volumes exceeding City recommended maximum volumes.

- The study analyzed the following 15 intersections:

  Logan Avenue at:
  - Sigsbee Street
  - Beardsley Street
  - Crosby Street
  - Sampson Street

  National Avenue at:
  - Sigsbee Street
  - Beardsley Street
  - Crosby Street
  - Sampson Street
  - 26th Street

  Newton Avenue at:
  - Beardsley Street
  - Crosby Street

  Main Street at:
  - Crosby Street

  Harbor Drive at:
  - Crosby Street
  - Sampson Street

  Kearney Avenue at:
  - Crosby Street

  It was found that all study area intersections had satisfactory levels of service during both the morning and afternoon peak hours.

- None of the nine unsignalized intersections in the study area warrant signalization under existing conditions.

- Implementation of the Barrio Logan Redevelopment Plan would add 72,520 vpd to the study area street system, including 4,312 during the morning peak hour and 7,373 during the afternoon peak hour.

- Future trips to and from the Barrio Logan area are expected to have the following distribution:

- North on Harbor Drive	-	20 percent
- North via Logan Ave./National Ave.	-	5 percent
- South (I-5/Harbor Dr./National Ave.)	-	30 percent
- North on I-5	-	30 percent
- East	-	15 percent

- The addition of future daily traffic volumes to the study area street system would cause 31 of the 46 roadway segments analyzed to exceed City of San Diego recommended maximum volumes. Volumes along Crosby Street would be especially high, particularly between Logan Avenue and Kearney Avenue where the future volume would be over six (6) times the City's recommended maximum.

- Under future traffic conditions, seven of nine unsignalized intersections warranted installation of traffic signal control.

- The addition of future traffic would seriously degrade peak hour operations at most Crosby Street intersections, with unacceptable peak hour level of service at five of six intersections studied. In addition, the Logan Avenue/ Beardsley Street intersection would be characterized by LOS F during the afternoon peak hour.

- Two one-way couplets were analyzed to determine whether anticipated future congestion could be alleviated while avoiding disruptive street widenings. A one-way couplet consists of two parallel streets carrying one-way traffic in opposite directions. Alternative 1 was a couplet of National Avenue one-way northbound and Newton Avenue one-way southbound between Sigsbee Street and Sampson Street. In Alternative 2, Crosby Street is one-way eastbound and Beardsley Street is one-way westbound between Logan Avenue and Harbor Drive. For both alternatives, BDI manually adjusted future volumes to reflect the new constraints or opportunities provided by the couplet.

- Under Alternative 1, daily operations along Newton Avenue and National Avenue would be significantly improved, but other roadways, including the heavily-traveled Crosby Street, would remain severely congested.

- Unsignalized intersections impacted by Alternative 1 were reanalyzed to determine if signal warrants were met. Two of the four signalized intersections (National Avenue/Crosby Street and National Avenue/Beardsley Street) would warrant signalization under Alternative 1 conditions.

- Under Alternative 1 peak hour conditions, several of the impacted intersections would continue to experience LOS E or LOS F conditions. Crosby Street intersections with Newton Avenue, National Avenue, Kearney Avenue and Harbor Drive would be characterized by LOS F during the afternoon peak hour.

- Under Alternative 2 conditions, operations along most of the study area roadway segments would continue to have volumes in excess of the City-recommended maximums. Traffic congestion would be alleviated by increased capacity along Crosby Street and Beardsley Street, but volumes would still exceed recommended maximums.

- All five unsignalized intersections impacted by the manual adjustments reflecting Alternative 2 conditions would warrant signalization under this scenario.

- Under Alternative 2, there would be unsatisfactory peak hour conditions at the Crosby Street intersections with Harbor Drive, Kearney Avenue, and Logan Avenue and at the intersection of Logan Avenue/Beardsley Street. However, the level of service at Crosby Street/National Avenue and Crosby Street/Newton Avenue would improve to LOS D or better.

MITIGATION MEASURES

One-Way Couplet Alternative

By eliminating movements which conflict with eastbound traffic at the Crosby Street intersections with National Avenue and Newton Avenue, the Alternative 2 couplet concept would improve future afternoon peak hour operations at these intersections from LOS F to LOS D, an adequate level of service. The additional capacity provided by the two-lane one-way segments of Crosby Street and Beardsley Street would also improve the ratio of daily volume to recommended maximum volume on many street segments, but would not increase capacity sufficiently to adequately accommodate future volumes. Although Alternative 2 would serve to relieve traffic congestion, study area streets in general would continue to experience undesirable, high daily volumes and several critical intersections would operate at worse than LOS D during peak periods, thereby requiring further mitigations.

Assuming the conversion of Beardsley Street and Crosby Street to one-way flow (Alternative 2), additional improvements were considered and study area streets and intersections were reanalyzed,

with the primary goal of achieving LOS D or better at critical intersections during peak periods. Secondarily, a projected daily volume to recommended maximum daily volume ratio of no more than 1.30 on street segments was desired. Alleviating peak hour congestion was considered the primary objective, since peak conditions provide a more meaningful representation of true operating conditions (traffic flow on street segments is generally restricted by intersection control and attendant delays).

Based on this analysis, additional mitigation measures have been proposed. Figure 14 summarizes the recommended intersection lane configurations and street improvements to serve future traffic demand as a result of regional growth and Barrio Logan redevelopment. Table 20 summarizes expected levels of service at the 15 critical intersections studied, with mitigation. Table 21 compares projected daily volumes to recommended maximum daily volumes, with mitigation, for study area street segments.

The street improvements shown in Figure 14 and outlined in the following paragraphs would result in all intersections studied operating at satisfactory levels of service (LOS D or better) during peak periods in the future. Further, upon implementation of these recommended improvements, daily volumes on all street segments analyzed would be within approximately 30 percent of the recommended maximum volume with three exceptions. Logan Avenue south of Crosby Street would carry traffic approximately 49 percent above the recommended maximum volume for the segment. Sigsbee Street between Newton Avenue and National Avenue and Logan Avenue and Harbor Drive would carry traffic exceeding the recommended maximum volume by more than 30 percent as well. In the case of Sigsbee Street and Sampson Street, City staff indicated that the higher average daily traffic volumes are acceptable. Figure 15 depicts future roadway classifications proposed under the Alternative 2 couplet.

It should be noted that, where possible, one-way couplet improvements were recommended to minimize street widening in general, and to avoid loss of on-street parking or widening that would involve acquisition of additional right-of-way. For instance, several streets, such as Logan Avenue, are recommended for widening from 52 feet to 64 feet curb-to-curb within 80 feet of existing right-of-way. It was assumed that by providing a substandard four-lane cross-section (the standard for four-lane collector streets is 72 feet curb-to-curb), four lanes could be provided with no loss of on-street parking and no additional right-of-way required. For the purpose of evaluating daily volumes, these recommended 64 foot streets were assumed to have a maximum recommended volume of 15,000 vehicles per day, consistent with the maximum for standard four-lane collector streets. Although the substandard cross-section would not allow construction of a raised median, which is typically provided on the standard cross-section, intersection improvements, including additional

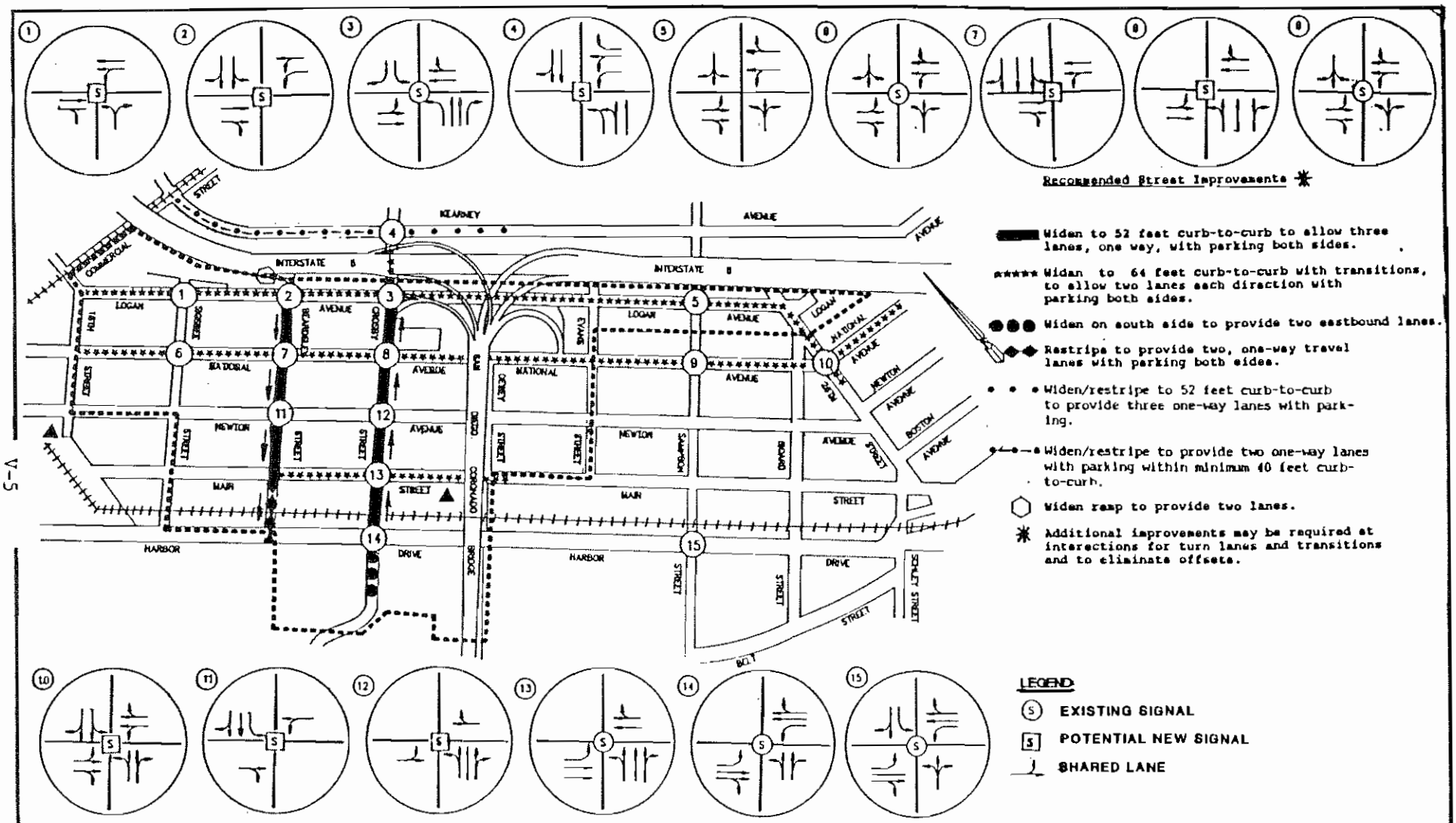


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FIGURE 14

RECOMMENDED LANE CONFIGURATIONS AND STREET IMPROVEMENTS
(ALTERNATIVE 2-BEARDSLEY STREET/CROSBY STREET ONE-WAY COUPLET)

TABLE 20

SUMMARY OF ALTERNATIVE 2 INTERSECTION LEVELS OF SERVICE
WITH MITIGATION IMPROVEMENTS

(ASSUMES BEARDSLEY STREET/CROSBY STREET ONE-WAY)

	ALTERNATIVE 2 LOS (NO MITIGATION)				ALTERNATIVE 2 LOS (WITH MITIGATION (a))			
	AM PEAK HR.		PM PEAK HR.		AM PEAK HR.		PM PEAK HR.	
INTERSECTION	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Kearney Avenue at:								
Crosby Street	0.82	D	1.32	F	0.64	B	0.82	D
Logan Avenue at:								
Sigsbee Street	0.42	A	0.58	A	0.31	A	0.59	A
Crosby Street	0.79	C	1.07	F	0.74	C	0.87	D
Beardsley Street	1.00	E	0.99	E	0.75	C	0.78	C
National Avenue at:								
Sigsbee Street	0.45	A	0.54	A	0.45	A	0.54	A
Beardsley Street	0.64	B	0.59	A	0.51	A	0.47	A
Crosby Street	0.32	A	0.81	D	0.30	A	0.63	B
Sampson Street	0.45	A	0.58	A	0.45	A	0.58	A
26th Street	0.63	B	0.72	C	0.47	A	0.47	A
Newton Avenue at:								
Beardsley Street	0.59	A	0.50	A	0.47	A	0.41	A
Crosby Street	0.38	A	0.86	D	0.38	A	0.71	C
Main Street at:								
Crosby Street	0.47	A	0.71	C	0.31	A	0.43	A
Harbor Drive at:								
Crosby Street	0.51	A	1.00	E	0.51	A	0.73	C
Sampson Street	0.54	A	0.73	C	0.52	A	0.73	C

Highway Capacity Manual
Unsignalized Intersection Analysis

		LEVEL OF SERVICE			LEVEL OF SERVICE	
INTERSECTION	APPROACH	AM PEAK	PM PEAK	APPROACH	AM PEAK	PM PEAK
Logan Avenue at:						
Sampson Street	ALL	>C(b)	>C(b)	ALL	>C(b)	>C(b)

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 21

COMPARISON OF ESTIMATED FUTURE AVERAGE WEEKDAY TRAFFIC TO CITY OF SAN DIEGO RECOMMENDED MAXIMUM DAILY TRAFFIC

ALTERNATIVE 2 TRAFFIC CONDITION WITH RECOMMENDED MITIGATION (ASSUMES BEARDSLEY STREET/CROSBY STREET ONE-WAY COUPLET)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2 (d)	7,500	9,000	1.20
Main St./Newton Ave.	3 (d)	15,000	12,900	0.86
Newton Ave./National Ave.	3 (d)	15,000	16,500	1.10
National Ave./Logan Ave.	3 (d)	15,000	19,100	1.27
Crosby Street:				
W/O Harbor Dr.	3C(f)	7,500	9,800	1.31
Harbor Dr./Main St.	3 (d)	15,000	10,200	0.68
Main St./Newton Ave.	3 (d)	15,000	13,100	0.87
Newton Ave./National Ave.	3 (d)	15,000	15,900	1.06
National Ave./Logan Ave.	3 (d)	15,000	18,600	1.24
Logan Ave./Kearny Ave.	4M	30,000	32,600	1.09
Kearny Ave./E/O	4C	15,000	12,700	0.85
Harbor Drive:				
N/O Crosby Street	4M	30,000	31,000	1.03
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76
Kearney Avenue:				
N/O Crosby Street	2 (d)	7,500	9,900	1.32
S/O Crosby Street	3 (d)	15,000	14,400	0.96

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is 64 feet curb-to-curb within 80 feet of right-of-way. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four lane collector. See text for further discussion.
(f) Two lanes eastbound and one lane westbound. Recommended maximum volume is estimated.

TABLE 21 -- CONTINUED

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.03
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,700	0.94
Newton Ave./National Ave.	2C	5,000	7,000	1.40
National Ave./Logan Ave.	2C	5,000	5,300	1.06
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	4C	15,000	7,900	0.52

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is 64 feet curb-to-curb within 80 feet of right-of-way. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four lane collector. See text for further discussion.
(f) Two lanes eastbound and one lane westbound. Recommended maximum volume is estimated.

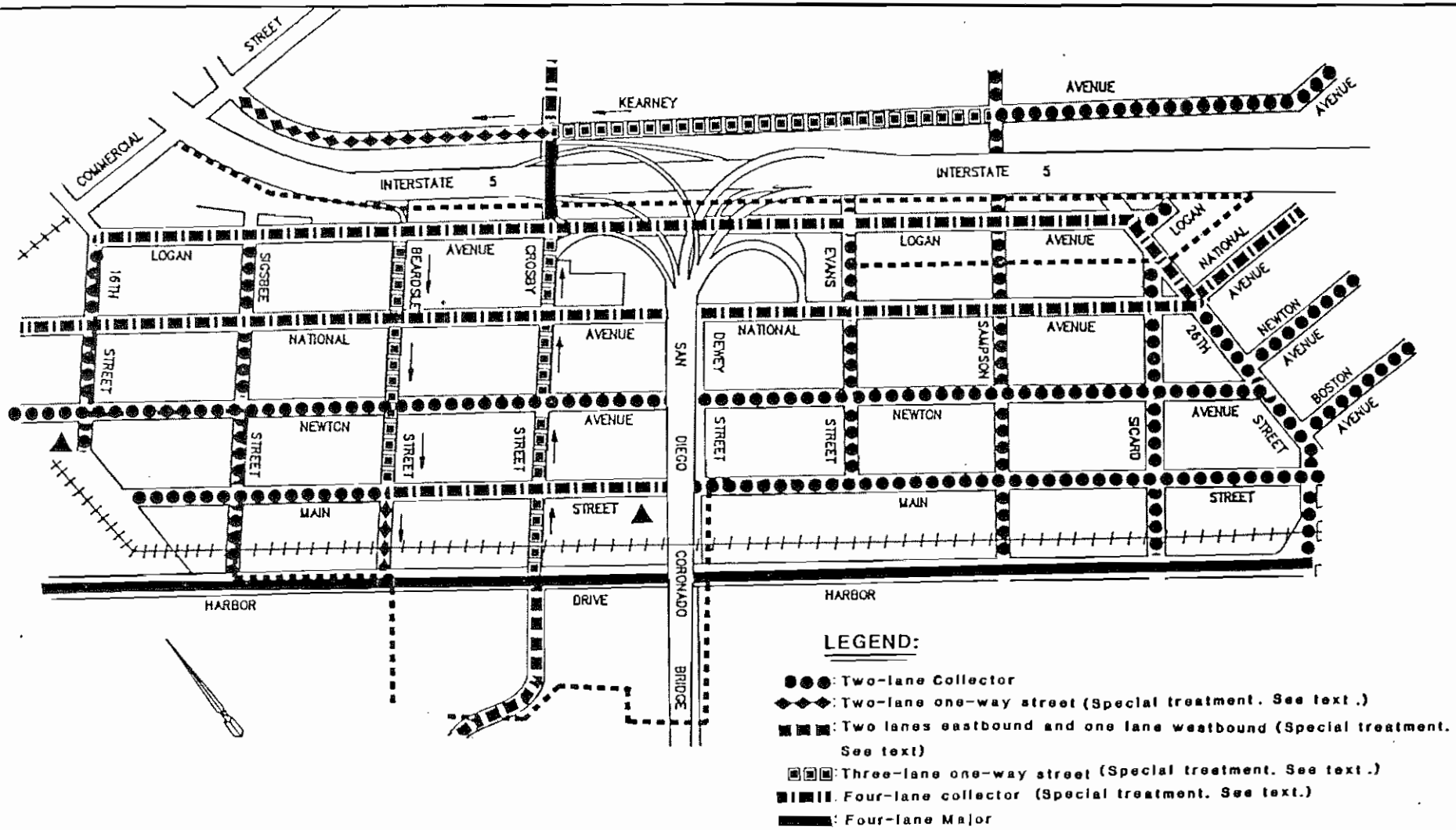

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FIGURE 15

PROPOSED ALTERNATIVE 2 LOCAL STREET CLASSIFICATIONS
(BEARDSLEY STREET /CROSBY STREET ONE-WAY COUPLET)

turn lanes, have been recommended where appropriate to achieve satisfactory intersection levels of service. The carrying capacity of these modified four-lane streets, therefore, was assumed to be little effected by the absence of a median between intersections.

The following improvements are recommended to mitigate project traffic impacts in connection with the Beardsley Street/Crosby Street one-way couplet:

- Implement the Alternative 2 one-way couplet with Beardsley Street one-way westbound and Crosby Street one-way eastbound between Harbor Drive and Logan Avenue. Beardsley Street and Crosby Street would be widened from 40 feet to 52 feet curb-to-curb to allow the retention of on-street parking and three one-way travel lanes.

- Improve the intersection of Beardsley Street and Logan Avenue to accommodate high future projected volumes, as follows:

  - Provide two southbound approach lanes, and provide a northbound shared through plus left-turn lane and a northbound exclusive left-turn lane. These improvements to Logan Avenue would be required as a result of implementing the Beardsley Street/Crosby Street one-way couplet.

  - Widen the I-5 southbound off-ramp to provide two lanes at the intersection of Logan Avenue. This improvement is required to accommodate projected future volumes and would be needed with or without the implementation of the Beardsley Street/Crosby Street one-way couplet. It should be noted that this improvement would require coordination with and the approval of Caltrans since it includes a Caltrans freeway facility.

- Improve the Logan Avenue/I-5 southbound on-ramp to provide two southbound left turn lanes on Logan Avenue and two lanes on the ramp. The ramp should also be monitored to determine whether signalization is warranted by heavy future volumes. Refer to the conceptual diagrams in Appendix G of this report for intersection configuration. Note that both improvements would require Caltrans coordination and approval.

- Improve the intersection of Logan Avenue and Crosby Street to provide an exclusive left-turn lane, two through lanes, and an exclusive right-turn lane on the eastbound approach, and an exclusive right-turn lane and exclusive left-turn lane on the westbound approach. Other approach lanes should be restriped as shown in Figure 14.

An engineering study will be needed to determine the required intersection geometrics. Design elements which will require special consideration include provision of adequate curb-lane widths and curb return radii to accommodate truck turning movements with minimum disruption to traffic flow, the proximity of on-ramps to State Route (SR) 75 (the Coronado Bay Bridge), and compensation for conversion of Crosby Street to one-way eastbound flow (to avoid lane offsets at the intersection).

- Improve the intersection of Kearney Avenue and Crosby Street to provide one exclusive left-turn lane, one shared through plus left-turn lane and one right-turn lane on the northbound approach, one left-turn, one shared through plus left-turn and one exclusive through lane on the eastbound approach, and two westbound approach lanes. The additional turn lanes at this intersection will be required to serve high projected turn moves, primarily associated with freeway access.

- Improve the intersection of Main Street and Crosby Street to provide an exclusive southbound left-turn lane to serve high projected left-turn volumes.

- Widen Crosby Street between Logan Avenue and Kearney Avenue to provide two travel lanes in each direction and required turn lanes at intersections. The amount of widening needed should be determined in conjunction with the engineering study recommended in connection with improvements to the Logan Avenue/Crosby Street intersection. Excess right-of-way appears to be available.

- Widen Crosby Street west of Harbor Drive on the south side to provide one additional eastbound lane. This could be done as adjacent industrial property redevelops.

- Widen the following existing 52 foot roadways to 64 feet (within existing 80 feet of right-of-way) with appropriate transitions to provide two lanes each direction with parking. Additional widening and/or parking removal may be required at some intersections to accommodate needed intersection lane configurations previously discussed:

  - Logan Avenue between 16th Street and 26th Street
  - Main Street between Beardsley Street and Dewey Street
  - National Avenue from 16th Street to south of 26th Street

  Note that on Logan Avenue from the I-5 southbound on-ramp to north of Crosby Street, additional right-of-way will be

required to accommodate the lane and intersection configurations presented in Appendix G. These improvements should be done to the satisfaction of the City Engineer.

- Widen/restripe Kearney Avenue between Commercial Avenue and the I-5 northbound off-ramp. South of Crosby Street, Kearney Avenue will require three one-way travel lanes within 52 feet curb-to-curb. North of Crosby Street, Kearney Avenue should be two lanes one-way within a minimum 40 feet of pavement. Existing right-of-way varies from less than 50 feet up to 80 feet; therefore, some additional right-of-way will be required. This improvement may require coordination with Caltrans, since Kearney Avenue abuts I-5 and widening could include Caltrans right-of-way.

- As future traffic conditions warrant, provide traffic signals at the following unsignalized intersections:

  - Logan Avenue/Beardsley Street
  - National Avenue/Crosby Street
  - National Avenue/Beardsley Street
  - Newton Avenue/Crosby Street
  - Newton Avenue/Beardsley Street
  - Kearney Avenue/Crosby Street
  - Logan Avenue/Sigsbee Street
  - National Avenue/26th Street
  - Logan Avenue/I-5 Southbound On-Ramp
  - Logan Avenue/Sampson Street

  The following signalized intersections should be interconnected to operate as a system:

  - Logan Avenue/Crosby Street
  - Logan Avenue/I-5 southbound on-ramp
  - Crosby Street/Kearney Avenue

- As redevelopment occurs, improve turning radii at intersections to meet minimum standards for truck turning. Currently, operational difficulties are encountered where trucks attempt turns at intersections with substandard curb radii. Resulting traffic delays can be particularly pronounced in the study area, given the unusually high degree of truck traffic found in Barrio Logan.

- As the community redevelops, provide on-site parking adequate to fully serve project parking demand. Since existing on-street parking is heavily utilized, this is essential to avoid any additional impact on existing parking that might be caused by spill-over due to unserved project parking

demand. On a case-by-case basis, shared parking arrangements could be pursued to minimize on-site parking requirements of mixed use sites.

Existing Circulation System Mitigation (No Couplet)

The following paragraphs describe mitigation measures developed to alleviate future Barrio Logan traffic congestion based upon the existing circulation system. These measures do not include implementation of a one-way couplet.

Figure 16 presents graphically recommended mitigation measures. These measures include street widenings, restriping, signalization and intersection improvements. Emphasis was placed on improving both peak hour and daily operations in the study area. For daily operations, City staff determined that roadways exceeding recommended daily capacity by 30 percent or more warranted mitigation. In certain cases, such as Sigsbee Street and Sampson Street, City staff waived this requirement and no mitigation measures were recommended.

Table 22 presents peak hour intersection operations with the proposed mitigation measures, and Table 23 summarizes daily operations with the proposed improvements. As shown in these tables, future traffic from the Barrio Logan Redevelopment Plan can be accommodated with the mitigations proposed.

Figure 17 depicts the future circulation system based on the mitigation measures presented in Figure 16. The primary east/west link, Crosby Street, is classified as a standard four-lane major roadway with a recommended daily maximum of 30,000 vpd.

The following paragraphs detail the improvements required to mitigate Barrio Logan Redevelopment Plan impacts:

- Improve the intersection of Beardsley Street and Logan Avenue to accommodate high future projected volumes, as follows:

  - Provide two southbound approach lanes, and provide a northbound shared through plus left-turn lane and a north bound exclusive left-turn lane.

  - Widen the I-5 southbound off-ramp to provide two lanes at the intersection of Logan Avenue. It should be noted that this improvement would require coordination with and the approval of Caltrans since it includes a Caltrans freeway facility.

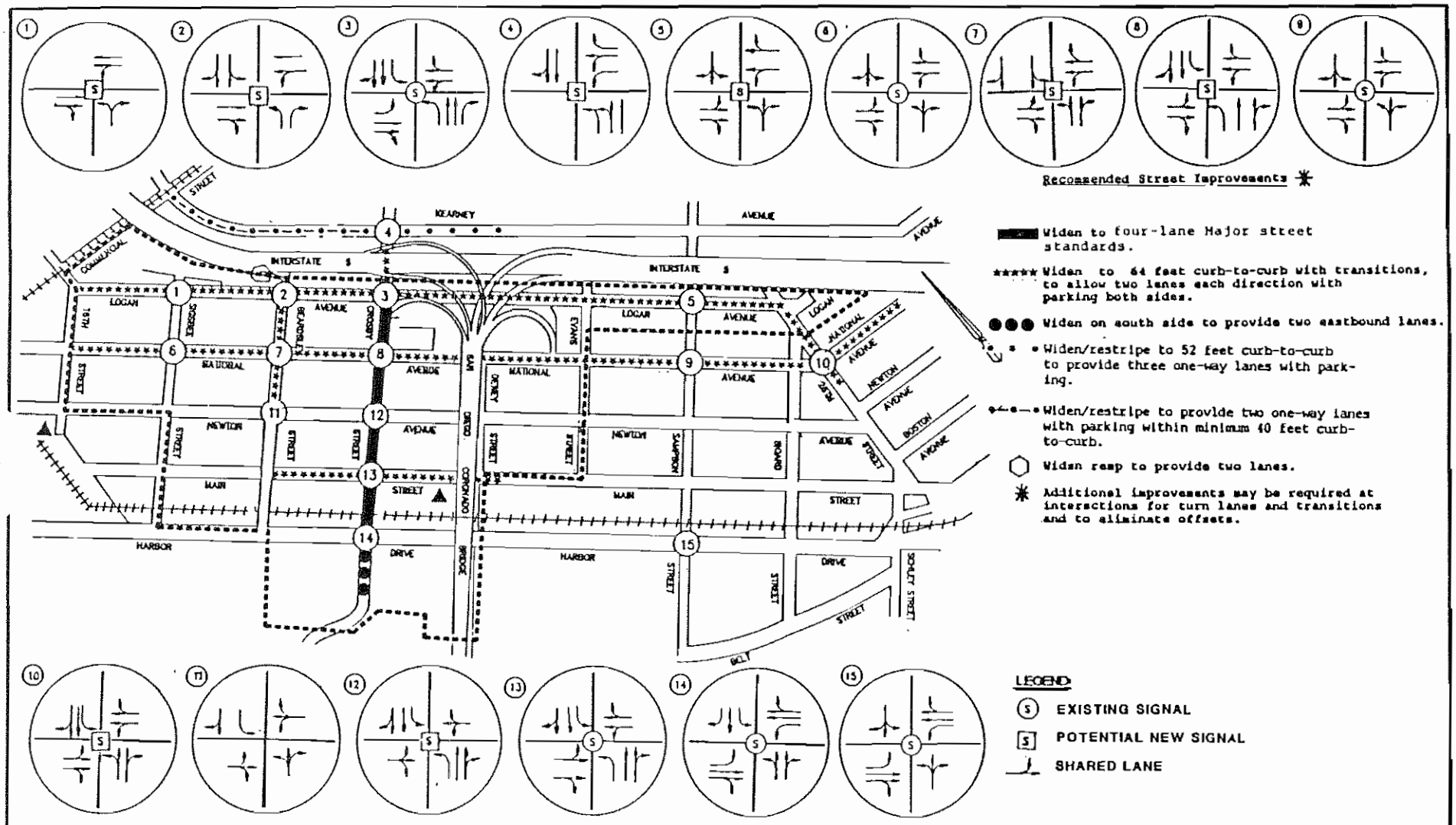

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FIGURE 16

RECOMMENDED LANE CONFIGURATIONS AND STREET IMPROVEMENTS
(NO ONE-WAY COUPLET)

TABLE 22

SUMMARY OF INTERSECTION LEVELS OF SERVICE
WITH MITIGATION IMPROVEMENTS

(WITHOUT BEARDSLEY STREET/CROSBY STREET ONE-WAY COUPLET)

	ALTERNATIVE 2 LOS (NO MITIGATION)				ALTERNATIVE 2 LOS (WITH MITIGATION (a))			
	AM PEAK HR.		PM PEAK HR.		AM PEAK HR.		PM PEAK HR.	
INTERSECTION	ICU	LOS	ICU	LOS	ICU	LOS	ICU	LOS
Kearney Avenue at:								
Crosby Street	0.82	D	1.32	F	0.67	B	0.83	D
Logan Avenue at:								
Sigsbee Street	0.42	A	0.58	A	0.32	A	0.41	A
Crosby Street	0.87	D	1.51	F	0.48	A	0.86	D
Beardsley Street	0.95	E	1.04	F	0.64	B	0.63	B
National Avenue at:								
Sigsbee Street	0.45	A	0.54	A	0.45	A	0.54	A
Beardsley Street	0.74	C	0.67	B	0.53	A	0.49	A
Crosby Street	0.73	C	1.27	F	0.50	A	0.76	C
Sampson Street	0.45	A	0.58	A	0.45	A	0.58	A
26th Street	0.63	B	0.72	C	0.43	A	0.37	A
Newton Avenue at:								
Crosby Street	0.71	C	1.17	F	0.51	A	0.77	C

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 22 -- CONTINUED

INTERSECTION	ALTERNATIVE 2 LOS (NO MITIGATION) AM PEAK HR. ICU	LOS	PM PEAK HR. ICU	LOS	ALTERNATIVE 2 LOS (WITH MITIGATION (a)) AM PEAK HR. ICU	LOS	PM PEAK HR. ICU	LOS
Main Street at:								
Crosby Street	0.61	B	0.90	D	0.44	A	0.66	B
Harbor Drive at:								
Crosby Street	0.73	C	1.12	F	0.65	B	0.85	D
Sampson Street	0.54	A	0.73	C	0.52	A	0.73	C

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INTERSECTION	APPROACH	LEVEL OF SERVICE AM PEAK	PM PEAK	LEVEL OF SERVICE AM PEAK	PM PEAK
Logan Avenue at:					
Sampson St.	ALL	>C(b)	>C(b)	>C(b)	>C(b)
Newton Avenue at:					
Beardsley St.	NB (Newton Ave.)	C	C	C	C
	SB (Newton Ave.)	C	C	C	C
	WB to SB left-turn	A	A	A	A
	EB to NB left-turn	A	A	A	A

(a) Mitigation measures are described in Section V of this report.
(b) The Highway Capacity Manual method for evaluating the level of service (LOS) at all-way stop-controlled intersections gives the approximate level of service in terms of LOS C only (either better than or worse than LOS C). A ">C" in the table above denotes better than LOS C conditions, while a "<C" indicates worse than LOS C.

TABLE 23

COMPARISON OF FUTURE AVERAGE
WEEKDAY TRAFFIC TO CITY OF SAN DIEGO
RECOMMENDED MAXIMUM DAILY TRAFFIC

(NO ONE-WAY COUPLET)

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Beardsley Street:				
Harbor Dr./Main St.	2C	5,000	4,300	0.86
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	4C(e)	15,000	9,700	0.65
National Ave./Logan Ave.	4C(e)	15,000	11,700	0.78
Crosby Street:				
W/O Harbor Dr.	3C(f)	7,500	9,800	1.31
Harbor Dr./Main St.	4M	30,000	14,200	0.47
Main St./Newton Ave.	4M	30,000	18,900	0.63
Newton Ave./National Ave.	4M	30,000	22,900	0.76
National Ave./Logan Ave.	4M	30,000	26,600	0.89
Logan Ave./Kearny Ave.	4M	30,000	32,600	1.09
Kearny Ave./E/O	4C(e)	15,000	12,700	0.85
Kearney Avenue:				
S/O Crosby Street	2 (d)	7,500	9,900	1.32
S/O Crosby Street	3 (d)	15,000	14,400	0.96
Harbor Drive:				
N/O Crosby Street	4M	30,000	30,200	1.01
Crosby St./Sampson St.	4M	30,000	21,600	0.72
S/O Sampson St.	4M	30,000	22,900	0.76

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.

TABLE 23 -- CONTINUED

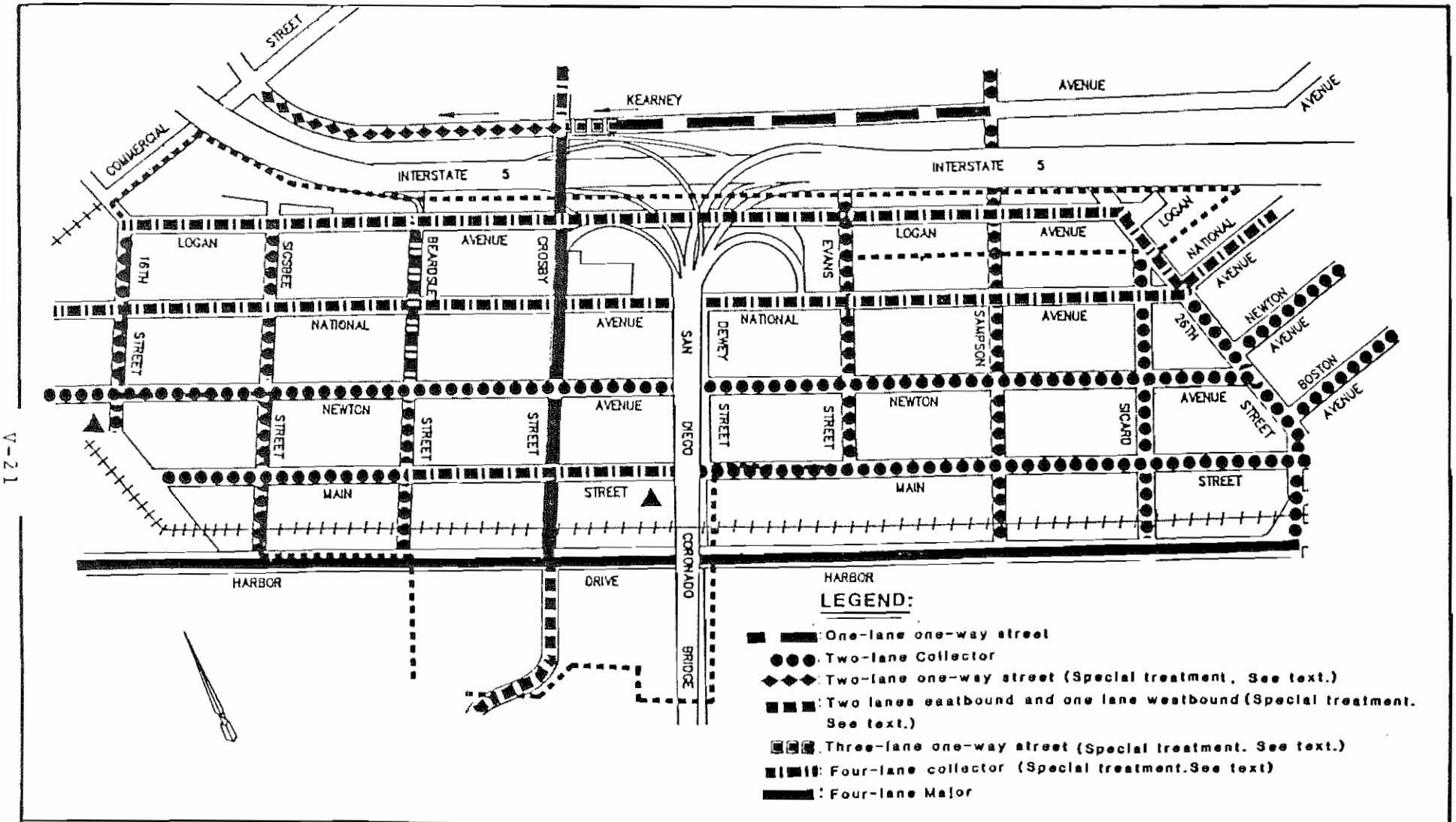
ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Logan Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	11,600	0.77
Sigsbee St./Beardsley St.	4C(e)	15,000	9,600	0.64
Beardsley St./Crosby St.	4C(e)	15,000	14,000	0.93
Crosby St./S/O Crosby St.	4C(e)	15,000	22,300	1.49
Evans St./Sampson St.	4C(e)	15,000	11,300	0.75
Sampson St./26th St.	4C(e)	15,000	6,200	0.41
Main Street:				
Sigsbee St./Beardsley St.	2C	5,000	4,900	0.98
Beardsley St./Crosby St.	4C(e)	15,000	6,200	0.41
Crosby St./Dewey St.	4C(e)	15,000	11,500	0.77
Dewey St./Evans St.	2C	5,000	4,400	0.88
National Avenue:				
16th St./Sigsbee St.	4C(e)	15,000	5,900	0.39
Sigsbee St./Beardsley St.	4C(e)	15,000	5,900	0.39
Beardsley St./Crosby St.	4C(e)	15,000	6,300	0.42
Crosby St./Dewey St.	4C(e)	15,000	8,400	0.56
Dewey St./Evans St.	4C(e)	15,000	5,500	0.37
Evans St./Sampson St.	4C(e)	15,000	4,200	0.28
Sampson St./26th St.	4C(e)	15,000	10,400	0.69
26th St./S/O 26th St.	4C(e)	15,000	14,400	0.96
Newton Avenue:				
Sigsbee St./Beardsley St.	2C	5,000	2,300	0.46
Beardsley St./Crosby St.	2C	5,000	4,100	0.82
Crosby St./Dewey St.	2C	5,000	6,400	1.28
Sampson Street:				
Harbor Dr./Main St.	2C	5,000	8,300	1.66
Main St./Newton Ave.	2C	5,000	7,000	1.40
Newton Ave./National Ave.	2C	5,000	6,600	1.32
National Ave./Logan Ave.	2C	5,000	6,900	1.38
Logan Ave./E/O Logan Ave.	2C	5,000	5,300	1.06

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.

TABLE 23 -- CONTINUED

ROADWAY SEGMENT	STREET CLASS(a)	REC. MAX. ADT(b)	FUTURE ADT	FUTURE V/C(c)
Sigsbee Street:				
Harbor Dr./Main St.	2C	5,000	4,500	0.90
Newton Ave./National Ave.	2C	5,000	6,700	1.34
National Ave./Logan Ave.	2C	5,000	5,200	1.04
16th Street:				
National Ave./Logan Ave.	2C	5,000	3,900	0.78
26th Street:				
Newton Ave./National Ave.	2C	5,000	4,200	0.84
National Ave./Logan Ave.	4C(e)	5,000	8,000	0.53

(a) # = Number of Lanes M = Major Street C = Collector Street
(b) See Appendix A.
(c) Future ADT to Recommended Maximum ADT ratio.
(d) One-way street. Estimated maximum volume is 7,500 vpd for two lanes and 15,000 vpd for three lanes.
(e) Recommended cross-section is a minimum of 64 feet curb-to-curb. Estimated maximum volume is 15,000 vpd, consistent with standard 72 feet curb-to-curb four-lane collector. See text for further discussion.
(f) Two lanes eastbound and one-lane westbound. Estimated maximum volume is 7,500 vpd.



BASMACIYAN DARNELL, INC.

FIGURE 17

PROPOSED LOCAL STREET CLASSIFICATIONS
(NO ONE-WAY COUPLET)

- Improve the Logan Avenue/I-5 southbound on-ramp to provide two southbound left turn lanes on Logan Avenue. The ramp should also be monitored to determine whether signalization is warranted by heavy future volumes. Refer to the conceptual diagrams in Appendix G of this report for intersection configuration. Note that both improvements would require Caltrans coordination and approval.

- Improve the intersection of Logan Avenue and Crosby Street to provide an exclusive left-turn lane, two through lanes, and an exclusive right-turn lane, on the eastbound approach, and an exclusive left-turn lane, an exclusive through and shared through/right-turn lane on the westbound approach. Other approach lanes should be restriped as shown in Figure G-1 (see Appendix G).

- Improve the intersection of Kearney Avenue and Crosby Street to provide one exclusive left-turn lane, one shared through plus left-turn lane and one right-turn lane on the northbound approach, one left-turn, one shared through plus left-turn and one exclusive through lane on the eastbound approach, and two westbound approach lanes. The additional turn lanes at this intersection will be required to serve high projected turn moves, primarily associated with freeway access.

- Widen Crosby Street between Harbor Drive and Kearney Avenue to provide two lanes in each direction in accordance with four-lane major roadway specifications. The proposed cross-sections are depicted in Appendix G. Recommended curb-to-curb width is 78 feet within 98 feet of right-of-way. This is a standard cross-section that preserves parking. An alternate 64 foot/84 foot cross-section is also presented in Appendix G. This cross-section eliminates parking. East of Logan Avenue, acquisition of 98 feet of right-of-way is recommended in either case in order to preserve future roadway widening options.

- Widen Crosby Street west of Harbor Drive on the south side to provide one additional eastbound lane. This could be done as adjacent industrial property redevelops.

- Widen the following existing 52 foot roadways to 64 feet (within existing 80 feet of right-of-way) with appropriate transitions to provide two lanes each direction with parking. Additional widening and/or parking removal may be required at some intersections to accommodate needed intersection lane configurations previously discussed:

  - Logan Avenue between 16th Street and 26th Street
  - Main Street between Beardsley Street and Dewey Street
  - National Avenue from 16th Street to south of 26th Street

Note that on Logan Avenue from the I-5 southbound on-ramp to north of Crosby Street, additional right-of-way will be required to accommodate the lane and intersection configurations presented in Appendix G. These improvements should be done to the satisfaction of the City Engineer.

- Widen/restripe Kearney Avenue between Commercial Avenue and the I-5 northbound off-ramp. South of Crosby Street, Kearney Avenue will require three one-way travel lanes within 52 feet curb-to-curb. North of Crosby Street, Kearney Avenue should be two lanes one-way within a minimum 40 feet of pavement. Existing right-of-way varies from less than 50 feet up to 80 feet; therefore, some additional right-of-way will be required. This improvement may require coordination with Caltrans, since Kearney Avenue abuts I-5 and widening could include Caltrans right-of-way.

- As future traffic conditions warrant, provide traffic signals at the following unsignalized intersections:

  - Logan Avenue/Beardsley Street
  - National Avenue/Crosby Street
  - National Avenue/Beardsley Street
  - Logan Avenue/I-5 Southbound On-Ramp
  - Newton Avenue/Crosby Street
  - Kearney Avenue/Crosby Street
  - Logan Avenue/Sigsbee Street
  - National Avenue/26th Street
  - Logan Avenue/Sampson Street

  The following signalized intersections should be interconnected to operate as a system:

  - Logan Avenue/Crosby Street
  - Logan Avenue/I-5 Southbound On-Ramp
  - Crosby Street/Kearney Avenue

- As redevelopment occurs, improve turning radii at intersections to meet minimum standards for truck turning. Currently, operational difficulties are encountered where trucks attempt turns at intersections with substandard curb radii. Resulting traffic delays can be particularly pronounced in the study area, given the unusually high degree of truck traffic found in Barrio Logan.

- As the community redevelops, provide on-site parking adequate to fully serve project parking demand. Since existing on-street parking is heavily utilized, this is essential to avoid any additional impact on existing parking that might be caused by spill-over due to unserved project parking demand. On a case-by-case basis, shared parking arrangements could be pursued to minimize on-site parking requirements of mixed use sites.

APPENDIX A

CITY OF SAN DIEGO STREET DESIGN MANUAL

THE CITY OF SAN DIEGO

CALIFORNIA

STREET DESIGN MANUAL

July 1987

A-1

CITY OF SAN DIEGO

STREET DESIGN MANUAL

July 1987

I. STREET CLASSIFICATION

A. Functional Classification

1. The necessary width, alignment, and design speed of a street is related to its functional classification. For the purpose of these standards, the following functional classifications shall apply.

2. FREEWAY: A street whose only purpose is to carry through traffic, and is fully access controlled by grade separations and ramp connections. It normally is maintained by the State and is constructed to State criteria, and varies in width from four to eight or more lanes.

3. EXPRESSWAY: A street whose only purpose is to carry through traffic and provide a network connecting to the State highway system. It may be access controlled by grade separations and interchanges; or if not, then intersections are spaced far apart. There is absolutely no access from abutting property.

4. PRIMARY ARTERIAL: A street whose primary purpose is to carry through traffic and provide a network connecting to the State highway system. It is six lanes in width and limits access from abutting property.

5. MAJOR STREET: A street whose major purpose is to carry through traffic and provide a network connecting to the State highway system while still providing access to abutting property. It is four or six lanes in width dependent on traffic volume.

6. COLLECTOR STREET: A street whose purpose is to provide for local traffic movement and access to abutting property, and also for movement between local streets and streets of higher classification. It is two or four lanes in width, dependent on expected traffic volume.

7. LOCAL STREET: A street whose primary purpose is to provide for local traffic movement and direct access to abutting property. Normally, it is a two-lane facility.

B. Traffic Volume

1. The necessary width and configuration of a street is also related to the estimated future average daily traffic (ADT).

2. Ordinarily, the ADT used is the motor vehicle volume anticipated within the next twenty years. However, in newly developing communities, the volume after buildout may be considered.

3. Special studies to establish future traffic volumes must be performed by a Registered Traffic Engineer. In the absence of such study, ADT in residential areas will be computed on the basis of the City's standard generation factors.

C. Design Requirements

1. Streets must be designed as required for the various functional classifications, regardless of ADT. Whenever expected ADT is greater than the approximate maximum ADT stated, the street should be designed to a higher satisfactory functional classification.

2. Basic width and alignment requirements are set forth under Section II hereof.

II. STREET STANDARDS

A. Purpose

1. This manual was prepared by the Engineering and Development Department for the information and guidance of both City staff and those professionals in the private design sector responsible for the design of the City's streets.

2. The manual establishes uniform policies and procedures to carry out the City's street design functions. It is neither intended as, nor does it establish, a legal standard for these functions.

B. Applicability and Definitions

1. These standards are applicable primarily to newly developing areas without unusual terrain problems. In difficult terrain and in older developed areas where flexibility is required, they may represent only desirable goals which the designer attempts to achieve, and deviations may be approved by the City Engineer.

2. These are minimum standards established for safety and comfort. Special requirements established by the Planning Department through Urban Design Plans and Specific Plans may cause these standards to be increased, especially in sidewalk width and amenities.

3. A single loaded street is a street serving property on one side only, with no need for access or parking on the other side.

C. Residential Cul-de-Sacs

Approximate Maximum ADT	-	200	
Curb to Curb[1]	-	30'	(26' single loaded)
Right-of-Way	-	50'	(41' single loaded)
Maximum Grade	-	15%	
Minimum Curve Radius	-	100'	
Sidewalks	-	4'	

(1) Where no parking is allowed, street may be reduced to 24 feet/44 feet, provided parking bays are provided at intervals of approximately 200 feet.

G. Two-Lane Collector - Residential Fronting

Approximate Maximum ADT	-	3500 Single family
	-	5000 Multi family
Minimum Design Speed	-	30 mph
Curb to Curb	-	40' 2 — 12' lanes, 2 — 8' shoulders
Right-of-Way	-	60'
Maximum Grade	-	10%
Minimum Curve Radius	-	500' above 6% grade
	-	450' with no superelevation to 300' with 4% superelevation at or below 6% grade (1)
Sidewalks	-	4'

(1) A special sight distance study is required for intersections within a curve of less than 500 feet radius.

H. Two-Lane Collector - Commercial or Industrial Fronting

Approximate Maximum ADT	-	5000
Minimum Design Speed	-	30 mph
Curb to Curb	-	40' Commercial
	-	50' Industrial
Right-of-Way	-	60' Commercial, 70' Industrial
Maximum Grade	-	8%
Minimum Curve Radius	-	450' with no superelevation to 375' with 2% superelevation above 6% grade (1)
		450' with no superelevation to 300' with 4% superelevation at or below 6% grade (1)
Sidewalks	-	5'

(1) A special sight distance study is required for intersections within a curve of less than 500 feet radius.

I. Two-Lane Collector - No Fronting Property

Approximate Maximum ADT	-	7500
Minimum Design Speed	-	40 mph
Curb to Curb[1]		40' (50' in industrial zone)
Right-of-Way[1]	-	60' (70' in industrial zone)
Maximum Grade	-	8%
Minimum Curve Radius	-	600' with 3% superelevation to 800' with no superelevation
Sidewalks	-	4' (5' in commercial and industrial zone)

(1) Above 5000 ADT, curb-to-curb width must be flared to 64 feet in 84 feet right-of-way at intersections with major streets or primary arterials. Such widening shall normally be symmetrical. The length of extra lanes and length of lane transition shall be subject to approval of the City Engineer to fit the particular situation.

J. Four-Lane Collector - 35 mph

Approximate Maximum ADT[1]	-	15,000
Minimum Design Speed	-	35 mph
Curb to Curb[1]	-	72' (includes a center lane)
Right-of-Way[1]	-	92'
Maximum Grade	-	10% residential zone 8% commercial or industrial zone
Minimum Curve Radius	-	500' with 2% superelevation to 650' with no superelevation
Sidewalks	-	5'

(1) Where ADT is 10,000 or less, street may be narrowed to 64 feet/84 feet (no center lane) with widening to 72 feet/92 feet for a left-turn lane at intersections with four-lane or six-lane streets. In such cases, widening may be required at other left turns, or throughout if there is an apparent need for frequent driveway access points.

K. Four-Lane Collector - 45 mph[1]

Approximate Maximum ADT[2]	-	15,000
Minimum Design Speed	-	45 mph
Curb to Curb[2]	-	72'
Right-of-Way[2]	-	92'
Maximum Grade	-	8%
Minimum Curve Radius	-	700' with 5% superelevation to 1100' with no superelevation
Sidewalks	-	5'

(1) For use where development is such that a substantial potential exists for a California Vehicle Code unposted speed limit other than 25 mph.

(2) Where ADT is 10,000 or less, street may be reduced to 64 feet/84 feet (no center lane) with widening to 72 feet/92 feet for a left-turn lane at intersections with four-lane or six-lane streets. In such cases, widening may be required at other left turns, or throughout if there is an apparent need for frequent driveway access points.

L. Four-Lane Major

Approximate Maximum ADT	-	30,000
Minimum Design Speed	-	55 mph
Curb to Curb[1]	-	78' (includes a 14' median)
Right-of-Way[1]	-	98'
Maximum Grade	-	7%
Minimum Curve Radius	-	1300' with 3% superelevation to 1900' with no superelevation[2]
Sidewalks	-	5'

(1) Widen to 88 feet/108 feet at all approaches to intersecting four-or six-lane streets to provide a minimum of 250 feet of two-lane left-turn storage, exclusive of transitions.

(2) May be reduced to 1,000 minimum with 7% superelevation provided safe "stopping sight distance on horizontal curve" provisions are made, in accordance with Section III D.

M. Four-Lane Urban Major[1]

Approximate Maximum ADT	-	30,000
Minimum Design Speed	-	45 mph
Curb to Curb[2]	-	78' (includes a 14' median)
Right-of-Way[2]	-	98'
Maximum Grade	-	7%
Minimum Curve Radius	-	700' with 5% superelevation to 1100' with no superelevation
Sidewalks	-	5'

(1) For streets of limited length, where intersections and signals are closely spaced, where there is extensive driveway access, or in other situations where the speed limit is expected to be less than 50 mph.

(2) Widen to 88 feet/108 feet at all approaches to intersecting four-or six-lane streets to provide a minimum of 250 feet of two-lane left-turn storage, exclusive of transitions.

N. Six-Lane Major

Approximate Maximum ADT	-	40,000
Minimum Design Speed	-	55 mph
Curb to Curb[1]	-	102' (includes 14' median)
Right-of-Way[1]	-	122'
Maximum Grade	-	7%
Minimum Curve Radius	-	1300' with 3% superelevation to 1900' with no superelevation[2]
Sidewalks	-	5'

(1) Widen to 112 feet/132 feet at all approaches to intersecting four-or six-lane streets to provide a minimum of 250 feet of two-lane left-turn storage, exclusive of transitions.

(2) May be reduced to 1,000 feet minimum with 7% superelevation provided safe "stopping sight distance on horizontal curve" provisions are made.

O. Six-Lane Primary Arterial

Approximate Maximum ADT	-	50,000 No driveway access
Minimum Design Speed	-	55 mph
Curb to Curb[1]	-	102' (includes a 14' median)
Right-of-Way[1]	-	122'
Maximum Grade	-	6%
Minimum Curve Radius	-	1300' with 3% superelevation to 1900' with no superelevation[2]
Sidewalks	-	5'

(1) Widen to 112 feet/132 feet at all approaches to intersecting four-or six-lane streets to provide a minimum of 250 feet of two-lane left-turn storage, exclusive of transitions.

(2) May be reduced to 1,000 feet minimum with 7% superelevation provided safe "stopping sight distance on horizontal curve" provisions are made.

P. Expressway

Approximate Maximum ADT	-	60,000
Minimum Design Speed	-	60 mph
Curb to Curb[1]	-	Same as for six-lane primary arterial
Maximum Grade	-	6%
Minimum Curve Radius	-	1800' with 2% superelevation to 2500' with no superelevation
Sidewalk	-	5'

(1) Extra width shall be provided as necessary for interchanges, weaving lanes, acceleration/deceleration lanes, and at-grade intersections.

Q. Freeway

Approximate Maximum ADT	-	60,000 to 150,000
Number of Lanes	-	4 to 8 or more

All other criteria for freeways dependent on Caltrans standards and requirements.

APPENDIX B

EXISTING CONDITIONS:

- COUNT SUMMARIES
- INTERSECTION CAPACITY WORKSHEETS
- TRAFFIC SIGNAL WARRANTS
- TRUCK CLASSIFICATION SUMMARIES
- LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS
- LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS
- LEVEL OF SERVICE CRITERIA FOR 3-WAY STOP CONTROLLED INTERSECTIONS

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Logan Ave./Sigsbee St.
PEAK HOUR: 7.45 AM TO 8.45 AM

	(E/W STREET)						(N/S STREET)										
	Eastbound			Westbound			Northbound			Southbound							
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6:30 AM	2	0	1	0	0	0	20	16	0	0	11	9	3	56	59		
6:45 AM	1	0	6	0	0	0	23	15	0	0	12	8	7	58	65	124	
7:00 AM	4	0	5	0	0	0	8	13	0	0	16	5	9	42	51	175	
7:15 AM	7	0	1	0	0	0	13	21	0	0	12	4	8	50	58	233	
7:30 AM	12	0	4	0	0	0	24	17	0	0	19	4	16	64	80	254	
7:45 AM	10	0	4	0	0	0	18	28	0	0	20	13	14	79	93	282	
8:00 AM	7	0	5	0	0	0	17	19	0	0	18	5	12	59	71	302	
8:15 AM	8	0	7	0	0	0	15	14	0	0	27	9	15	65	80	324	
8:30 AM	10	0	12	0	0	0	13	23	0	0	27	6	22	69	91	335	
8:45 AM	10	0	3	0	0	0	10	24	0	0	23	11	13	68	81	323	335
PEAK PERIOD	35	0	28	0	0	0	63	84	0	0	92	33					
	0	0	0	0	0	0	0	0	0	0	0	0					

PM PEAK 488

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Logan Ave./Sigsbee St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)										
	Eastbound			Westbound			Northbound			Southbound							
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour	
3:30 PM	20	0	22	0	0	0	8	33	0	0	39	8	42	88	130		
3:45 PM	21	0	16	0	0	0	4	37	0	0	44	11	37	96	133		
4:00 PM	16	0	16	0	0	0	7	28	0	0	37	8	32	80	112		
4:15 PM	13	0	9	0	0	0	4	27	0	0	47	13	22	91	113	488	
4:30 PM	15	0	15	0	0	0	2	22	0	0	41	3	30	68	98	456	
4:45 PM	12	0	10	0	0	0	5	31	0	0	40	7	22	83	105	428	
5:00 PM	15	0	11	0	0	0	1	24	0	0	43	10	26	78	104	420	
5:15 PM	9	0	6	0	0	0	2	20	0	0	28	6	15	56	71	378	
5:30 PM	4	0	10	0	0	0	2	13	0	0	21	7	14	43	57	337	
5:45 PM	8	0	5	0	0	0	2	19	0	0	28	1	13	50	63	295	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	191	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120	488
PEAK PERIOD	70	0	63	0	0	0	23	125	0	0	167	40					
	70	0	63	0	0	0	23	125	0	0	167	40					

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: SAN DIEGO
INTERSECTION: Beardsley St./Newton Ave.
PEAK HOUR: 6.30 AM TO 7.30 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	1	2	0	3	97	2	0	3	0	0	1	0	105	4	109	
6:45 AM	1	2	1	2	90	6	1	3	0	1	3	0	102	8	110	219
7:00 AM	1	2	0	7	55	4	1	2	2	1	2	0	69	8	77	296
7:15 AM	2	3	3	8	70	9	1	6	2	4	2	1	95	16	111	407
7:30 AM	0	0	2	3	53	4	2	1	2	3	3	1	62	12	74	372
7:45 AM	0	5	1	4	45	17	2	7	4	3	3	0	72	19	91	353
8:00 AM	1	10	0	6	35	18	0	7	2	0	3	2	70	14	84	360
8:15 AM	0	3	0	4	17	15	1	6	1	5	6	2	39	21	60	309
8:30 AM	2	5	1	5	39	18	3	19	7	8	8	5	70	50	120	355
8:45 AM	2	4	0	7	22	14	2	5	6	7	8	3	49	31	80	344 407
PEAK PERIOD	5	9	4	20	312	21	3	14	4	6	8	1				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: SAN DIEGO
INTERSECTION: Beardsley St./Newton Ave.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	0	41	3	7	25	7	1	6	6	18	11	2	83	44	127	
3:45 PM	1	31	1	6	16	6	1	11	14	6	8	1	61	41	102	
4:00 PM	1	24	3	6	19	5	2	9	6	11	5	0	58	33	91	
4:15 PM	2	8	1	5	25	6	1	4	5	5	8	1	47	24	71	391
4:30 PM	1	18	2	15	13	2	1	6	8	8	6	1	51	30	81	345
4:45 PM	1	14	2	6	4	0	0	3	4	3	2	1	27	13	40	283
5:00 PM	1	12	0	5	11	0	0	2	2	6	9	2	29	21	50	242
5:15 PM	0	18	0	1	6	1	2	4	1	1	5	0	26	13	39	210
5:30 PM	0	5	1	4	4	5	1	3	3	0	7	0	19	14	33	162
5:45 PM	0	5	1	1	8	1	0	1	5	2	1	0	16	9	25	147
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	58 391
PEAK PERIOD	4	104	8	24	85	24	5	30	31	40	32	4				
	4	104	8	24	85	24	5	30	31	40	32	4				

17,25,33,41,49,57,65,73,81,89,97,A5,B3,C1,C9,D7.

AM PEAK 1272

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Harbor Dr./Sampson St.
PEAK HOUR: 7.00 AM TO 8.00 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	12	17	24	5	40	13	31	65	3	2	32	20	111	153	264	
6:45 AM	5	13	16	5	49	12	26	64	2	4	33	16	100	145	245	509
7:00 AM	11	13	21	5	45	12	33	72	4	2	41	17	107	169	276	785
7:15 AM	8	20	10	2	56	21	27	63	2	6	42	18	117	158	275	1060
7:30 AM	16	26	44	3	64	11	39	93	9	2	44	20	164	207	371	1167
7:45 AM	14	25	51	1	34	3	28	78	4	14	74	24	128	222	350	1272
8:00 AM	14	20	41	3	8	3	12	71	2	6	40	15	89	146	235	1231
8:15 AM	1	18	18	0	17	3	20	60	4	2	37	8	57	131	188	1144
8:30 AM	4	14	19	2	13	3	15	26	3	5	42	8	55	99	154	927
8:45 AM	8	16	14	3	8	3	3	48	1	2	41	6	52	101	153	730 1272
PEAK PERIOD	49	84	126	11	199	47	127	306	19	24	201	79				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Harbor Dr./Sampson St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	19	42	23	3	55	4	37	101	88	22	113	15	146	376	522	
3:45 PM	12	57	43	5	48	18	35	70	19	17	104	14	183	259	442	
4:00 PM	17	71	50	7	28	4	20	60	11	24	160	10	177	285	462	
4:15 PM	10	27	47	3	26	6	16	50	3	50	145	3	119	267	386	1812
4:30 PM	29	41	46	5	8	4	10	63	4	32	146	4	133	259	392	1682
4:45 PM	8	34	33	0	11	4	6	48	2	15	150	4	90	225	315	1555
5:00 PM	5	21	29	1	5	1	4	41	3	14	169	3	62	234	296	1389
5:15 PM	4	10	16	0	2	3	1	43	1	9	117	4	35	175	210	1213
5:30 PM	2	4	9	2	2	3	4	24	1	2	73	1	22	105	127	948
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	633
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	337
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	127 1812
PEAK PERIOD	58	197	163	18	157	32	108	281	121	113	522	42				
	58	197	163	18	157	32	108	281	121	113	522	42				

AM PEAK 527

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/13/91 CITY: San Diego
INTERSECTION: Crosby St./Newton St.
PEAK HOUR: 7.30 AM TO 8.30 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	2	23	0	11	65	4	1	3	0	0	1	4	105	9	114	
6:45 AM	0	26	3	10	89	3	0	1	5	3	1	1	131	11	142	256
7:00 AM	0	24	0	6	63	8	1	1	6	3	4	4	101	19	120	376
7:15 AM	0	18	1	8	71	6	1	2	4	1	2	4	104	14	118	494
7:30 AM	1	38	1	2	70	8	0	2	7	3	6	2	120	20	140	520
7:45 AM	0	30	1	3	72	8	0	1	5	5	8	0	114	19	133	511
8:00 AM	1	37	1	14	47	7	0	1	6	4	4	4	107	19	126	517
8:15 AM	1	30	0	4	61	9	1	6	3	4	7	2	105	23	128	527
8:30 AM	2	39	0	7	41	11	2	6	6	3	4	1	100	22	122	509
8:45 AM	3	32	2	2	46	9	0	3	8	7	4	1	94	23	117	493 527
PEAK PERIOD	3	135	3	23	250	32	1	10	21	16	25	8				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Crosby St./Newton Ave.
PEAK HOUR: 3.45 PM TO 4.45 PM

	(E/W STREET)						(N/S STREET)										
	Eastbound			Westbound			Northbound			Southbound							
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour	
3:30 PM	4	37	4	6	20	5	0	0	5	0	7	4	76	16	92		
3:45 PM	9	79	4	10	36	11	2	6	6	10	5	1	149	30	179		
4:00 PM	2	126	5	8	43	9	0	5	10	7	8	5	193	35	228		
4:15 PM	0	74	0	7	27	4	0	6	4	7	5	2	112	24	136	635	
4:30 PM	0	79	2	7	32	7	0	3	4	9	9	4	127	29	156	699	
4:45 PM	0	63	1	8	42	7	2	2	7	2	3	3	121	19	140	660	
5:00 PM	1	81	2	1	31	1	2	1	6	14	5	1	117	29	146	578	
5:15 PM	1	72	0	5	31	6	0	3	9	4	1	1	115	18	133	575	
5:30 PM	0	62	1	5	19	2	1	0	9	3	9	0	89	22	111	530	
5:45 PM	1	38	0	3	32	1	1	2	5	3	1	2	75	14	89	479	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	333	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	699
PEAK PERIOD	11	358	11	32	138	31	2	20	24	33	27	12					
	11	358	11	32	138	31	2	20	24	33	27	12					

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./Beardsley St.
PEAK HOUR: 7.45 AM TO 8.45 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	2	11	61	0	0	9	0	2	8	0	74	19	93	
6:45 AM	0	2	2	14	69	0	1	7	1	1	7	2	87	19	106	199
7:00 AM	0	0	1	9	68	1	1	7	1	0	10	0	79	19	98	297
7:15 AM	0	2	2	6	73	1	4	19	4	2	13	2	84	44	128	425
7:30 AM	2	1	3	12	58	4	2	28	4	1	12	2	80	49	129	461
7:45 AM	0	4	9	6	54	6	7	33	5	1	18	2	79	66	145	500
8:00 AM	2	3	4	6	62	7	15	24	2	0	18	1	84	60	144	546
8:15 AM	1	7	5	8	38	3	8	21	4	3	14	2	62	52	114	532
8:30 AM	2	9	11	9	51	6	11	25	1	3	19	1	88	60	148	551
8:45 AM	0	5	7	9	48	8	8	18	2	1	16	2	77	47	124	530 551
PEAK PERIOD	5	23	29	29	205	22	41	103	12	7	69	6				
	0	0	0	0	0	0	0	0	0	0	0	0				

PM PEAK 717

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./Beardsley St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	5	25	10	25	30	5	10	25	11	3	35	2	100	86	186	
3:45 PM	4	23	11	7	31	6	12	26	10	2	39	4	82	93	175	
4:00 PM	2	21	10	54	29	3	8	30	2	3	20	2	119	65	184	
4:15 PM	5	27	8	15	23	4	3	21	9	3	48	6	82	90	172	717
4:30 PM	3	16	15	16	15	9	3	20	9	3	23	1	74	59	133	664
4:45 PM	1	13	13	7	23	1	6	25	6	2	26	0	58	65	123	612
5:00 PM	2	20	16	12	13	2	4	10	6	5	31	0	65	56	121	549
5:15 PM	1	8	12	9	11	3	2	12	9	2	19	1	44	45	89	466
5:30 PM	2	17	7	11	12	4	3	9	7	1	22	1	53	43	96	429
5:45 PM	1	14	13	13	13	3	2	12	8	2	18	0	57	42	99	405
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	195 717
PEAK PERIOD	16	96	39	101	113	18	33	102	32	11	142	14				
	16	96	39	101	113	18	33	102	32	11	142	14				

AM PEAK 982

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 3/7/90 CITY: SAN DIEGO
INTERSECTION: LOGAN AVE./CROSBY ST.
PEAK HOUR: 7.15 AM TO 8.15 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						Peak
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	7	15	10	2	10	15	3	17	15	22	42	20	59	125	184	194
7:15 AM	18	32	16	1	6	12	4	22	22	24	51	38	87	162	249	430
7:30 AM	10	35	15	0	14	7	3	23	15	17	85	34	82	177	259	682
7:45 AM	11	32	12	1	10	5	0	22	10	21	49	35	71	137	208	900
8:00 AM	16	40	6	0	13	9	1	34	25	25	61	33	96	160	256	932
8:15 AM	10	43	7	1	9	8	3	30	11	18	41	16	76	119	197	930
8:30 AM	9	35	17	2	13	7	3	23	21	22	41	18	83	129	212	883
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	675 982
PEAK PERIOD	55	140	53	2	43	33	8	101	72	88	247	140				
	0	0	0	0	0	0	0	0	0	0	0	0				

PM PEAK 724

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 3/14/90 CITY: SAN DIEGO
INTERSECTION: MAIN ST/CROSBY ST
PEAK HOUR: 4.00 PM TO 5.00 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	9	25	10	2	86	6	7	15	11	5	20	3	142	61	203	
4:15 PM	6	34	4	2	69	6	3	14	6	4	9	2	121	38	159	362
4:30 PM	7	27	5	3	84	4	3	12	7	5	19	1	120	47	177	539
4:45 PM	7	19	7	1	86	7	5	14	13	7	17	2	127	58	185	724
5:00 PM	4	27	3	1	90	2	2	7	11	6	7	1	127	34	161	682
5:15 PM	7	23	0	1	46	2	6	2	16	1	8	0	79	33	112	635
5:30 PM	6	11	1	0	53	1	1	7	3	2	5	0	72	18	90	548
5:45 PM	0	22	5	0	29	1	2	6	0	1	4	0	57	13	70	433
6:00 PM	1	14	2	0	31	2	2	4	4	2	5	1	50	18	68	340
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	238 724
PEAK PERIOD	23	105	26	8	325	23	18	55	37	21	65	8				
	0	0	0	0	0	0	0	0	0	0	0	0				

AM PEAK 606

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 3/14/90 CITY: SAN DIEGO
INTERSECTION: MAIN ST/CROSBY ST
PEAK HOUR: 6.30 AM TO 7.30 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	1	96	1	1	22	0	4	11	7	1	11	0	121	34	155	
6:45 AM	2	102	3	1	25	4	3	13	11	2	12	1	141	42	183	633
7:00 AM	7	84	13	0	19	1	2	10	12	1	10	2	124	37	161	499
7:15 AM	7	41	6	1	22	2	5	6	3	3	9	2	79	28	107	606
7:30 AM	5	57	8	2	21	2	5	6	2	1	6	5	95	25	120	571
7:45 AM	5	46	4	0	18	3	0	18	4	0	3	8	76	33	109	497
8:00 AM	8	41	4	1	13	2	3	14	9	1	14	3	69	44	113	449
8:15 AM	6	23	6	0	14	2	3	6	6	2	11	2	51	30	81	423
8:30 AM	6	45	9	2	26	0	5	10	3	10	14	0	90	42	132	425
8:45 AM	3	31	6	1	23	2	5	12	8	5	14	3	66	47	113	426	606
PEAK PERIOD	17	317	23	3	68	7	14	40	33	7	42	5				
	0	0	0	0	0	0	0	0	0	0	0	0				

PM PEAK 1324

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 3/7/90 CITY: SAN DIEGO
INTERSECTION: LOGAN AVE./CROSBY ST.
PEAK HOUR: 4.00 PM TO 5.00 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	18	96	6	2	17	8	6	61	42	47	67	12	147	235	382	
4:15 PM	22	67	10	0	21	7	2	40	42	53	28	16	127	191	318	700
4:30 PM	19	94	7	2	8	23	1	70	40	45	46	13	153	215	368	1068
4:45 PM	20	60	11	0	6	7	1	42	38	28	26	17	104	152	256	1324
5:00 PM	15	87	7	3	20	6	6	65	55	65	43	3	138	237	375	1317
5:15 PM	22	40	7	3	8	14	1	28	26	26	39	11	94	131	225	1224
5:30 PM	19	41	9	4	5	11	2	26	27	33	25	10	89	123	212	1068
5:45 PM	21	30	8	2	3	3	4	42	12	27	29	7	67	121	188	1000
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	825
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400 1324
PEAK PERIOD	79	317	34	4	52	45	10	213	162	173	177	58				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/6/91 CITY: San Diego
INTERSECTION: Harbor Dr./Crosby St.
PEAK HOUR: 7.15 AM TO 8.15 AM

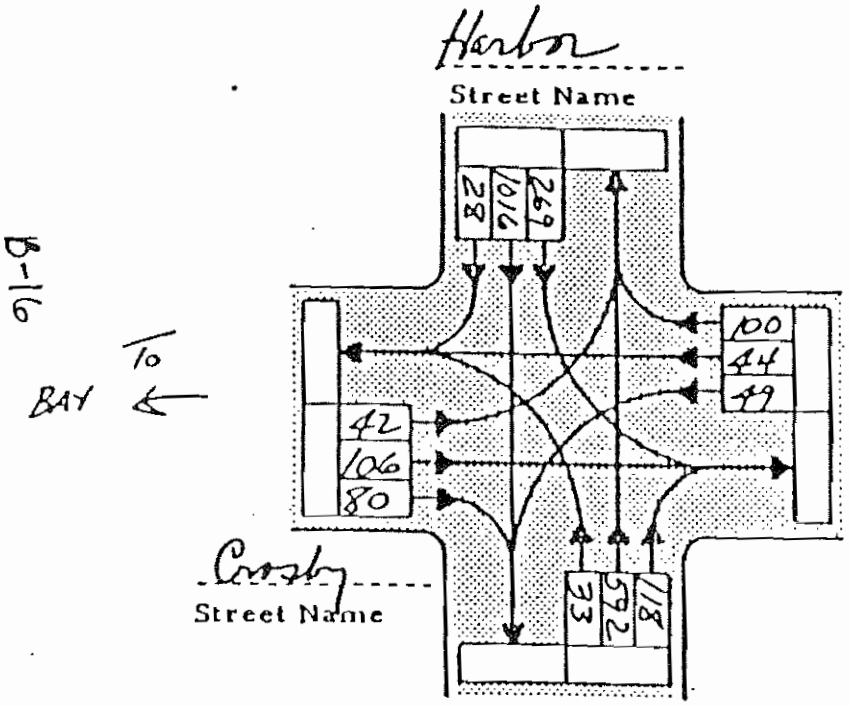
	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	1	4	0	25	17	41	9	116	3	4	85	9	88	226	314	
6:45 AM	0	5	4	12	10	31	12	89	13	6	69	4	62	193	255	569
7:00 AM	2	4	0	12	14	30	11	74	16	8	77	10	62	196	258	827
7:15 AM	3	8	1	16	12	20	8	63	14	3	73	12	60	173	233	1060
7:30 AM	6	5	4	18	21	25	7	63	6	9	95	16	79	196	275	1021
7:45 AM	7	7	1	13	23	29	16	71	19	12	110	9	80	237	317	1083
8:00 AM	9	9	3	6	11	25	16	69	14	6	84	11	63	200	263	1088
8:15 AM	1	10	7	2	11	24	17	40	16	4	60	2	55	139	194	1049
8:30 AM	4	8	1	4	9	15	12	56	13	6	45	10	41	142	183	957
8:45 AM	6	10	7	12	11	18	13	50	4	1	48	3	64	119	183	823 1088
PEAK PERIOD	25	29	9	53	67	99	47	266	53	30	362	48				
	0	0	0	0	0	0	0	0	0	0	0	0				

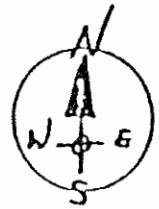
Federhart & Associates

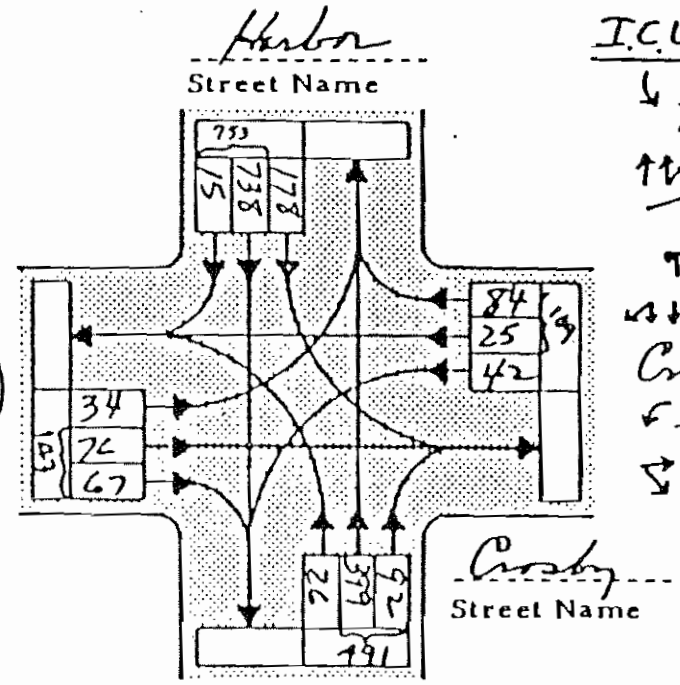
TRAFFIC AND PARKING STUDIES

TRAFFIC TURNING MOVEMENTS COUNTS

INTERSECTION Harbor Drive @ Crosby PROJECT F 9083







I.C.U. CALCS.

$\frac{178}{1500} = .12$

$\frac{491}{3400} = .14$

OR

$\frac{26}{1500} = .10$

$\frac{752}{3400} = .22$

Crosby

$\frac{42}{1500} = .10$

$\frac{143}{1500} = .10$

.52

LOS A

P.M. 1½ HOUR VOLUME

Hour: 3:30 To 5:00 PM

Date: 7/26/90

PEAK P.M. 1 HOUR VOLUME

Hour: 4 To 5 PM

Date: 7/26/90

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./26 St.
PEAK HOUR: 6.30 AM TO 7.30 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	15	1	46	88	5	1	3	6	4	7	0	155	21	176	
6:45 AM	0	15	3	30	80	2	1	2	4	4	2	0	130	13	143	319
7:00 AM	1	21	2	21	91	11	1	1	3	7	3	1	147	16	163	482
7:15 AM	0	26	1	10	65	10	2	1	6	5	1	0	112	15	127	609
7:30 AM	1	20	1	9	49	13	3	0	7	7	1	1	93	19	112	545
7:45 AM	0	20	3	14	64	9	1	5	5	10	3	0	110	24	134	536
8:00 AM	1	11	2	10	44	10	1	2	7	9	6	1	78	26	104	477
8:15 AM	1	16	4	7	47	16	4	2	10	12	3	1	91	32	123	473
8:30 AM	0	19	2	14	45	17	6	1	4	7	6	0	97	24	121	482
8:45 AM	0	19	5	7	40	16	2	5	6	16	4	0	87	33	120	468 609
PEAK PERIOD	1	77	7	107	324	28	5	7	19	20	13	1				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./Sigsbee St.
PEAK HOUR: 8.00 AM TO 9.00 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	3	3	3	1	28	3	7	8	4	0	6	3	41	28	69	69
7:00 AM	1	5	0	0	20	1	1	12	3	0	11	3	27	30	57	126
7:15 AM	4	2	4	2	15	5	3	16	1	0	8	1	32	29	61	187
7:30 AM	3	9	1	2	16	3	5	28	2	2	14	5	34	56	90	277
7:45 AM	3	1	4	7	34	5	9	16	2	1	7	7	54	42	96	304
8:00 AM	5	11	3	5	20	1	4	17	2	1	16	4	45	44	89	336
8:15 AM	2	7	1	2	18	2	9	13	1	3	9	1	32	36	68	343
8:30 AM	2	20	11	1	17	4	8	29	2	1	13	8	55	61	116	369
8:45 AM	4	20	11	3	6	1	4	23	2	1	19	4	45	53	98	371 371
PEAK PERIOD	13	58	26	11	61	8	25	82	7	6	57	17				
	0	0	0	0	0	0	0	0	0	0	0	0				

PM PEAK 515

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./Sigsbee St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	12	41	16	3	7	4	4	32	8	1	28	6	83	79	162	
3:45 PM	15	17	9	3	8	3	7	31	8	4	29	7	55	86	141	
4:00 PM	13	23	9	4	8	2	1	17	6	1	26	5	59	56	115	
4:15 PM	8	11	8	2	7	3	3	18	5	1	25	6	39	58	97	515
4:30 PM	6	14	6	0	7	3	3	18	8	1	22	7	36	59	95	448
4:45 PM	8	17	13	3	15	0	4	16	6	1	22	3	56	52	108	415
5:00 PM	1	28	13	1	4	3	1	9	5	4	22	6	50	47	97	397
5:15 PM	3	10	6	2	9	1	1	8	8	1	13	3	31	34	65	365
5:30 PM	1	8	10	3	4	1	1	11	2	1	17	1	27	33	60	330
5:45 PM	2	9	1	2	2	2	2	15	3	1	7	2	18	30	48	270
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	173
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	108 515
PEAK PERIOD	48	92	42	12	30	12	15	98	27	7	108	24				
	48	92	42	12	30	12	15	98	27	7	108	24				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./25 St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	0	68	5	11	70	28	2	14	55	17	7	3	182	98	280	
3:45 PM	2	87	8	17	60	17	5	8	37	28	6	0	191	84	275	
4:00 PM	1	84	7	8	52	22	6	6	29	21	1	2	174	65	239	
4:15 PM	1	92	3	7	35	25	2	6	47	30	6	2	163	93	256	1050
4:30 PM	1	66	9	7	30	23	0	8	18	22	2	0	136	50	186	956
4:45 PM	0	50	4	7	39	27	8	5	16	19	3	2	127	53	180	861
5:00 PM	1	52	4	11	26	23	0	5	18	16	5	1	117	45	162	784
5:15 PM	0	40	4	9	29	19	3	3	16	26	7	1	101	56	157	685
5:30 PM	3	41	7	10	27	15	0	4	16	24	4	0	103	48	151	650
5:45 PM	1	27	2	7	36	21	2	2	10	25	6	1	94	46	140	610
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	448
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	291 1050
PEAK PERIOD	4	331	23	43	217	92	15	34	168	96	20	7				
	4	331	23	43	217	92	15	34	168	96	20	7				

AM PEAK 496

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/13/91 CITY: San Diego
INTERSECTION: National Ave./Sampson St.
PEAK HOUR: 6.45 AM TO 7.45 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	6	9	5	4	27	7	18	13	0	0	13	2	58	46	104	
6:45 AM	3	13	8	3	33	9	5	17	1	1	12	1	69	37	106	210
7:00 AM	5	13	8	9	34	11	18	15	2	1	11	4	80	51	131	341
7:15 AM	2	12	7	2	27	6	21	27	0	3	18	6	56	75	131	472
7:30 AM	9	19	10	3	14	7	20	26	5	0	12	3	62	66	128	496
7:45 AM	7	19	5	4	8	4	10	23	7	2	12	5	47	59	106	496
8:00 AM	3	17	6	8	12	4	12	23	1	3	15	1	50	55	105	470
8:15 AM	2	13	4	3	10	7	7	23	2	3	12	2	39	49	88	427
8:30 AM	1	18	5	3	20	5	7	36	4	3	19	4	52	73	125	424
8:45 AM	1	16	4	2	18	6	6	29	3	2	13	3	47	56	103	421 496
PEAK PERIOD	23	63	30	18	83	28	69	91	14	6	53	18				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: '2/13'91 CITY: San Diego
INTERSECTION: National Ave./Sampson St.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)										
	Eastbound			Westbound			Northbound			Southbound							
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour	
3:30 PM	5	87	20	10	24	10	19	36	6	12	41	8	156	122	278		
3:45 PM	7	58	18	10	16	6	19	27	9	12	44	10	115	121	236		
4:00 PM	6	76	22	6	19	9	10	29	9	10	43	2	138	103	241		
4:15 PM	1	45	14	9	22	10	10	24	9	8	34	5	101	90	191	946	
4:30 PM	3	72	17	3	14	6	7	21	3	7	30	3	115	71	186	854	
4:45 PM	3	46	6	7	6	4	6	26	9	11	28	6	72	86	158	776	
5:00 PM	1	33	12	7	6	7	7	22	4	6	28	5	66	72	138	673	
5:15 PM	2	13	8	8	5	2	1	24	6	5	21	3	38	60	98	580	
5:30 PM	2	19	11	6	8	7	4	21	8	7	17	2	53	59	112	506	
5:45 PM	4	14	4	7	6	8	2	14	8	4	11	2	43	41	84	432	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	196	946
PEAK PERIOD	19	266	74	35	81	35	58	116	33	42	162	25					
	19	266	74	35	81	35	58	116	33	42	162	25					

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Logan Ave./Sampson St
PEAK HOUR: 6.30 AM TO 7.30 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	2	12	0	4	49	12	1	8	3	6	8	0	79	26	105	
6:45 AM	2	14	1	6	54	5	1	9	2	7	8	2	82	29	111	216
7:00 AM	4	4	0	4	41	8	0	14	2	4	4	11	61	35	96	312
7:15 AM	4	14	2	18	28	0	0	7	3	7	10	8	66	35	101	413
7:30 AM	2	25	2	10	27	3	0	8	6	3	10	5	69	32	101	409
7:45 AM	4	19	1	7	18	0	0	20	7	5	10	2	49	44	93	391
8:00 AM	2	16	0	9	20	3	0	3	10	8	9	3	50	33	83	378
8:15 AM	3	10	2	9	18	5	0	13	8	10	8	7	47	46	93	370
8:30 AM	5	18	2	7	11	5	0	12	14	6	5	5	48	42	90	359
8:45 AM	4	13	2	10	16	2	1	8	9	9	7	6	47	40	87	353 413
PEAK PERIOD	12	44	3	32	172	25	2	38	10	24	30	21				
	0	0	0	0	0	0	0	0	0	0	0	0				

PM PEAK 794

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: Logan Ave./Sampson St
PEAK HOUR: 3.45 PM TO 4.45 PM

	(E/W STREET)						(N/S STREET)										
	Eastbound			Westbound			Northbound			Southbound							
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour	
3:30 PM	15	62	4	2	19	13	0	17	23	14	16	9	115	79	194		
3:45 PM	8	54	4	9	20	11	2	17	14	18	16	10	106	77	183		
4:00 PM	16	73	4	7	33	17	4	14	7	12	23	4	150	64	214		
4:15 PM	5	65	5	7	20	11	3	10	16	23	26	9	113	87	200	791	
4:30 PM	12	68	3	12	19	7	2	15	15	11	25	8	121	76	197	794	
4:45 PM	8	47	3	7	18	9	3	15	10	14	17	7	92	66	158	769	
5:00 PM	8	40	2	2	11	9	3	14	9	10	17	7	72	60	132	687	
5:15 PM	3	26	3	6	14	12	2	18	15	21	23	4	64	83	147	634	
5:30 PM	2	20	4	9	17	20	5	17	8	19	20	2	72	71	143	580	
5:45 PM	6	30	7	10	4	20	2	14	18	10	22	6	77	72	149	571	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	292	794
PEAK PERIOD	41	260	16	35	92	46	11	56	52	64	90	31					
	41	260	16	35	92	46	11	56	52	64	90	31					

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/12/91 CITY: San Diego
INTERSECTION: National Ave./Crosby St.
PEAK HOUR: 7.00 AM TO 8.00 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	3	20	1	5	32	2	9	14	6	4	9	1	63	43	106	
6:45 AM	2	18	0	3	29	7	8	11	4	5	6	2	59	36	95	201
7:00 AM	2	24	3	9	77	11	8	11	4	5	10	2	126	40	166	367
7:15 AM	4	22	0	2	49	6	15	19	8	6	9	2	83	59	142	509
7:30 AM	1	22	3	8	11	16	10	25	13	6	12	3	61	69	130	533
7:45 AM	4	15	2	4	15	12	15	24	13	8	17	5	52	82	134	572
8:00 AM	4	21	1	6	28	6	9	8	7	14	9	2	66	49	115	521
8:15 AM	2	20	1	4	29	15	11	16	5	7	5	3	71	47	118	497
8:30 AM	6	28	0	5	38	8	7	23	5	7	13	3	85	58	143	510
8:45 AM	4	25	1	6	31	8	7	19	7	7	11	4	75	55	130	506 572
PEAK PERIOD	11	83	8	23	152	45	48	79	38	25	48	12				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/14/91 CITY: San Diego
INTERSECTION: National Ave./Crosby St.
PEAK HOUR: 3.45 PM TO 4.45 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	2	78	2	6	26	8	8	16	16	39	16	9	122	104	226	
3:45 PM	0	102	4	14	39	20	9	20	25	37	36	12	179	139	318	
4:00 PM	6	85	6	16	47	10	7	22	27	23	24	2	170	105	275	
4:15 PM	6	111	8	8	30	17	9	13	21	21	29	0	180	93	273	1092
4:30 PM	4	90	2	11	40	8	6	14	25	31	28	7	155	111	266	1132
4:45 PM	2	75	5	8	36	5	18	15	21	20	18	7	131	99	230	1044
5:00 PM	1	92	3	12	24	6	4	11	25	28	23	2	138	93	231	1000
5:15 PM	2	76	4	9	26	6	10	13	19	31	16	6	123	95	218	945
5:30 PM	2	68	6	17	21	6	6	13	6	22	16	1	120	64	184	863
5:45 PM	1	40	2	9	24	6	4	11	6	12	10	0	82	43	125	758
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	309 1132
PEAK PERIOD	16	388	20	49	156	55	31	69	98	112	117	21				
	16	388	20	49	156	55	31	69	98	112	117	21				

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/7/91 CITY: SAN DIEGO
INTERSECTION: Logan Ave./I-5 SB Off Ramp (Beardsley St.)
PEAK HOUR: 7.15 AM TO 8.15 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	2	0	2	13	69	2	24	34	0	0	9	5	88	72	160	
6:45 AM	1	0	3	26	69	2	33	35	0	0	12	4	101	84	185	345
7:00 AM	1	0	4	22	64	2	12	27	0	0	12	5	93	56	149	494
7:15 AM	3	0	5	29	66	6	18	34	0	0	23	3	109	78	187	681
7:30 AM	5	0	5	35	43	13	21	38	0	0	26	5	101	90	191	712
7:45 AM	9	0	14	27	64	19	26	39	0	0	29	5	133	99	232	759
8:00 AM	8	0	5	22	43	12	20	23	0	0	27	1	90	71	161	771
8:15 AM	1	0	7	18	47	9	18	27	0	0	27	7	82	79	161	745
8:30 AM	8	0	11	13	36	5	15	25	0	0	29	1	73	70	143	697
8:45 AM	6	0	11	23	28	7	11	22	0	0	32	7	75	72	147	612 771
PEAK PERIOD	25	0	29	113	216	50	85	134	0	0	105	14				
	0	0	0	0	0	0	0	0	0	0	0	0				

CITY OF SAN DIEGO
TRAFFIC ENGINEERING DIVISION

TRAFFIC VOLUME COUNT
SUMMARY DIAGRAM

FILE NO. 243-90

Requestor R. PETERS

TR No. SP

Location BEARDSLEY ST @ LOGAN AV (65-D3)

NORTH POINT

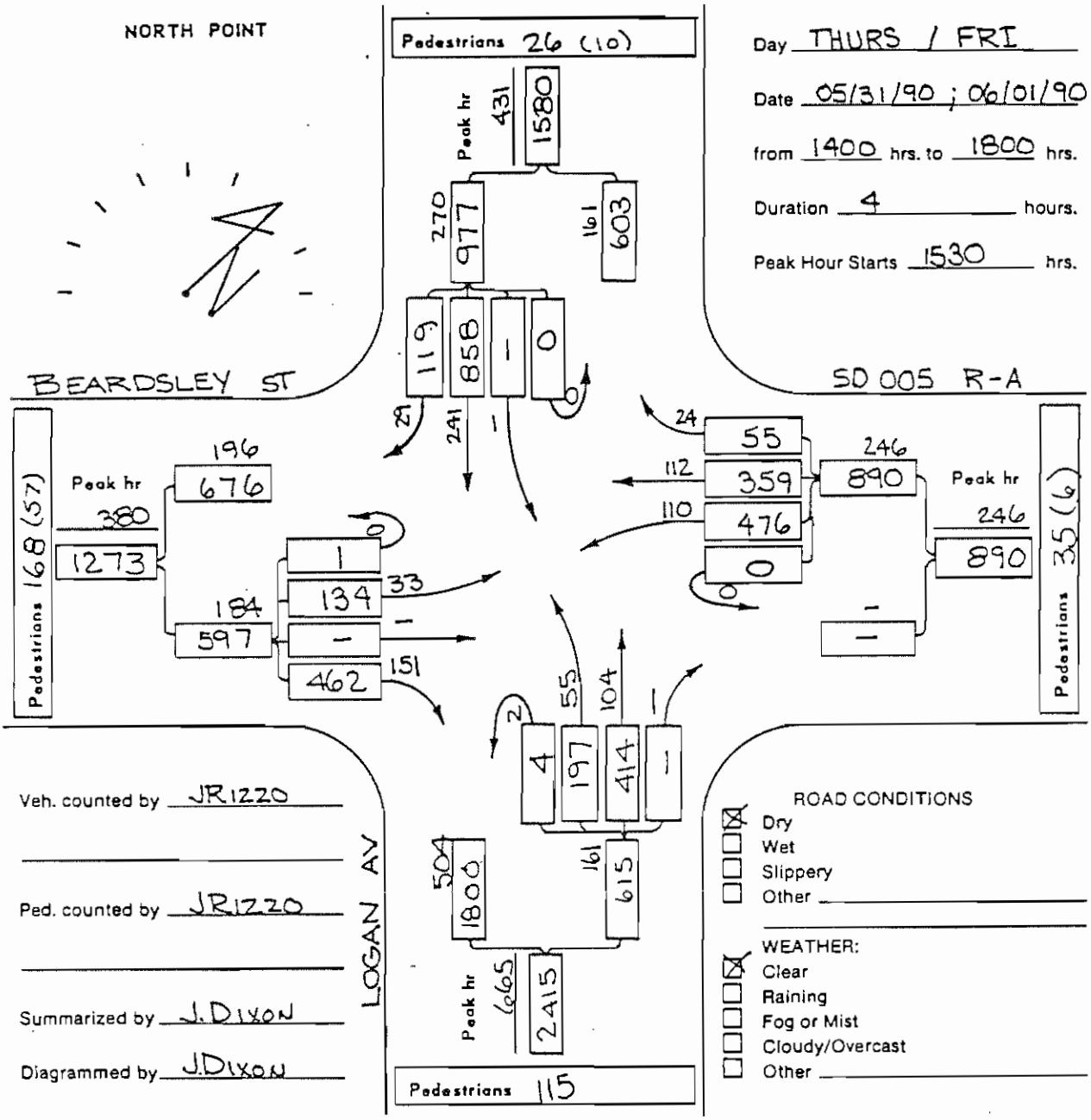
Day THURS / FRI

Date 05/31/90 ; 06/01/90

from 1400 hrs. to 1800 hrs.

Duration 4 hours.

Peak Hour Starts 1530 hrs.



Veh. counted by JR1220

Ped. counted by JR1220

Summarized by J. DIXON

Diagrammed by J. DIXON

ROAD CONDITIONS
- [x] Dry
- [ ] Wet
- [ ] Slippery
- [ ] Other

WEATHER:
- [x] Clear
- [ ] Raining
- [ ] Fog or Mist
- [ ] Cloudy/Overcast
- [ ] Other

Intersection Control(s) ALL-WAY STOP

Remarks PAVEMENT MARKING "STOP" ALL LEGS
BUSSTOP ON NE CORNER
PUBLIC TELEPHONE ON SW CORNER
R10, R7, R16B FNBT; (2) R35, R36 FWBT; R7 FSBT

CE-264 (Rev. 11-87)

MMARY) REPORT CITY OF SAN DIEGO, CALIFORNI

Y ST @ LOGAN AV DATE 05-31-90 / 06-01-90 FILE NO. 243-90

ROAD SURFACE DRY A/C OBSERVER J. RIZZO REQ. TYPE SP

	WEST LEG E/B on BEARDSLEY ST					NORTH LEG S/B on LOGAN AV					EAST LEG W/B on SD005 R-A					TOTALS		
IT Peds	R	S	L	B/UT	Peds.	R	S	L	B/UT	Peds	R	S	L	B/UT	Peds.	Veh.	Bikes	Ped
17	50	-	13	0/0	10	8	100	-	1/0	0	10	45	56	0/0	5	360	2	32
16	45	-	18	0/0	35	21	88	-	1/0	4	3	58	77	0/0	4	389	1	59
24	44	-	12	0/0	13	27	102	-	3/0	5	5	59	74	0/0	11	402	4	53
41	90	-	14	0/0	44	14	130	-	1/0	5	18	62	47	0/0	2	455	4	92
3	61	-	19	0/0	13	15	111	-	2/0	5	6	50	63	0/0	4	406	2	25
6	69	-	28	0/0	23	11	134	-	0/0	3	5	39	70	0/0	3	444	0	35
4	63	-	18	0/0	10	13	114	-	1/0	4	3	33	44	0/0	4	362	1	22
4	40	-	12	1/1	20	10	79	-	1/0	0	5	13	45	0/0	2	261	6	26
115	462	-	134	1/	168	119	858	-	10/0	26	55	359	476	0/0	35	3079	20	34
	597					977					890					3079		

DARKING "STOP" - ALL LEGS

N N.E CORNER

PHONE ON S.W CORNER

X-WALKS UNMARKED ALL LEGS

LIMIT LINES MARKED ALL LEGS

CENTER LINES DBL YLLW N-LEG; DBL YLLW S-LEG.

APPROACH LANES (1) ALL LEGS

TURN POCKETS NONE

INTERSECTION CONTROL ALL WAY STOP

ADVANCE MARKINGS R 10, R7, R168 EN BT; (2) R35, R36 EWB R 7 FSBT

44	151	—	33	0/0	57	29	241	-	3/0	10	24	112	110	0/0	6	861	6	11
	184					270					246					861		

AM PEAK 1016

TURNING MOVEMENT COUNT SUMMARY

AM COUNT

DATE COUNT TAKEN: 2/20/91 CITY: San Diego
INTERSECTION: Crosby St./Kearney Ave.
PEAK HOUR: 7.15 AM TO 8.15 AM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	17	15	0	0	33	2	137	27	28	0	0	0	67	192	259	
6:45 AM	12	16	0	0	41	7	121	36	25	0	0	0	76	182	258	517
7:00 AM	16	17	0	0	27	4	82	26	17	0	0	0	64	125	189	706
7:15 AM	19	12	0	0	37	3	111	38	26	0	0	0	71	175	246	952
7:30 AM	30	20	0	0	33	4	87	22	19	0	0	0	87	128	215	908
7:45 AM	20	35	0	0	44	6	115	43	28	0	0	0	105	186	291	941
8:00 AM	27	30	0	0	41	10	97	34	25	0	0	0	108	156	264	1016
8:15 AM	27	26	0	0	51	3	76	23	21	0	0	0	107	120	227	997
8:30 AM	24	22	0	0	42	6	84	18	20	0	0	0	94	122	216	998
8:45 AM	25	31	0	0	43	5	59	16	22	0	0	0	104	97	201	908 1016
PEAK PERIOD	96	97	0	0	155	23	410	137	98	0	0	0				
	0	0	0	0	0	0	0	0	0	0	0	0				

TURNING MOVEMENT COUNT SUMMARY

PM COUNT

DATE COUNT TAKEN: 2/20/91 CITY: San Diego
INTERSECTION: Crosby St./Kearney Ave.
PEAK HOUR: 3.30 PM TO 4.30 PM

	(E/W STREET)						(N/S STREET)									
	Eastbound			Westbound			Northbound			Southbound						
Time	L	T	R	L	T	R	L	T	R	L	T	R	E+W	N+S	Total	Peak Hour
3:30 PM	52	44	0	0	66	6	69	22	27	0	0	0	168	118	286	
3:45 PM	44	55	0	0	72	3	50	25	27	0	0	0	174	102	276	
4:00 PM	67	48	0	0	46	7	40	18	22	0	0	0	168	80	248	
4:15 PM	71	44	0	0	56	10	46	24	20	0	0	0	181	90	271	1081
4:30 PM	62	44	0	0	59	6	45	24	20	0	0	0	171	89	260	1055
4:45 PM	33	45	0	0	48	3	47	15	24	0	0	0	129	86	215	994
5:00 PM	38	61	0	0	67	4	35	29	26	0	0	0	170	90	260	1006
5:15 PM	37	47	0	0	59	4	25	17	28	0	0	0	147	70	217	952
5:30 PM	37	36	0	0	56	4	49	22	26	0	0	0	133	97	230	922
5:45 PM	28	34	0	0	57	2	29	9	20	0	0	0	121	58	179	886
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	626
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	409 1081
PEAK PERIOD	234	191	0	0	240	26	205	89	96	0	0	0				
	234	191	0	0	240	26	205	89	96	0	0	0				

```
LOCATION:Logan Ave./Sigsbee St.          |NAME:Existing AM
-----------------------------------------------------------------------------
HOURLY VOLUMES                           | VOLUMES IN PCPH
                                   <N    |
 Major street:Logan Ave.                 |
========================================= | ========================================
N= 2                      <---V5---   84 |                        <---V5---
Grade     92---V2--->     v---V4---   63 |          ---V2--->      v---V4---   69
  0%      33---V3---v               N= 1 |          ---V3---v
================= <|    |>  ========== | ================= <|    |>  ========
Date of Counts: |   |    |   |          |                 |   |    |   |
'2/14/91        |   V7   V9  | X STOP   |                 |   V7   V9  |
Time Period:    |   |    |   |   YIELD  |                 |   |    |   |
AM Peak         |   35     28|          |                 |   39     31|
Approach Speed:  Minor Street:   Grade  |
                Sigsbee St.        0%   |
PHF: 0.90          N= 0
Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.              |    2   |    3   |    4   |    5   |    7   |    9   |
-----------------------------------------------------------------------------
Volume (vph)              |   92   |   33   |   63   |   84   |   35   |   28
-----------------------------------------------------------------------------
Vol(pcph),see Table 10.1|XXXXXXXX|XXXXXXXX|   69   |XXXXXXXX|   39   |   31
=============================================================================
STEP 1 : RT From Minor Street            |          /-> V9
=============================================================================
Conflicting Flows, Vc                    | 1/2 V3+V2= 17 + 46 = 63 vph(Vc9)
Critical Gap, Tc                         | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp                   | Cp9= 1000 pcph (Fig.10.3)
Actual Capacity, Cm                      | Cm9=Cp9= 1000 pcph
=============================================================================
STEP 2 : LT From Major Street            |          v-- V4
=============================================================================
Conflicting Flows, Vc                    | V3+V2= 33 + 92 = 125 vph(Vc4)
Critical Gap, Tc                         | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp                   | Cp4=  969 pcph (Fig.10.3)
% of Cp utilized and Impedance Factor    | (V4/Cp4)x100=  7.1% P4= .96
Actual Capacity, Cm        (Fig.10.5)    | Cm4=Cp4=  969 pcph
=============================================================================
STEP 3 : LT From Minor Street            |          <-\ V7
=============================================================================
Conflicting Flows, Vc                    | 1/2 V3+V2+V5+V4=
                                         | 17 + 92 + 84 + 63 = 256 vph(Vc7)
Critical Gap, Tc                         | Tc=    7 secs (Tab.10.2)
Potential Capacity, Cp                   | Cp7=  612 pcph (Fig.10.3)
Actual Capacity, Cm                      | Cm7=Cp7xP4= 612 x .96 = 588 pcph
=============================================================================
SHARED LANE CAPACITY    SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared
```

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	39	588		549		A	
9	31	1000		969		A	
4	69	969		900		A	

```
LOCATION:Logan Ave./Sigsbee St.          |NAME:Existing PM
-----------------------------------------------------------------------------------
HOURLY VOLUMES                            | VOLUMES IN PCPH
                                    <N    |
 Major street:Logan Ave.                  |
========================================  | ========================================
N= 2                      <---V5---  125  |                          <---V5---
Grade   167---V2--->      v---V4---   23  |          ---V2--->       v---V4---    25
  0%     40---V3---v                N= 1  |          ---V3---v
=================  <|    |>  ==========  | =================  <|    |>  =========
Date of Counts:  |   |    |   |          |                  |   |    |   |
'2/14/91         |   V7   V9  | X STOP   |                  |   V7   V9  |
Time Period:     |   |    |   |   YIELD  |                  |   |    |   |
PM Peak          |   70     63|          |                  |   77     69|
Approach Speed:  Minor Street:   Grade   |
                 Sigsbee St.        0%   |
PHF: 0.92          N= 0
Population:
=================================================================================
VOLUME ADJUSTMENTS
---------------------------------------------------------------------------------
Movement no.              |    2    |    3    |    4    |    5    |    7    |    9    |
---------------------------------------------------------------------------------
Volume (vph)              |   167   |    40   |    23   |   125   |    70   |    63   |
---------------------------------------------------------------------------------
Vol(pcph),see Table 10.1|XXXXXXXX|XXXXXXXX|    25   |XXXXXXXX|    77   |    69   |
=================================================================================
STEP 1 : RT From Minor Street             |           /-> V9
=================================================================================
Conflicting Flows, Vc                     | 1/2 V3+V2= 20 + 84 = 104 vph(Vc9)
Critical Gap, Tc                          | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp                    | Cp9=  991 pcph (Fig.10.3)
Actual Capacity, Cm                       | Cm9=Cp9=  991 pcph
=================================================================================
STEP 2 : LT From Major Street             |           v-- V4
=================================================================================
Conflicting Flows, Vc                     | V3+V2= 40 + 167 = 207 vph(Vc4)
Critical Gap, Tc                          | Tc=  5.5 secs (Tab.10.2)
Potential Capacity, Cp                    | Cp4=  883 pcph (Fig.10.3)
% of Cp utilized and Impedance Factor     | (V4/Cp4)x100=  2.8% P4= .98
Actual Capacity, Cm        (Fig.10.5)     | Cm4=Cp4=  883 pcph
=================================================================================
STEP 3 : LT From Minor Street             |           <-\ V7
=================================================================================
Conflicting Flows, Vc                     | 1/2 V3+V2+V5+V4=
                                          | 20 + 167 + 125 + 23 = 335 vph(Vc7)
Critical Gap, Tc                          | Tc=    7 secs (Tab.10.2)
Potential Capacity, Cp                    | Cp7=  549 pcph (Fig.10.3)
Actual Capacity, Cm                       | Cm7=Cp7xP4= 549 x .98 = 538 pcph
=================================================================================
SHARED LANE CAPACITY    SH = (V7+V9)/((V7/Cm7)+(V9/Cm9)) if lane is shared

                                                  CR        CR       LOS   LOS
MOVEMENT    V(PCPH)    CM(PCPH)    CSH(PCPH)    (CM-V)    (CSH-V)    CM    CSH
=================================================================================
    7          77         538                     461                  A
    9          69         991                     922                  A
    4          25         883                     858                  A
```

```
LOCATION:Beardsley St./Newton Ave.          NAME:Existing AM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    1                |
                              |  V12                |        ^
                              |   |    8            |        N
                              |   |  V11            |
                              |   |   |    6        |
       ======================    |   |  V10         ======================
          N= 1                  <|   v   |>       ^----------V6-- 21
Grade 0%                                           <----------V5-- 312  N= 1
           5 --V1------------^                     v----------V4-- 20
           9 --V2------------>                        major road        Grade 0%
           4 --V3------------v        <|   ^   |>    Beardsley St.
       ======================         V7   |   |   ======================
                              |         3   |   |   | STOP xx
                              |             V8  |   | YIELD
                              |  N= 1       14  |   | Date of Counts:2/14/91
                              |                 V9  | Time Period:AM Peak
                              | minor road       4  | Prevailing Speed:
                              | Newton Ave.         | PHF:0.92
                              |   Grade 0 %         | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12
-----------------------------------------------------------------------------
Volume (vph)       |   5|   9|   4|  20| 312|  21|   3|  14|   4|   6|   8|   1|
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|   6|XXXX|XXXX|  22|XXXX|XXXX|   3|  15|   4|   7|   9|   1
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    1                |
                              |  V12                |
                              |   |    9            |
                              |   |  V11            |
                              |   |   |    7        |
       ======================    |   |  V10         ======================
                                 <|   v   |>       ^----------V6-- ==
                                                    <----------V5-- ==
           6 --V1------------^                     v----------V4--  22
          == --V2------------>
          == --V3------------v        <|   ^   |>
       ======================         V7   |   |   ======================
                              |         3   |   |   |
                              |             V8  |   |
                              |             15  |   |
                              |                 V9  |
                              |                  4  |
```

LOCATION:Beardsley St./Newton Ave. NAME:Existing AM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9 2+ 9= 11 vph	1/2 V6+V5=Vc12 11+ 312= 323 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 765 pcph
% of Cp utilized	(V9/Cp9)x100= .4%	(V12/Cp12)x100= .1%
Impedance Factor, P (Fig.10.5)	P9= 1	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 765 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4 4+ 9= 13 vph	V6+V5=Vc1 21+ 312= 333 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 857 pcph
% of Cp utilized	(V4/Cp4)x100= 2.2%	(V1/Cp1)x100= .7%
Impedance Factor, P (Fig.10.5)	P4= .99	P1= 1
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 857 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 2+ 9+ 5+ 21+ 312+ 20= 369 vph	.5V6+V5+V4+V3+V2+V1=Vc11 11+ 312+ 20+ 4+ 9+ 5= 361 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 650 pcph	Cp11 = 656 pcph
% of Cp utilized	(V8/Cp8)x100= 2.3%	(V11/Cp11)x100= 1.4%
Impedance Factor, P (Fig.10.5)	P8= .99	P11= .99
Actual Capacity, Cm	Cm8=Cp8xP1xP4 644= 650x 1x.99pcph	Cm11=Cp11xP1xP4 649= 656x 1x.99pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 369+ 8+ 1= 378vph	Vc11(step3)+V8+V9=Vc10 361+ 14+ 4= 379vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 575 pcph	Cp10 = 575 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 575x 1x.99x.99x 1 = 564 pcph	Cm10=Cp10xP4xP1xP8xP9 = 575x.99x 1x.99x 1 = 564 pcph

LOCATION:Beardsley St./Newton Ave. NAME:Existing AM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	3	564	675	561	653	A	A
8	15	644	675	629	653	A	A
9	4	1000	675	996	653	A	A

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	7	564	616	557	599	A	A
11	9	649	616	640	599	A	A
12	1	765	616	764	599	A	A

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	6	857	851	A
4	22	1000	978	A

COMMENTS:

```
LOCATION:Beardsley St./Newton Ave.          NAME:Existing PM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    4                |
                              |  V12                |        ^
                              |   |   32            |        N
                              |   |  V11            |
                              |   |   |   40        |
      ======================  |   |   V10           ======================
         N= 1                 <|   v   |>          ^----------V6-- 24
Grade 0%                                           <----------V5-- 85   N= 1
          4 --V1------------^                      v----------V4-- 24
        104 --V2------------>                         major road        Grade 0%
          8 --V3------------v        <|   ^   |>     Beardsley St.
      ======================         V7   |   |     ======================
                              |         5   |   |     | STOP xx
                              |             V8  |     | YIELD
                              |  N= 1       30  |     | Date of Counts:2/14/91
                              |                 V9    | Time Period:PM Peak
                              | minor road      31    | Prevailing Speed:
                              | Newton Ave.           | PHF:0.77
                              |   Grade 0 %           | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.      |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------
Volume (vph)      |   4| 104|   8|  24|  85|  24|   5|  30|  31|  40|  32|   4|
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|   4|XXXX|XXXX|  26|XXXX|XXXX|   6|  33|  34|  44|  35|   4|
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    4                |
                              |  V12                |
                              |   |   35            |
                              |   |  V11            |
                              |   |   |   44        |
      ======================  |   |   V10           ======================
                              <|   v   |>          ^----------V6-- ==
                                                   <----------V5-- ==
          4 --V1------------^                      v----------V4--  26
         == --V2------------>
         == --V3------------v        <|   ^   |>
      ======================         V7   |   |     ======================
                              |         6   |   |     |
                              |             V8  |     |
                              |             33  |     |
                              |                 V9    |
                              |                 34    |
```

LOCATION:Beardsley St./Newton Ave. NAME:Existing PM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9 4+ 104= 108 vph	1/2 V6+V5=Vc12 12+ 85= 97 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 987 pcph	Cp12 = 998 pcph
% of Cp utilized	(V9/Cp9)x100= 3.4%	(V12/Cp12)x100= .4%
Impedance Factor, P (Fig.10.5)	P9= .98	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 987 pcph	Cm12=Cp12= 998 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4 8+ 104= 112 vph	V6+V5=Vc1 24+ 85= 109 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 1000 pcph
% of Cp utilized	(V4/Cp4)x100= 2.6%	(V1/Cp1)x100= .4%
Impedance Factor, P (Fig.10.5)	P4= .98	P1= 1
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 1000 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 4+ 104+ 4+ 24+ 85+ 24= 245 vph	.5V6+V5+V4+V3+V2+V1=Vc11 12+ 85+ 24+ 8+ 104+ 4= 237 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 755 pcph	Cp11 = 762 pcph
% of Cp utilized	(V8/Cp8)x100= 4.4%	(V11/Cp11)x100= 4.6%
Impedance Factor, P (Fig.10.5)	P8= .97	P11= .97
Actual Capacity, Cm	Cm8=Cp8xP1xP4 740= 755x 1x.98pcph	Cm11=Cp11xP1xP4 747= 762x 1x.98pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 245+ 32+ 4= 281vph	Vc11(step3)+V8+V9=Vc10 237+ 30+ 31= 298vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 647 pcph	Cp10 = 632 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 647x 1x.98x.97x 1 = 615 pcph	Cm10=Cp10xP4xP1xP8xP9 = 632x.98x 1x.97x.98 = 589 pcph

LOCATION:Beardsley St./Newton Ave. NAME:Existing PM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	6	615	822	609	749	A	A
8	33	740	822	707	749	A	A
9	34	987	822	953	749	A	A

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	44	589	661	545	578	A	A
11	35	747	661	712	578	A	A
12	4	998	661	994	578	A	A

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	4	1000	996	A
4	26	1000	974	A

COMMENTS:

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: AM PEAK HOUR

(HARSAM1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	127	0.08	0.10	0
NR	NA	NA	19	NA	NA	0
NT	2	3400	306	0.10	0.10	0
SL	1	1500	24	0.02	0.10	0
SR	NA	NA	79	NA	NA	0
ST	2	3400	201	0.09	0.10	0
EL	NA	NA	49	NA	~~NA~~ .10 ~~0~~	1
ER	NA	NA	126	NA	NA	0
ET	1	1700	84	0.15	0.15	0
WL	NA	NA	11	NA	NA	0
WR	NA	NA	47	NA	NA	0
WT	1	1700	199	0.15	0.15	~~0~~ 1

N/S component	0.20
E/W component	~~0.15~~ 0.25
Rt.Tn. comp.	0.00
ICU	~~0.35~~ 0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(HARSAM1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	1	1500	108	0.07	0.10	1
NR	NA	NA	121	NA	NA	0
NT	2	3400	281	0.12	0.12	0
SL	1	1500	113	0.08	0.10	0
SR	NA	NA	42	NA	NA	0
ST	2	3400	522	0.17	0.17	1
EL	NA	NA	58	NA	NA	0
ER	NA	NA	163	NA	NA	0
ET	1	1700	197	0.25	0.25	1
WL	NA	NA	18	NA	~~NA~~ .10	1
WR	NA	NA	32	NA	NA	0
WT	1	1700	157	0.12	0.12	0

N/S component	0.27
E/W component	~~0.25~~ 0.35
Rt.Tn. comp.	0.00
ICU	~~0.52~~ 0.62

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

```
LOCATION:Crosby St./Newton Ave.            NAME:Existing AM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    8                |
                              |  V12                |        ^
                              |   |   25            |        N
                              |   |  V11            |
                              |   |   |   16        |
       ======================    |   |  V10        ======================
          N= 2                  <|   v   |>       ^----------V6-- 32
Grade 0%                                           <----------V5-- 250  N= 2
           3 --V1------------^                     v----------V4-- 23
         135 --V2------------>                        major road        Grade 0%
           3 --V3------------v       <|   ^   |>     Crosby St.
       ======================        V7   |   |   ======================
                              |         1   |   |   | STOP xx
                              |             V8  |   | YIELD
                              |  N= 1       10  |   | Date of Counts:2/13/91
                              |                 V9  | Time Period:AM Peak
                              | minor road      21  | Prevailing Speed:
                              | Newton Ave.         | PHF:0.94
                              |   Grade 0 %         | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------
Volume (vph)       |   3| 135|   3|  23| 250|  32|   1|  10|  21|  16|  25|   8|
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|   3|XXXX|XXXX|  25|XXXX|XXXX|   1|  11|  23|  18|  28|   9|
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    9                |
                              |  V12                |
                              |   |   28            |
                              |   |  V11            |
                              |   |   |   18        |
       ======================    |   |  V10        ======================
                                 <|   v   |>       ^----------V6-- ==
                                                    <----------V5-- ==
           3 --V1------------^                     v----------V4--  25
          == --V2------------>
          == --V3------------v       <|   ^   |>
       ======================        V7   |   |   ======================
                              |         1   |   |   |
                              |             V8  |   |
                              |             11  |   |
                              |                 V9  |
                              |                 23  |
```

LOCATION:Crosby St./Newton Ave. NAME:Existing AM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	2+ 68= 70 vph	16+ 125= 141 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 952 pcph
% of Cp utilized	(V9/Cp9)x100= 2.3%	(V12/Cp12)x100= .9%
Impedance Factor, P (Fig.10.5)	P9= .99	P12= .99
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 952 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	3+ 135= 138 vph	32+ 250= 282 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 955 pcph	Cp1 = 804 pcph
% of Cp utilized	(V4/Cp4)x100= 2.6%	(V1/Cp1)x100= .4%
Impedance Factor, P (Fig.10.5)	P4= .98	P1= 1
Actual Capacity, Cm	Cm4=Cp4= 955 pcph	Cm1=Cp1= 804 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	2+ 135+ 3+ 32+	16+ 250+ 23+ 3+
	250+ 23= 445 vph	135+ 3= 430 vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 529 pcph	Cp11 = 539 pcph
% of Cp utilized	(V8/Cp8)x100= 2.1%	(V11/Cp11)x100= 5.2%
Impedance Factor, P (Fig.10.5)	P8= .99	P11= .97
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	518= 529x 1x.98pcph	528= 539x 1x.98pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	445+ 25+ 8= 478vph	430+ 10+ 21= 461vph
Critical Gap, Tc (Tab.10.2)	7 (secs.)	7 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 445 pcph	Cp10 = 457 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 445x 1x.98x.97x.99	= 457x.98x 1x.99x.99
	= 419 pcph	= 439 pcph

LOCATION:Crosby St./Newton Ave. NAME:Existing AM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	1	419	751	418	716	A	A
8	11	518	751	507	716	A	A
9	23	1000	751	977	716	A	A

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	18	439	531	421	476	A	A
11	28	528	531	500	476	A	A
12	9	952	531	943	476	A	A

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	3	804	801	A
4	25	955	930	A

COMMENTS:

```
LOCATION:Crosby St./Newton Ave.            NAME:Existing PM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |   12                |
                              |  V12                |        ^
                              |   |   27            |        N
                              |   |  V11            |
                              |   |   |   33        |
       ======================   |   |  V10         ======================
          N= 2                  <|   v   |>       ^----------V6-- 31
Grade 0%                                           <----------V5-- 138  N= 2
          11 --V1------------^                     v----------V4-- 32
         358 --V2------------>                        major road        Grade 0%
          11 --V3------------v       <|   ^   |>    Crosby St.
       ======================        V7   |   |   ======================
                              |         2   |   |   | STOP xx
                              |             V8  |   | YIELD
                              |  N= 1       20  |   | Date of Counts:2/13/91
                              |                 V9  | Time Period:PM Peak
                              | minor road      24  | Prevailing Speed:
                              | Newton Ave.         | PHF:0.77
                              |   Grade 0 %         | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12
-----------------------------------------------------------------------------
Volume (vph)       |  11| 358|  11|  32| 138|  31|   2|  20|  24|  33|  27|  12|
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|  12|XXXX|XXXX|  35|XXXX|XXXX|   2|  22|  26|  36|  30|  13|
=============================================================================

VOLUMES IN PCPH               |                     |
                              |   13                |
                              |  V12                |
                              |   |   30            |
                              |   |  V11            |
                              |   |   |   36        |
       ======================   |   |  V10         ====================
                                <|   v   |>       ^----------V6-- ==
                                                   <----------V5-- ==
          12 --V1------------^                     v----------V4--  35
          == --V2------------>
          == --V3------------v       <|   ^   |>
       ======================        V7   |   |   ======================
                              |         2   |   |   |
                              |             V8  |   |
                              |             22  |   |
                              |                 V9  |
                              |                 26  |
```

LOCATION:Crosby St./Newton Ave. NAME:Existing PM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	6+ 179= 185 vph	16+ 69= 85 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 906 pcph	Cp12 = 1000 pcph
% of Cp utilized	(V9/Cp9)x100= 2.9%	(V12/Cp12)x100= 1.3%
Impedance Factor, P (Fig.10.5)	P9= .98	P12= .99
Actual Capacity, Cm	Cm9=Cp9= 906 pcph	Cm12=Cp12= 1000 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	11+ 358= 369 vph	31+ 138= 169 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 726 pcph	Cp1 = 923 pcph
% of Cp utilized	(V4/Cp4)x100= 4.8%	(V1/Cp1)x100= 1.3%
Impedance Factor, P (Fig.10.5)	P4= .97	P1= .99
Actual Capacity, Cm	Cm4=Cp4= 726 pcph	Cm1=Cp1= 923 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	6+ 358+ 11+ 31+	16+ 138+ 32+ 11+
	138+ 32= 576 vph	358+ 11= 566 vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 437 pcph	Cp11 = 444 pcph
% of Cp utilized	(V8/Cp8)x100= 5%	(V11/Cp11)x100= 6.8%
Impedance Factor, P (Fig.10.5)	P8= .97	P11= .96
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	420= 437x.99x.97pcph	426= 444x.99x.97pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	576+ 27+ 12= 615vph	566+ 20+ 24= 610vph
Critical Gap, Tc (Tab.10.2)	7 (secs.)	7 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 358 pcph	Cp10 = 360 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 358x.99x.97x.96x.99	= 360x.97x.99x.97x.98
	= 327 pcph	= 329 pcph

LOCATION:Crosby St./Newton Ave. NAME:Existing PM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	2	327	573	325	523	B	A
8	22	420	573	398	523	B	A
9	26	906	573	880	523	A	A

APPROACH MOVEMENTS 10,11,12

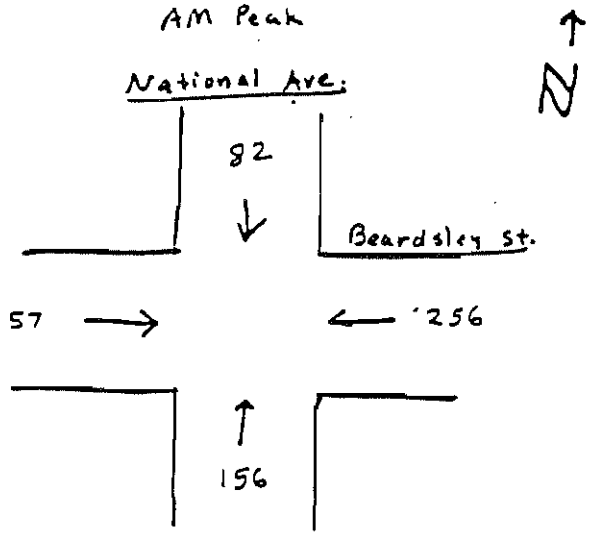
MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	36	329	410	293	331	C	B
11	30	426	410	396	331	B	B
12	13	1000	410	987	331	A	B

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	12	923	911	A
4	35	726	691	A

COMMENTS:

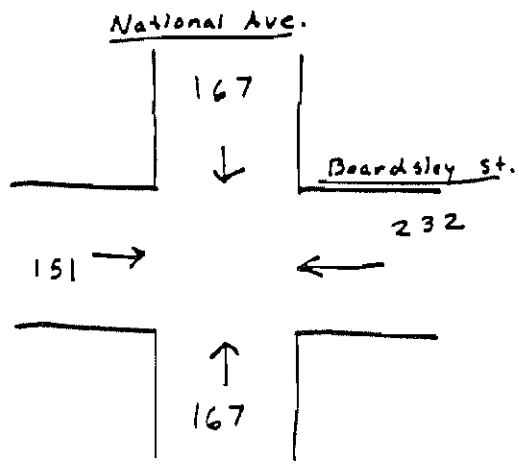
AM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 551
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

PM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 717
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,300
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
National Ave./Beardsley St.
Existing Conditions

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: AM PEAK HOUR

(LOGCR01.ICU/2-22-91)

EXISTING CONDITIONS

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	8	NA	~~NA~~ .10	1
NR	NA	NA	72	NA	NA	0
NT	2	3400	181	0.08	0.10	0
SL	NA	NA	88	NA	NA	0
SR	NA	NA	140	NA	NA	0
ST	2	3400	247	0.14	0.14	1
EL	NA	NA	55	NA	NA	0
ER	1	1500	53	0.04	0.10	0
ET	1	1700	140	0.11	0.11	1
WL	NA	NA	2	NA	~~NA~~ .10	1
WR	1	1500	33	0.02	0.10	0
WT	1	1700	43	0.03	0.10	0

N/S component	~~0.14~~ 0.24
E/W component	~~0.11~~ 0.21
Rt.Tn. comp.	0.00
ICU	~~0.25~~ 0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: PM PEAK HOUR

(LOGCR01.ICU/2-22-91)

EXISTING CONDITIONS

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	10	NA	~~NA~~ .10	1
NR	NA	NA	162	NA	NA	0
NT	2	3400	213	0.11	0.11	0
SL	NA	NA	173	NA	NA	0
SR	NA	NA	58	NA	NA	0
ST	2	3400	177	0.12	0.12	1
EL	NA	NA	79	NA	NA	0
ER	1	1500	34	0.02	0.10	0
ET	1	1700	317	0.23	0.23	1
WL	NA	NA	4	NA	~~NA~~ .10	1
WR	1	1500	45	0.03	0.10	0
WT	1	1700	52	0.03	0.10	0

N/S component	~~0.12~~ .22
E/W component	~~0.23~~ .33
Rt.Tn. comp.	0.00
ICU	~~0.35~~ 0.55

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION: MAIN STREET/CROSBY STREET
DATE: 3/14/90
TIME: 6:30 TO7:30 AM

(MAICRO)

Movemnt	No. Lanes	Cap.	EXISTING Vol.	AM Peak V/C	Crit. Mvmt.
NL	NA	NA	14	NA	0
NR	1	1500	33	0.02	0
NT	1	1700	40	0.10	1
SL	NA	NA	7	NA	0
SR	NA	NA	5	NA	0
ST	1	1700	42	0.10	1
EL	NA	NA	17	NA	0
ER	1	1500	23	0.02	0
ET	1	1700	327	0.20	1
WL	~~1~~ NA	~~1500~~ NA	3	~~0.10~~ NA	0
WR	~~1~~ NA	~~1500~~ NA	7	~~0.10~~ NA	0
WT	1	1700	88	0.10	1

N/S component	0.20
E/W component	0.30
Rt.Tn. component	0.00
ICU	0.50

Critical movement identified by a 1.
Ten-lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION: MAIN STREET/CROSBY STREET
DATE: 3/14/90
TIME: 4:00 TO 5:00 PM

(MAICRO)

Movemnt	No. Lanes	Cap.	Vol.	EXISTING PM Peak V/C	Crit. Mvmt.
NL	NA	NA	18	NA	0
NR	1	1500	37	0.02	0
NT	1	1700	55	0.10	1
SL	NA	NA	21	NA	0
SR	NA	NA	0	NA	0
ST	1	1700	65	0.10	1
EL	NA	NA	29	NA	0
ER	1	1500	26	0.02	0
ET	1	1700	109	0.10	1
WL	~~1~~ NA	~~1500~~ NA	8	~~0.10~~ NA	0
WR	~~1~~ NA	~~1500~~ NA	23	~~0.02~~ NA	0
WT	1	1700	325	~~0.19~~ 0.21	1

N/S component		0.20
E/W component		~~0.29~~ 0.31
Rt.Tn. component		0.00
	ICU	~~0.49~~ 0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Crosby St.
DATE: 2/6/91
TIME: AM PEAK HOUR

(HARCRO1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	47	0.03	0.10	1
NR	1	1500	53	0.04	0.10	0
NT	2	3400	266	0.08	0.10	0
SL	1	1500	30	0.02	0.10	0
SR	NA	NA	48	NA	NA	0
ST	2	3400	362	0.12	0.12	1
EL	NA	NA	25	NA	NA	0
ER	NA	NA	9	NA	NA	0
ET	1	1700	29	0.04	0.10	0
WL	NA	NA	53	NA	NA	0
WR	1	1500	99	0.07	0.10	0
WT	1	1700	67	0.07	0.10	0

N/S component	0.22
E/W component	~~0.10~~ 0.20
Rt.Tn. comp.	0.00
ICU	~~0.32~~ 0.42

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Crosby St.
DATE: 7/26/90
TIME: PM PEAK HOUR

(HARCRO1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	1	1500	26	0.02	0.10	1
NR	1	1500	92	0.06	0.10	0
NT	2	3400	399	0.12	0.12	0
SL	1	1500	178	0.12	0.12	0
SR	NA	NA	15	NA	NA	0
ST	2	3400	738	0.22	0.22	1
EL	NA	NA	34	NA	NA	0
ER	NA	NA	67	NA	NA	0
ET	1	1700	76	0.10	0.10	0
WL	NA	NA	42	NA	NA	0
WR	1	1500	84	0.06	0.10	0
WT	1	1700	25	0.04	0.10	0

N/S component	0.32
E/W component	~~0.10~~ 0.20
Rt.Tn. comp.	0.00
ICU	~~0.42~~ 0.52

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

```
LOCATION:National Ave./26th St.            NAME:Existing AM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 2      |
                              |    1                |
                              |  V12                |        ^
                              |   |   13            |        N
                              |   |  V11            |
                              |   |   |   20        |
      ======================    |   |  V10        ======================
         N= 2                 <|   v   |>       ^----------V6-- 28
Grade 0%                                        <----------V5-- 324  N= 2
          1 --V1------------^                   v----------V4-- 107
         77 --V2------------>                      major road        Grade 0%
          7 --V3------------v       <|   ^   |>   National Ave.
      ======================        V7   |   |  ======================
                              |        5   |   |  | STOP xx
                              |            V8   |  | YIELD
                              |  N= 1       7   |  | Date of Counts:2/12/91
                              |                V9  | Time Period:AM Peak
                              | minor road     19  | Prevailing Speed:
                              | 26th St.           | PHF:0.93
                              |   Grade 0 %        | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------
Volume (vph)       |   1|  77|   7| 107| 324|  28|   5|   7|  19|  20|  13|   1
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|   1|XXXX|XXXX| 118|XXXX|XXXX|   6|   8|  21|  22|  14|   1|
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    1                |
                              |  V12                |
                              |   |   14            |
                              |   |  V11            |
                              |   |   |   22        |
      ======================    |   |  V10        ======================
                                <|   v   |>       ^----------V6-- ==
                                                  <----------V5-- ==
          1 --V1------------^                     v----------V4-- 118
         == --V2------------>
         == --V3------------v       <|   ^   |>
      ======================        V7   |   |  ======================
                              |        6   |   |  |
                              |            V8   |  |
                              |             8   |  |
                              |                V9  |
                              |                21  |
```

LOCATION:National Ave./26th St. NAME:Existing AM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	4+ 39= 43 vph	14+ 162= 176 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 915 pcph
% of Cp utilized	(V9/Cp9)x100= 2.1%	(V12/Cp12)x100= .1%
Impedance Factor, P (Fig.10.5)	P9= .99	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 915 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	7+ 77= 84 vph	28+ 324= 352 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 741 pcph
% of Cp utilized	(V4/Cp4)x100= 11.8%	(V1/Cp1)x100= .1%
Impedance Factor, P (Fig.10.5)	P4= .93	P1= 1
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 741 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	4+ 77+ 1+ 28+	14+ 324+ 107+ 7+
	324+ 107= 541 vph	77+ 1= 530 vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 461 pcph	Cp11 = 469 pcph
% of Cp utilized	(V8/Cp8)x100= 1.7%	(V11/Cp11)x100= 3%
Impedance Factor, P (Fig.10.5)	P8= .99	P11= .98
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	429= 461x 1x.93pcph	436= 469x 1x.93pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	541+ 13+ 1= 555vph	530+ 7+ 19= 556vph
Critical Gap, Tc (Tab.10.2)	7 (secs.)	7 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 394 pcph	Cp10 = 394 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 394x 1x.93x.98x 1	= 394x.93x 1x.99x.99
	= 359 pcph	= 359 pcph

LOCATION:National Ave./26th St. NAME:Existing AM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	6	359	621	353	586	B	A
8	8	429	621	421	586	A	A
9	21	1000	621	979	586	A	A

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	22	359	385	337	349	B	B
11	14	436	385	422	349	A	B
12	1	915		914		A	

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	1	741	740	A
4	118	1000	882	A

COMMENTS:

```
LOCATION:National Ave./26th St.              NAME:Existing PM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 2      |
                              |    7                |
                              |  V12                |        ^
                              |   |   20            |        N
                              |   |  V11            |
                              |   |   |   96        |
       ======================    |   |  V10        ======================
          N= 2                  <|   v   |>       ^----------V6-- 92
Grade 0%                                           <----------V5-- 217  N= 2
           4 --V1------------^                     v----------V4-- 43
         331 --V2------------>                        major road        Grade 0%
          23 --V3------------v       <|   ^   |>     National Ave.
       ======================        V7   |   |    ======================
                              |        15   |   |    | STOP xx
                              |            V8   |    | YIELD
                              |  N= 1      34   |    | Date of Counts:2/12/91
                              |                V9    | Time Period:AM Peak
                              | minor road    168    | Prevailing Speed:
                              | 26th St.             | PHF:0.94
                              |   Grade 0 %          | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------
Volume (vph)       |   4| 331|  23|  43| 217|  92|  15|  34| 168|  96|  20|   7|
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|   4|XXXX|XXXX|  47|XXXX|XXXX|  17|  37| 185| 106|  22|   8|
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    8                |
                              |  V12                |
                              |   |   22            |
                              |   |  V11            |
                              |   |   |  106        |
       ======================    |   |  V10        ======================
                                 <|   v   |>       ^----------V6-- ==
                                                    <----------V5-- ==
           4 --V1------------^                     v----------V4--  47
          == --V2------------>
          == --V3------------v       <|   ^   |>
       ======================        V7   |   |    ======================
                              |        17   |   |    |
                              |            V8   |    |
                              |            37   |    |
                              |                V9    |
                              |               185    |
```

LOCATION:National Ave./26th St. NAME:Existing PM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	12+ 166= 178 vph	46+ 109= 155 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 913 pcph	Cp12 = 937 pcph
% of Cp utilized	(V9/Cp9)x100= 20.3%	(V12/Cp12)x100= .9%
Impedance Factor, P (Fig.10.5)	P9= .86	P12= .99
Actual Capacity, Cm	Cm9=Cp9= 913 pcph	Cm12=Cp12= 937 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	23+ 331= 354 vph	92+ 217= 309 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 739 pcph	Cp1 = 777 pcph
% of Cp utilized	(V4/Cp4)x100= 6.4%	(V1/Cp1)x100= .5%
Impedance Factor, P (Fig.10.5)	P4= .96	P1= 1
Actual Capacity, Cm	Cm4=Cp4= 739 pcph	Cm1=Cp1= 777 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	12+ 331+ 4+ 92+	46+ 217+ 43+ 23+
	217+ 43= 699 vph	331+ 4= 664 vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 366 pcph	Cp11 = 385 pcph
% of Cp utilized	(V8/Cp8)x100= 10.1%	(V11/Cp11)x100= 5.7%
Impedance Factor, P (Fig.10.5)	P8= .94	P11= .97
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	351= 366x 1x.96pcph	370= 385x 1x.96pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	699+ 20+ 7= 726vph	664+ 34+ 168= 866vph
Critical Gap, Tc (Tab.10.2)	7 (secs.)	7 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 303 pcph	Cp10 = 240 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 303x 1x.96x.97x.99	= 240x.96x 1x.94x.86
	= 279 pcph	= 186 pcph

LOCATION:National Ave./26th St. NAME:Existing PM

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	17	279	648	262	409	C	A
8	37	351	648	314	409	B	A
9	185	913	648	728	409	A	A

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	106	186	203	80	75	E	E
11	22	370	203	348	75	B	E
12	8	937		929		A	

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	4	777	773	A
4	47	739	692	A

COMMENTS:

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATSIG1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	25	NA	NA	0
NR	NA	NA	7	NA	NA	0
NT	2	3400	82	0.03	0.10	0
SL	NA	NA	6	NA	NA	0
SR	NA	NA	17	NA	NA	0
ST	2	3400	57	0.02	0.10	0
EL	NA	NA	13	NA	NA	0
ER	NA	NA	26	NA	NA	0
ET	1	1700	58	0.06	0.10	0
WL	NA	NA	11	NA	NA	0
WR	NA	NA	8	NA	NA	0
WT	1	1700	61	0.05	0.10	0

N/S component	~~0.10~~ .20
E/W component	~~0.10~~ .20
Rt.Tn. comp.	0.00
ICU	~~0.20~~ .40

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATSIG1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	15	NA	NA	0
NR	NA	NA	27	NA	NA	0
NT	2	3400	98	0.04	0.10	0
SL	NA	NA	7	NA	NA	0
SR	NA	NA	24	NA	NA	0
ST	2	3400	108	0.04	0.10	0
EL	NA	NA	48	NA	NA	0
ER	NA	NA	42	NA	NA	0
ET	1	1700	92	0.11	0.11	1
WL	NA	NA	12	NA	NA	1
WR	NA	NA	12	NA	NA	0
WT	1	1700	30	0.03	0.10	0

N/S component	~~0.10~~ .20
E/W component	~~0.11~~ .21
Rt.Tn. comp.	0.00
ICU	~~0.21~~ .41

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St
DATE: 2/13/91
TIME: AM PEAK HOUR

(NATSAM1.ICU/2-16-91)

EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	69	NA	NA	0
NR	NA	NA	14	NA	NA	0
NT	2	3400	91	0.05	0.10	0
SL	NA	NA	6	NA	NA	0
SR	NA	NA	18	NA	NA	0
ST	2	3400	53	0.02	0.10	0
EL	NA	NA	23	NA	NA	0
ER	NA	NA	30	NA	NA	0
ET	1	1700	63	0.07	0.10	0
WL	NA	NA	18	NA	NA	0
WR	NA	NA	28	NA	NA	0
WT	1	1700	83	0.08	0.10	0

N/S component	~~0.10~~ .20
E/W component	~~0.10~~ .20
Rt.Tn. comp.	0.00
ICU	~~0.20~~ .40

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St
DATE: 2/13/91
TIME: PM PEAK HOUR

(NATSAM1.ICU/2-16-91)

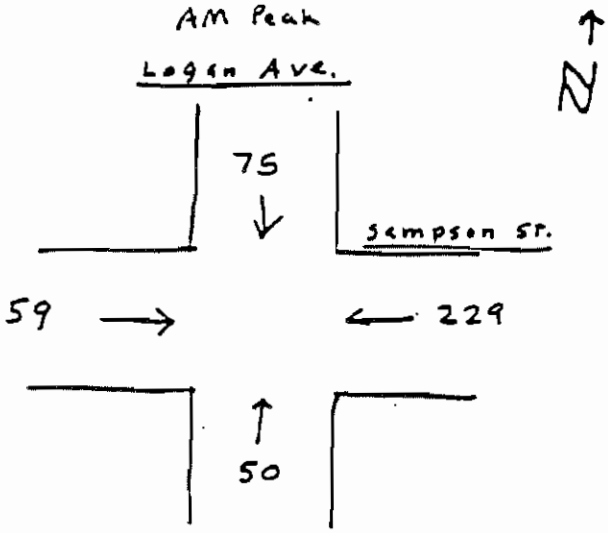
EXISTING CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	58	NA	NA	0
NR	NA	NA	33	NA	NA	0
NT	2	3400	116	0.06	0.10	0
SL	NA	NA	42	NA	NA	0
SR	NA	NA	25	NA	NA	0
ST	2	3400	162	0.07	0.10	0
EL	NA	NA	19	NA	NA	0
ER	NA	NA	74	NA	NA	0
ET	1	1700	266	0.21	0.21	1
WL	NA	NA	35	NA	NA	1
WR	NA	NA	35	NA	NA	0
WT	1	1700	81	0.09	0.10	0

N/S component	~~0.10~~ .20
E/W component	~~0.21~~ .31
Rt.Tn. comp.	0.00
ICU	~~0.31~~ .51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

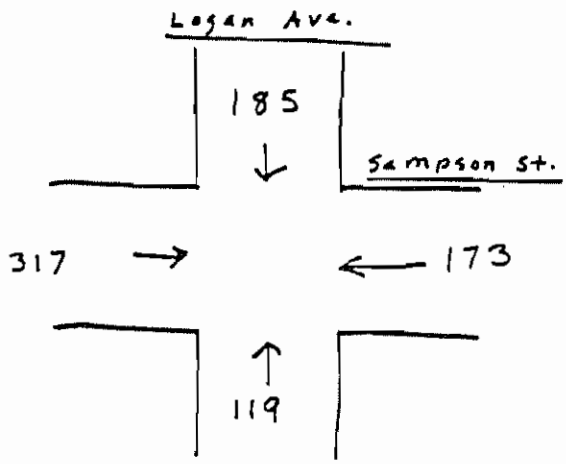
AM Peak



Lane Configuration: 2x4
Demand Split: 70/30
Total Volume: 413
Max. LOS C Volume
from Table 10-7: 1,610

LOS is better than C

PM Peak



Lane Configuration: 2x4
Demand Split: 60/40
Total Volume: 794
Max. LOS C Volume
from Table 10-7: 1,660

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

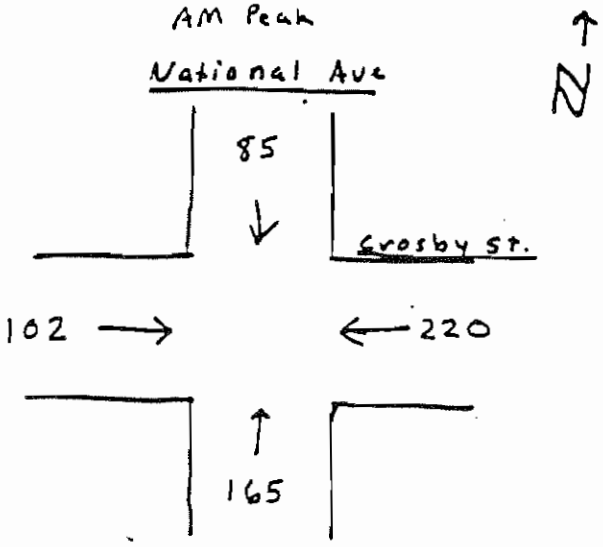
DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,200
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
Logan Ave./Sampson St.
Existing Conditions

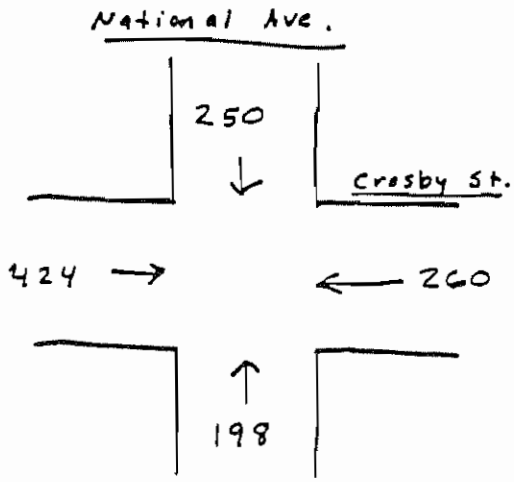
AM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 572
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

PM Peak



Lane Configuration: 2 x 4
Demand Split: 60/40
Total Volume: 1,132
Max. LOS C Volume
from Table 10-7: 1,660

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

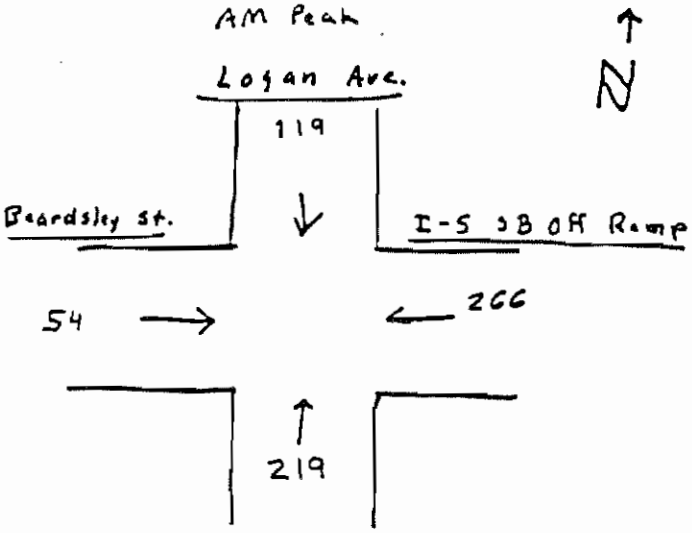
DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,200
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
National Ave./Crosby St.
Existing Conditions

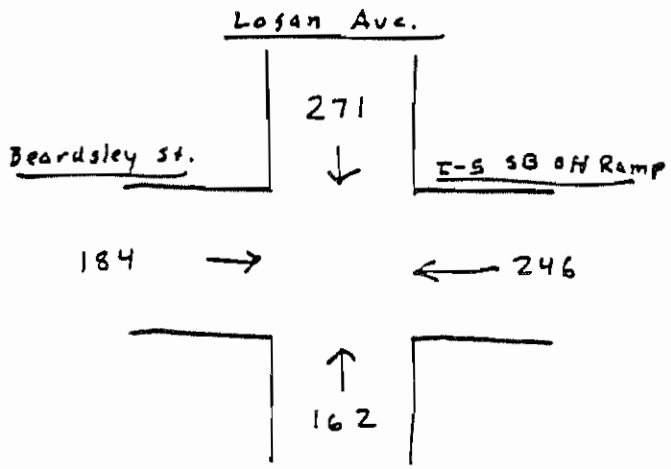
AM Peak



Lane Configuration: 2 x 2
Demand Split: 55/45
Total Volume: 712
Max. LOS C Volume
from Table 10-7: 1,140

LOS is better than C

PM Peak



Lane Configuration: 2 x 2
Demand Split: 50/50
Total Volume: 863
Max. LOS C Volume
from Table 10-7: 1,800

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,200
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

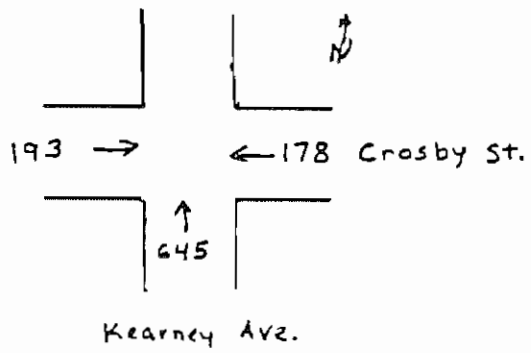
SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis

Logan Ave / I-5 SB Off Ramp (Beardsley St.)
Existing Conditions

AM Peak



Lane Configuration: 2 by 2

Demand Split: 65/35

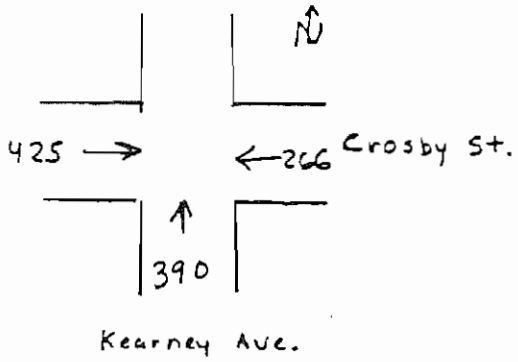
Total Volume: 1,016

Max. LOS C Volume

from Table A-1: 988

LOS is worse than C

PM Peak



Lane Configuration: 2 by 2

Demand Split: 70/30

Total Volume: 1,081

Max. LOS C Volume

from Table A-1: 947

LOS is worse than C

(Table A-1 is presented on Page B-77)

BASMACIYAN-DARNELL, INC.

Three-Way Stop-Controlled
Intersection Capacity Analysis
Crosby St./ Kearney Ave.
Existing Conditions

Figure 8-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X1	X1	8,000 (4,550)	5,600	2,400 (800)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X1	X1	12,000 (4,550)	8,400	1,200 (800)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied _____ Not Satisfied X

2 Warrants — 2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) NO (2)

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
Logan Ave. / Sigsbee St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	X 1	8,000 (3350)	5,600	2,400 (575)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	1	12,000 (3350)	8,400	1,200 (575)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied _____ Not Satisfied X

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) NO (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
Beardsley St. / Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X	1	1	8,000 (7,500)	5,600	2,400 (550)	1,680
	2 or more	1	9,600	6,720	2,400	1,680
	2 or more	2 or more	9,600	6,720	3,200	2,240
	1	2 or more	8,000	5,600	3,200	2,240
			80% = 6,400		80% = 1,920	

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied _____

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X	1	1	12,000 (7,560)	8,400	1,200 (550)	850
	2 or more	1	14,400	10,080	1,200	850
	2 or more	2 or more	14,400	10,080	1,600	1,120
	1	2 or more	12,000	8,400	1,600	1,120
			80% = 9,600		80% = 960	

3. Combination

Satisfied _____ Not Satisfied X

No one warrant satisfied but following warrants fulfilled 80% or more ___ No (1) No (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
Crosby St./Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	1	8,000 (4500)	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	X 2 or more	9,600	6,720	3,200 (1950)	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	1	12,000 (4500)	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more	X 2 or more	14,400	10,080	1,600 (1950)	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied _____ Not Satisfied ___X___

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) ___ NO (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
National Ave./Beardsley St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Vehicles per day on major street (total of both approaches) Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Vehicles per day on higher-volume minor-street approach (one direction only) Rural
X1	X1	8,000 (10,300)	5,600	2,400 (1550)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240
				90% = 1920	

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Vehicles per day on major street (total of both approaches) Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Vehicles per day on higher-volume minor-street approach (one direction only) Rural
1	1	12,000 (10,300)	8,400	1,200 (1550)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		90% = 9600		90% = 960	

3. Combination

Satisfied _____ Not Satisfied X

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) YES (2)

2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions

National Ave./26th St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	X 1	8,000	5,600	2,400 (1550)	1,680
X 2 or more	1	9,600 (4100)	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240
				80% = 1920	

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	X 1	12,000	8,400	1,200 (1550)	850
X 2 or more	1	14,400 (4100)	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied _____ Not Satisfied ___X___

2 Warrants | 2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) ___ NO (2)

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
Logan Ave. / Sampson St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X1	X1	8,000 (8500)	5,600	2,400 (2275)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240
				80% = 1920	

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X1	X1	12,000 (9500)	8,400	1,200 (2275)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 9600			

3. Combination

Satisfied _____ Not Satisfied X

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES (1) NO (2)

2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Existing Conditions
National Ave./Crosby St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	x1	8,000 (5550)	5,600	2,400 (2500)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240
		80% = 6,400			

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	1	12,000 (5550)	8,400	1,200 (2500)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 6,400			

3. Combination

Satisfied _____ Not Satisfied X

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) NO (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions

Logan Ave. / I-5 SB OH Ramp (Beardsley)

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	8,000	5,600	2,400	1,680
	2 or more	1	9,600	6,720	2,400	1,680
	2 or more	2 or more	9,600	6,720	3,200	2,240
X	1	2 or more	8,000 8,800	5,600	3,200 2,252	2,240
					80% = 2,560	

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	12,000	8,400	1,200	850
	2 or more	1	14,400	10,080	1,200	850
	2 or more	2 or more	14,400	10.080	1,600	1,120
X	1	2 or more	12,000 8,800	8,400	1,600 2,252	1,120
			80% = 9,600			

3. Combination

Satisfied _____ Not Satisfied ___X___

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) - NO (2)

Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Existing Conditions
Crosby St./Kearney Ave.

TABLE 3
SUMMARY OF TRUCK CLASSIFACTION COUNTS (a)
AND PERCENTAGES

LOCATION	AUTOS	% OF TOTAL(a)	TRUCKS 2-3 AXLES TRUCKS	% OF TOTAL(b)	4+ AXLES TRUCKS	% OF TOTAL(c)	TOTAL TRUCKS	% OF TOTAL TRUCKS (d)	BUS RV	% OF TOTAL(e)	GRAND TOTAL
MAIN STREET											
AT SAMPSON STREET											
-NORTHBOUND	168	94.9%	5	2.8%	0	0.0%	5	2.8%	4	2.3%	177
-SOUTHBOUND	73	86.9%	4	4.8%	0	0.0%	4	4.8%	7	8.3%	84
TOTAL BOTH DIRECTIONS	241	92.3%	9	3.4%	0	0.0%	9	3.4%	11	4.2%	261
SAMPSON STREET											
AT MAIN STREET E											
-EASTBOUND	116	92.1%	4	3.2%	3	2.4%	1	5.6%	3	2.4%	126
-WESTBOUND	129	90.8%	8	5.6%	5	3.5%	4	9.2%	0	0.0%	142
TOTAL BOTH DIRECTIONS	245	91.4%	12	4.5%	8	3.0%	5	7.5%	3	1.1%	268

(a) Autos as Persent of Total Traffic
(b) 2-3 Axle Trucks as a Percent of Total Traffic
(c) 4+ Axle Trucks as a Percent of Total Traffic
(d) Total Trucks as a Percent of Total Traffic
(e) Bus/RV as aPercent of Total Traffic

09,17,25,33,41,49,57,65,73,81,89,97,A5,B3,C1,C9,D7.

TABLE 3
SUMMARY OF TRUCK CLASSIFACTION COUNTS (a)
AND PERCENTAGES

LOCATION	AUTOS	% OF TOTAL(a)	TRUCKS 2-3 AXLES TRUCKS	% OF TOTAL(b)	4+ AXLES TRUCKS	% OF TOTAL(c)	TOTAL TRUCKS	% OF TOTAL TRUCKS (d)	BUS RV	% OF TOTAL(e)	GRAND TOTAL
NEWTON AVENUE AT CROSBY STREET											
-NORTHBOUND	46	97.9%	1	2.1%	0	0.0%	1	2.1%	0	0.0%	47
-SOUTHBOUND	72	97.3%	2	2.7%	0	0.0%	2	2.7%	0	0.0%	74
TOTAL BOTH DIRECTIONS	118	97.5%	3	2.5%	0	0.0%	3	2.5%	0	0.0%	121
CROSBY STREET AT NEWTON AVENUE											
-EASTBOUND	380	96.7%	2	0.5%	11	2.8%	1	3.3%	0	0.0%	393
-WESTBOUND	201	97.6%	2	1.0%	3	1.5%	4	2.4%	0	0.0%	206
TOTAL BOTH DIRECTIONS	581	97.0%	4	0.7%	14	2.3%	5	3.0%	0	0.0%	599

(a) Autos as Persent of Total Traffic
(b) 2-3 Axle Trucks as a Percent of Total Traffic
(c) 4+ Axle Trucks as a Percent of Total Traffic
(d) Total Trucks as a Percent of Total Traffic
(e) Bus/RV as aPercent of Total Traffic

LOS FOR SIGNALIZED INTERSECTIONS

The Intersection Capacity Utilization (ICU) technique evaluates the performance based on a volume to capacity ratio where the observed peak hour volume at the intersection is divided by the intersection's theoretical capacity.

LEVEL OF SERVICE DEFINITIONS

Level of Service (LOS)	Operating Conditions	Volume/Capacity Ratio (V/C)
A	Free flow, no restrictions on maneuvering or operating speeds. Low traffic volumes and high speeds.	.60 or less
B	Stable flow, more restrictions. Operating speeds beginning to be affected by traffic volumes.	.61-.70
C	Stable flow, more restrictions. Speed and maneuverability more closely controlled by higher traffic volumes.	.71-.80
D	Approaching unstable flow. Traffic volumes profoundly affect arterials.	.81-.90
E	Unstable flow, some, stoppages. Speeds lower than LOS "D". Constitutes maximum capacity by definition.	.91 - 1.0
F	Forced flow, many stoppages. Low operating speeds, at times dropping to zero.	undefined

Source: Highway Capacity Manual, 1965

LOS FOR UNSIGNALIZED INTERSECTIONS

The levels of service for the Unsignalized Intersections are a function of the intersection's reserve capacity or amount of additional capacity remaining on the major street for use by vehicles entering or leaving the Major Street. The 1985 Highway Capacity Manual (HCM) describes the level of service criteria for Unsignalized Intersections as follows:

Level of Service	Reserve Capacity *	Expected Delays to Cross Street Traffic
A	Over 400	Little or no delay
B	300-399	Short traffic delays
C	200-299	Average traffic delays
D	100-199	Long traffic delays
E	0-99	Very long traffic delays
F	**	Extreme traffic delays

* Passenger car equivalents per hour

** When demand volume exceeds the capacity of the lane, extreme delays will be encountered which might affect other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Source: 1985 Highway Capacity Manual, TRB Report No. 209

METHODOLOGY TO CALCULATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR THREE-WAY STOP-CONTROLLED INTERSECTIONS

Since the 1985 Highway Capacity Manual does not have specific procedures to determine the level of service (LOS) for three-way stop controlled intersections the four-way stop procedures were modified. Based on the following equation, three-way stop LOS C service volumes can be calculated.

$$C=(A1 * 3600/D * V1/(V1+V2))+(A2 * 3600/D * V2/(V1+V2))$$

C = LOS C service volumes
A1= number of eastbound and westbound approach lanes
A2= number of northbound and southbound approach lanes
D = Delay per hour
V1= departure headways of eastbound and westbound vehicles crossing from a stopped position.
V2= departure headways of northbound and southbound vehicles crossing from a stopped position
V1/(V1+V2)= % demand split for eastbound and westbound
V2/(V1+V2)= % demand split for northbound and southbound

To use the above equation to calculate the service volumes (S) of the three-way stop controlled intersections, the first step is to find the delay in one hour (D) for the 50/50, 55/45, 60/60, 65/35, and 70/30 demand splits. It was assumed the delay in one hour (D) for a three-way stop-controlled and four-way stop-controlled intersections are the same. Utilizing these values, the corresponding LOS C service volumes for three-way stop control were calculated. The results of the LOS C service volumes for three-way stop-controlled intersections are listed in Table A-1.

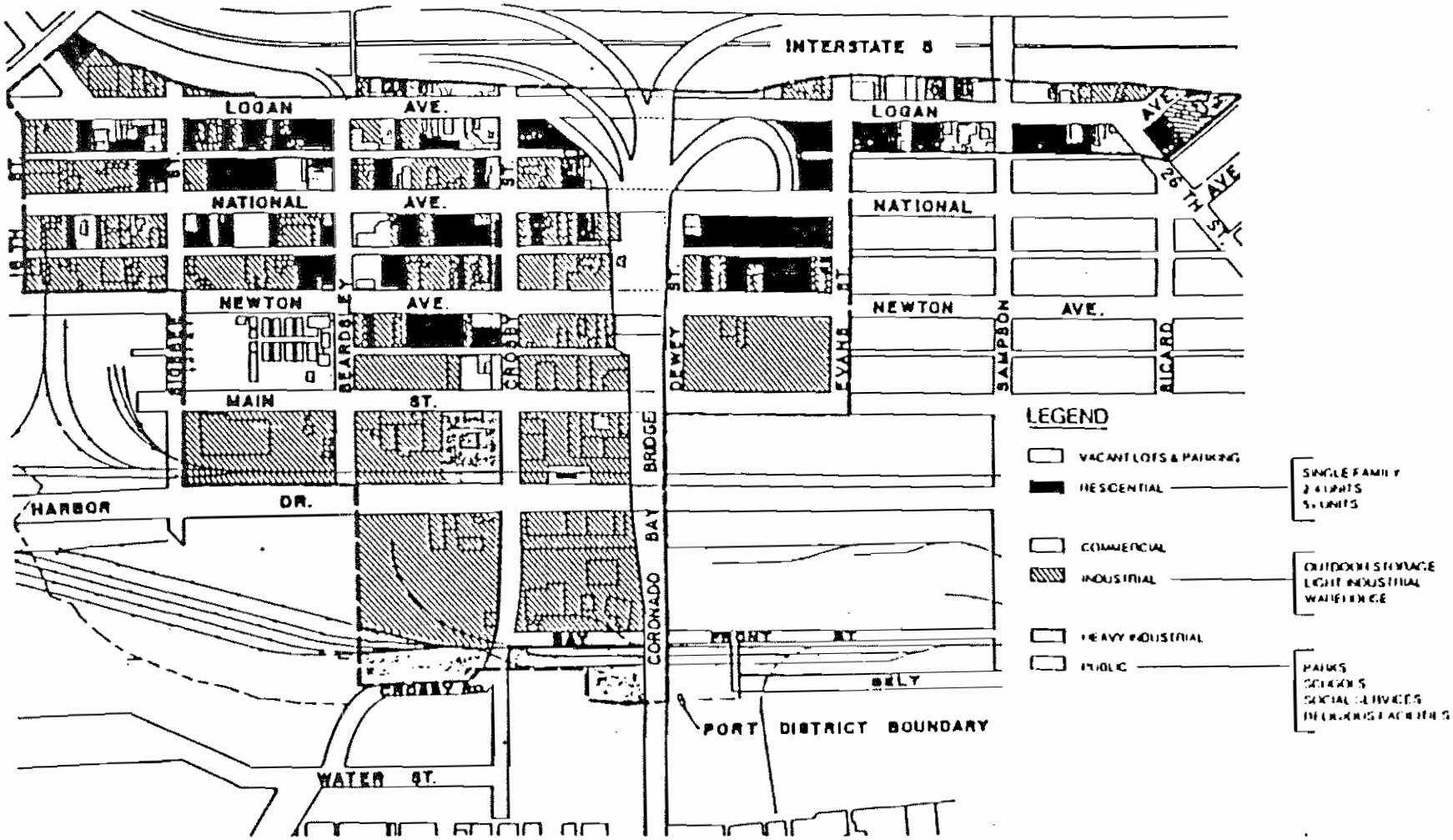
TABLE A-1

APPROXIMATE LEVEL OF SERVICE C SERVICE VOLUMES FOR THREE-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH			
	NUMBER OF LANES			
	1 BY 2	2 BY 2	1 BY 4	2 BY 4
50/50	900	1,200	1,500	1,650
55/45	884	1,110	1,470	1,604
60/40	864	1,038	1,453	1,576
65/35	833	988	1,457	1,551
70/30	816	947	1,468	1,547

APPENDIX C

FUTURE CONDITIONS:
- EXISTING AND PROPOSED LAND USE PLAN
- TRIP DISTRIBUTION BY ZONE
- SELECT ZONE ASSIGNMENT PLOT
  SANDAG SERIES VII REGIONAL MODEL
- TRIP GENERATION AND DISTRIBUTION
  CALCULATIONS
- SANDAG SERIES VII REGIONAL MODEL
  VOLUME PLOT
- PARKING WORKSHEETS

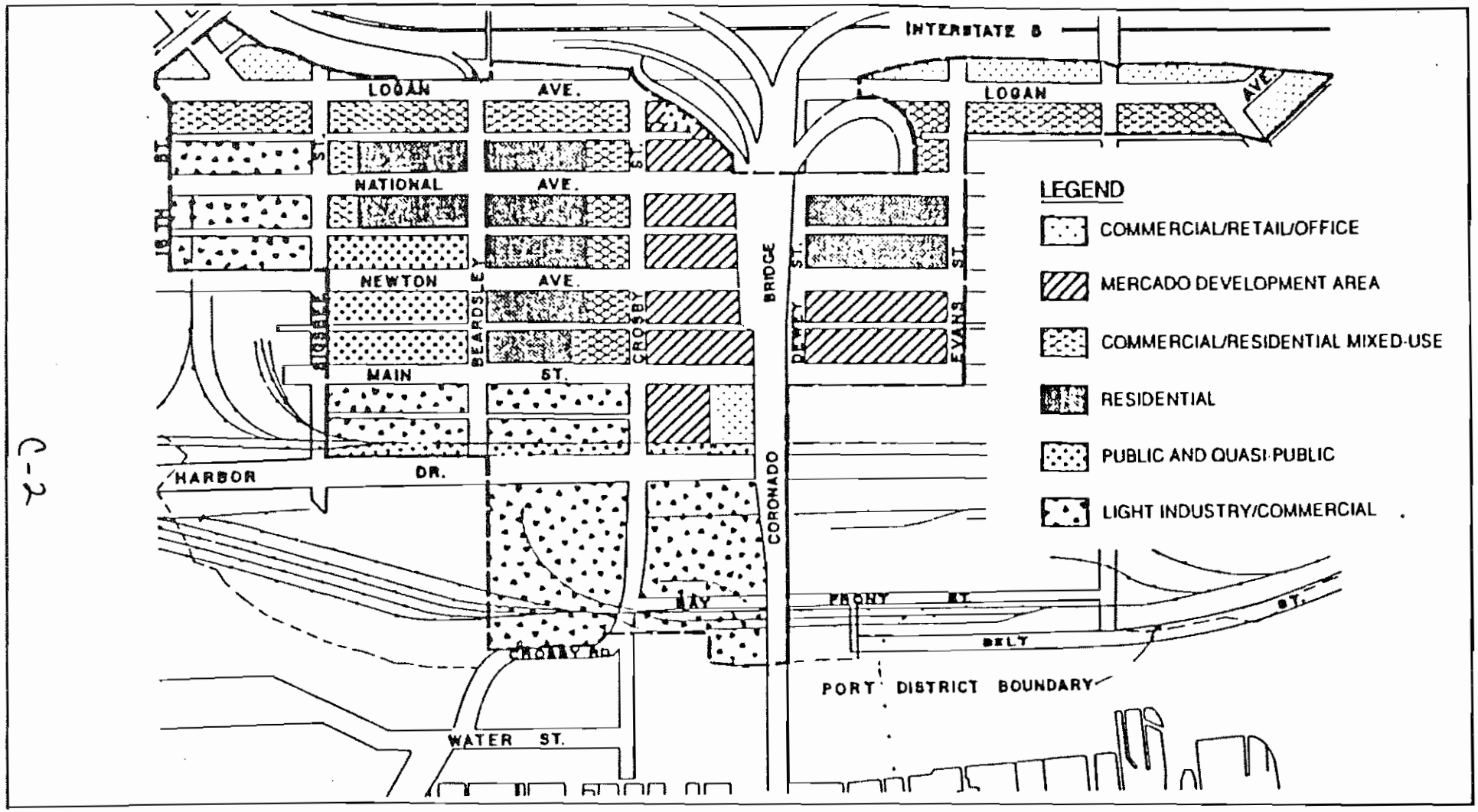


NOT TO SCALE

EXISTING LAND USES

BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 4

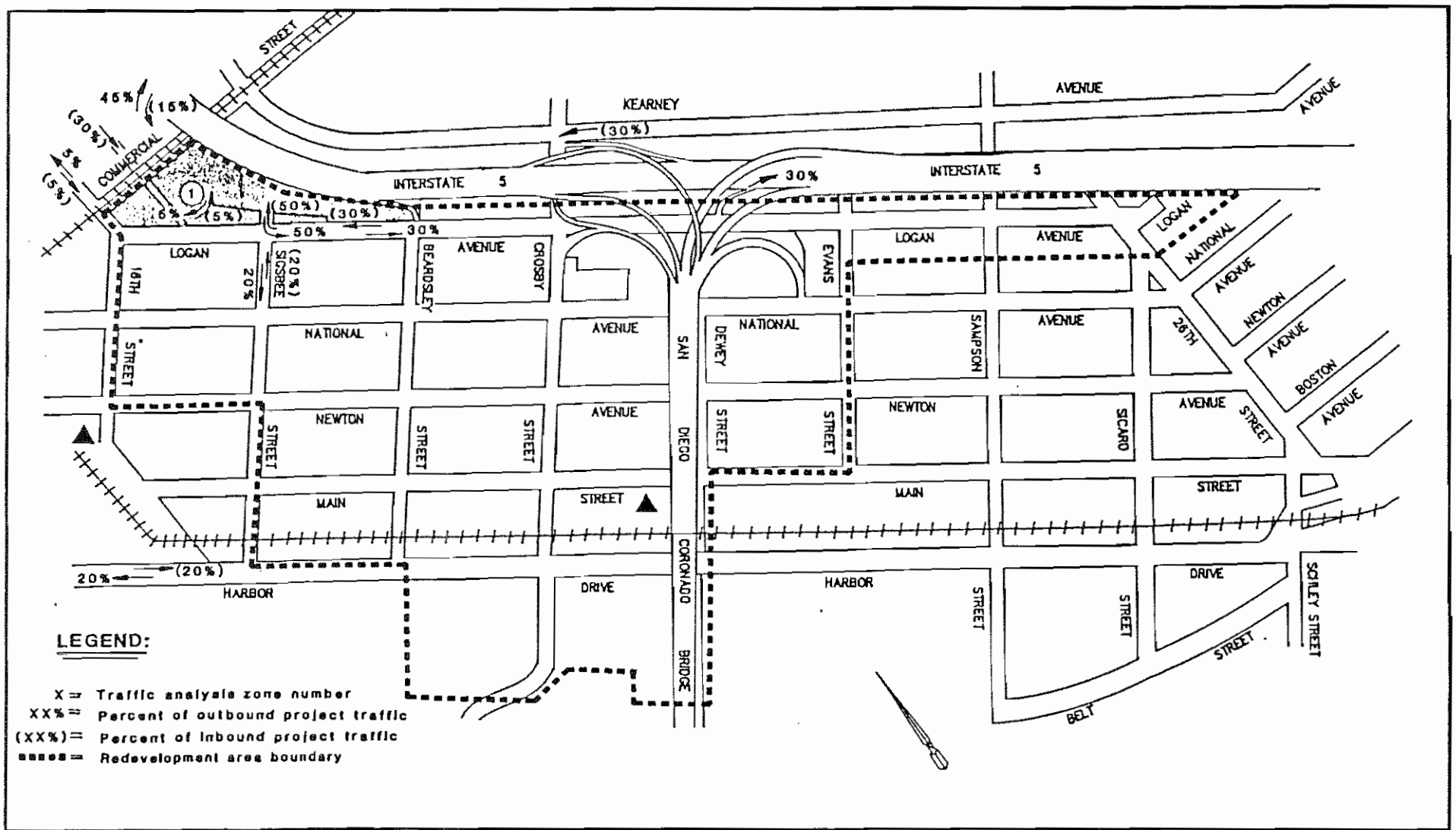


C-2

NOT TO SCALE

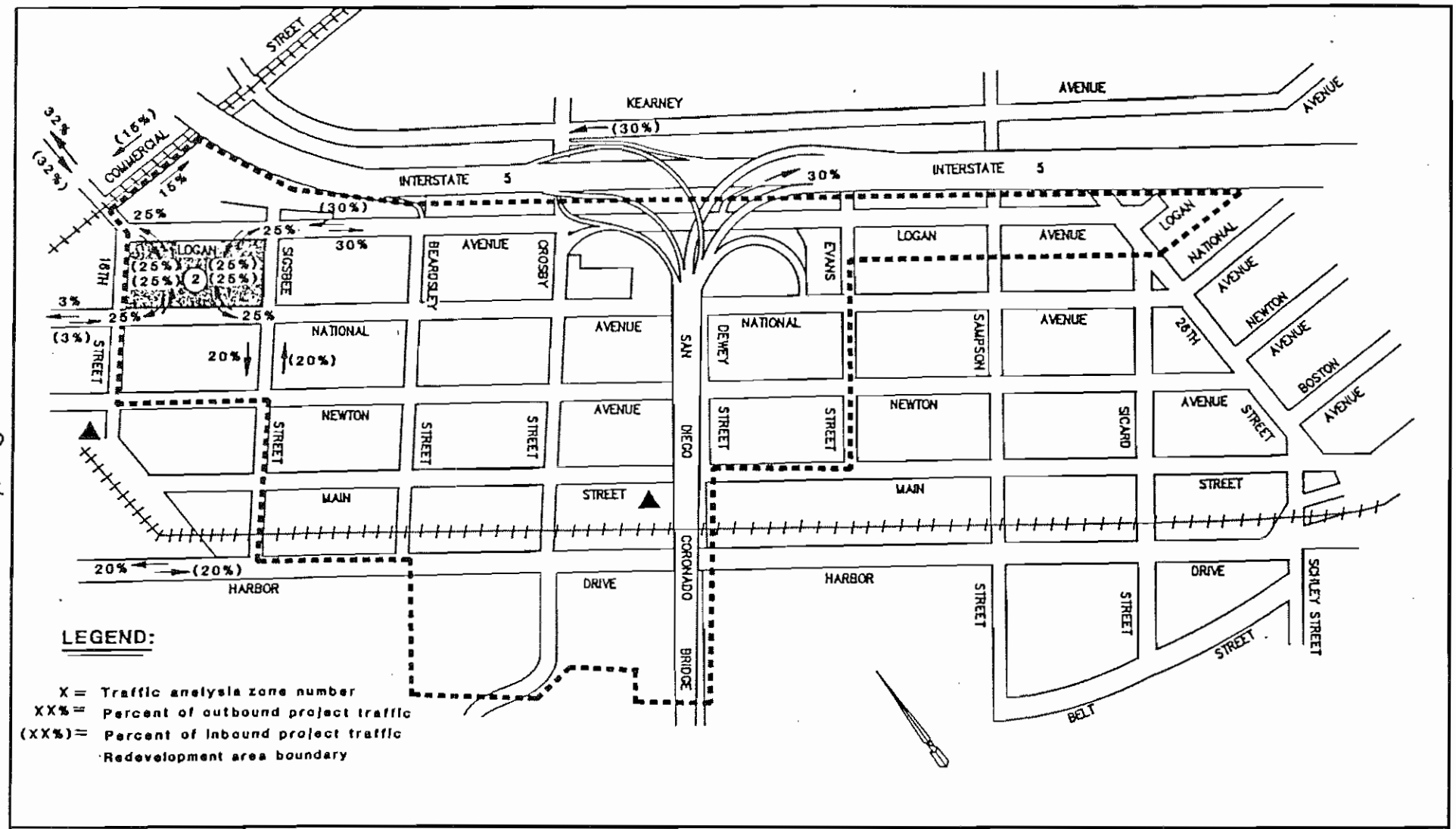
PROPOSED LAND USE PLAN
BARRIO LOGAN REDEVELOPMENT PLAN EIR
CITY OF SAN DIEGO REDEVELOPMENT AGENCY

FIGURE 3



BASMACIYAN-DARNELL, INC.

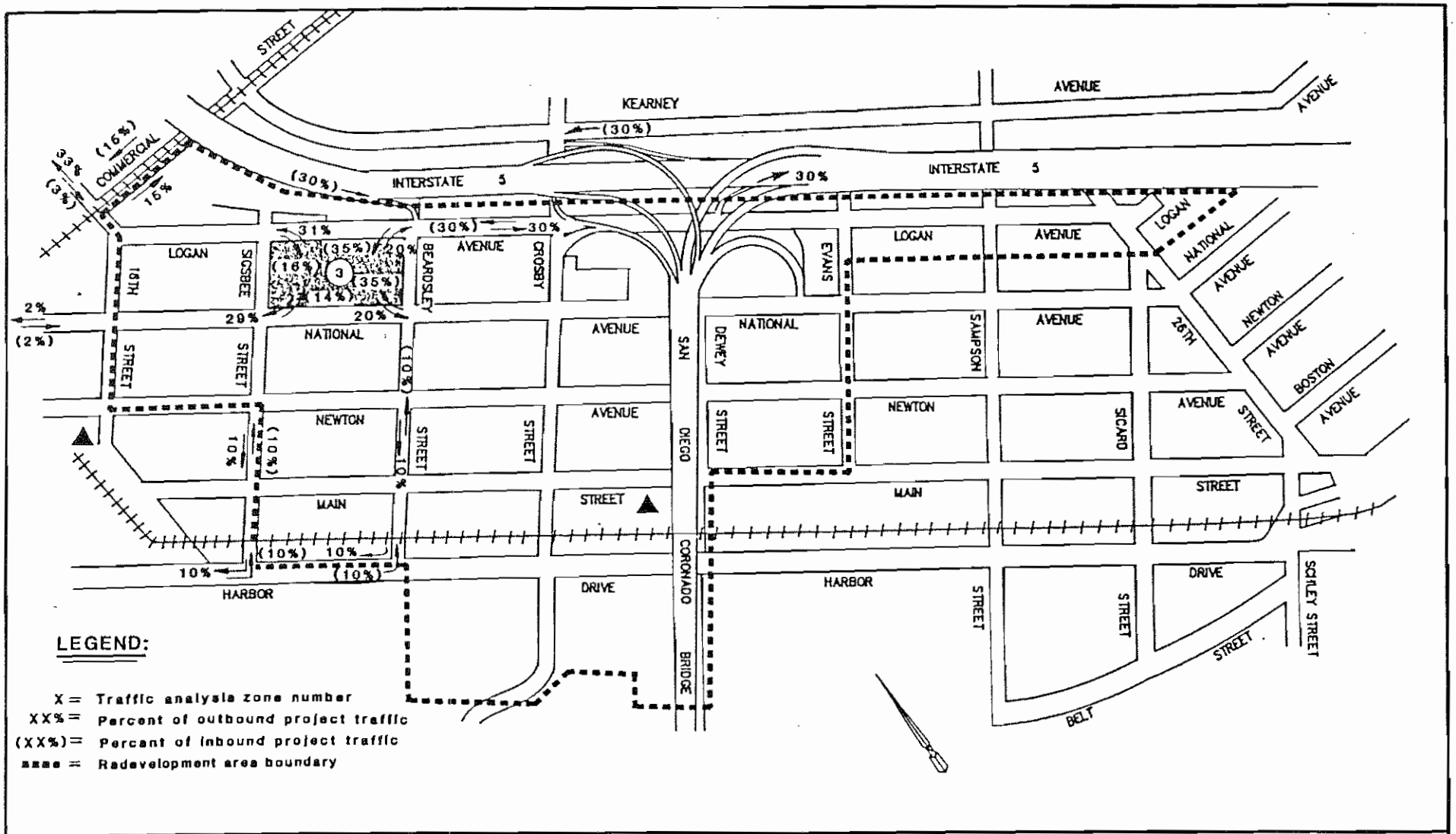
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 1



BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 2

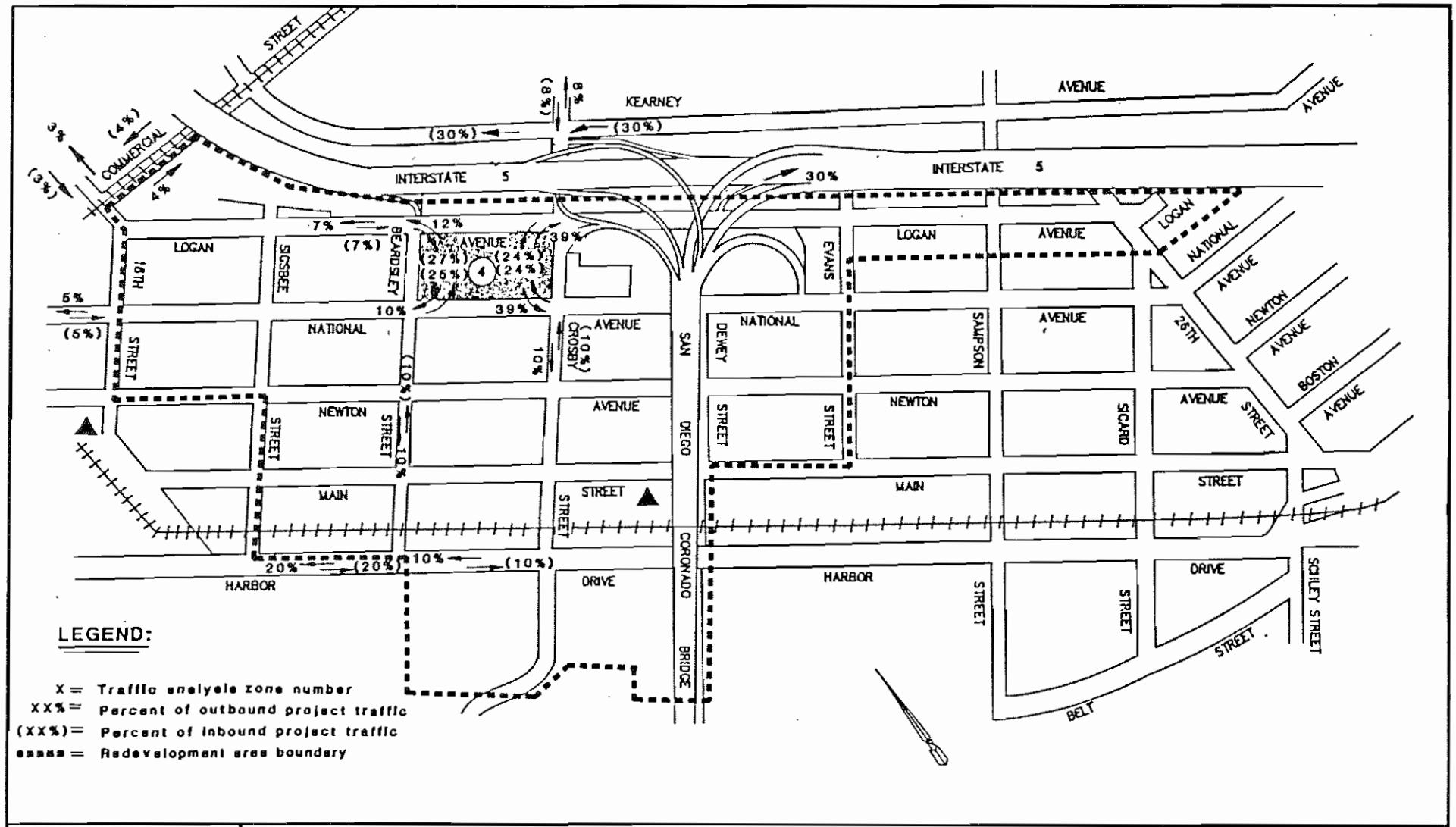
C-4



BDI
BASMACIYAN-DARNELL, INC.

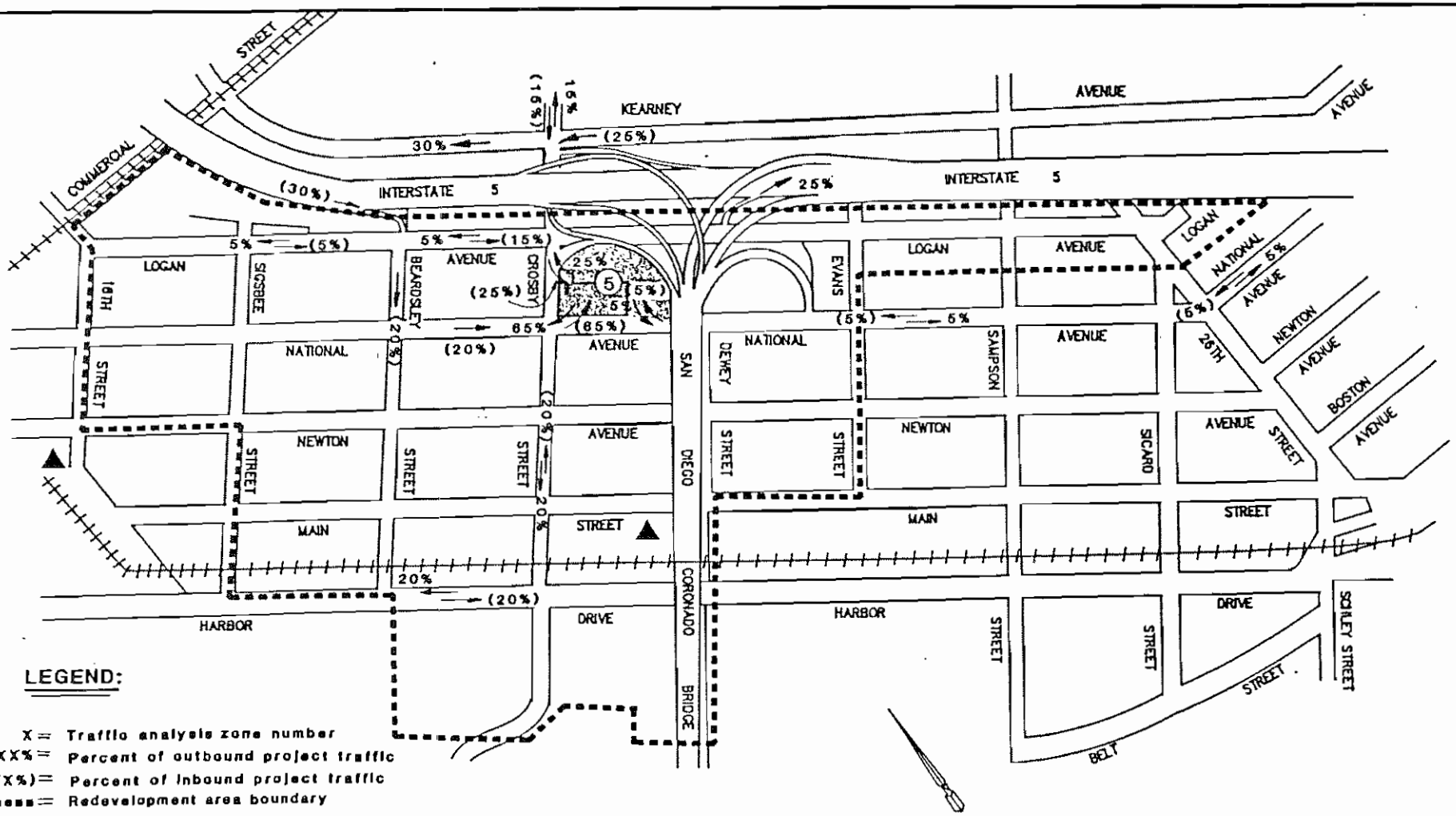
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 3

C-5



BDI
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 4

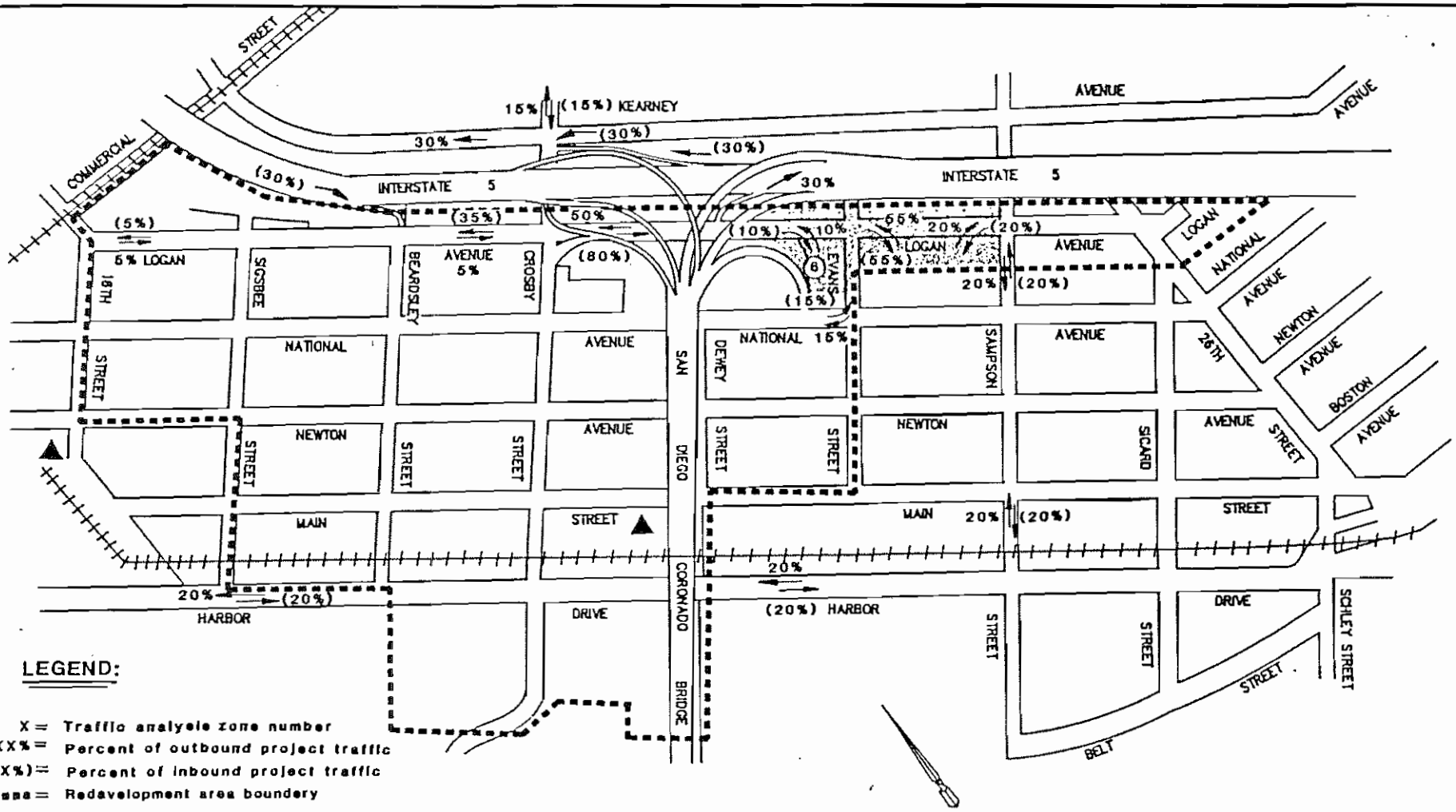


LEGEND:

X = Traffic analysis zone number
XX% = Percent of outbound project traffic
(XX%) = Percent of inbound project traffic
▪▪▪▪▪ = Redevelopment area boundary

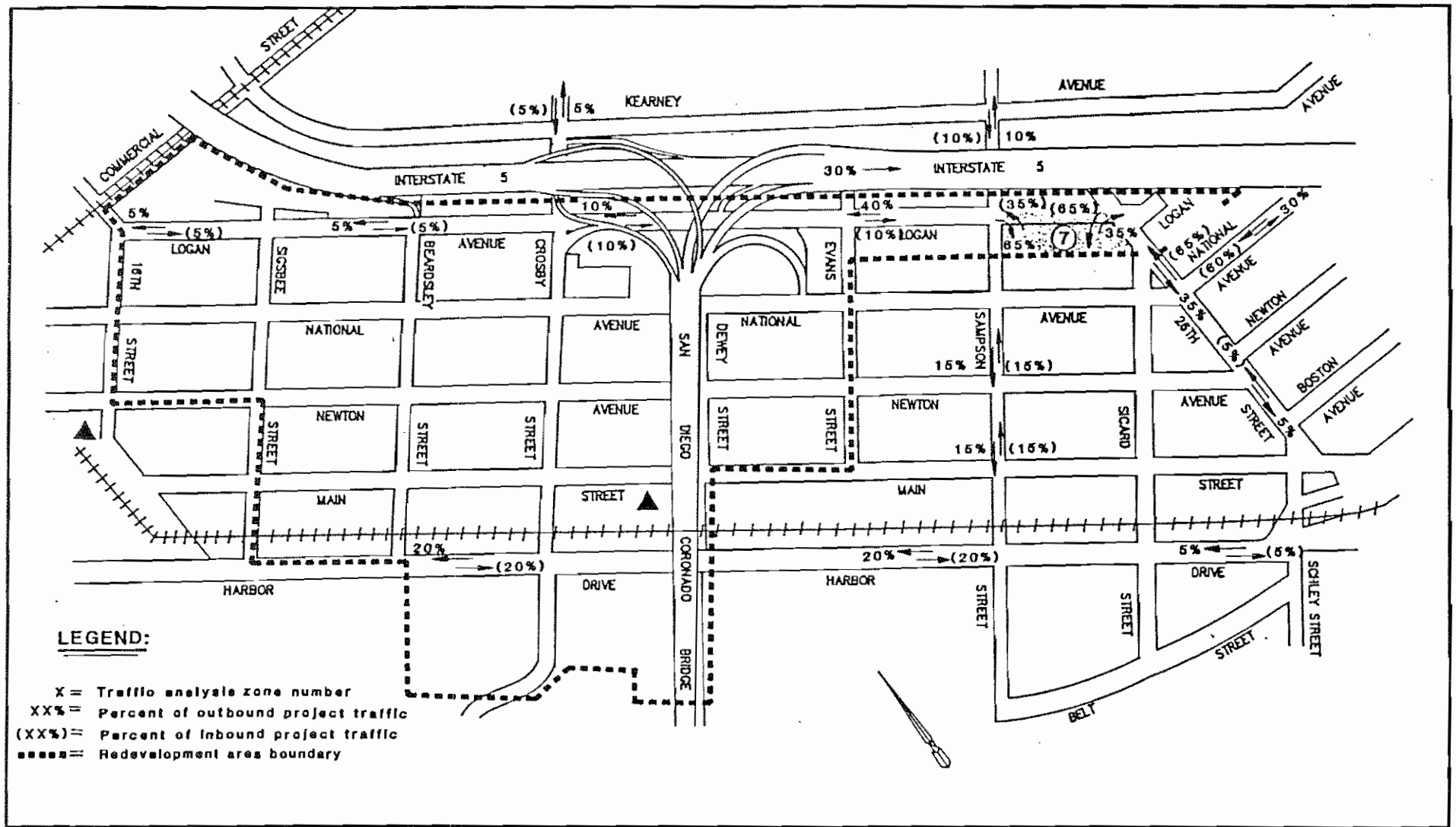
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 5



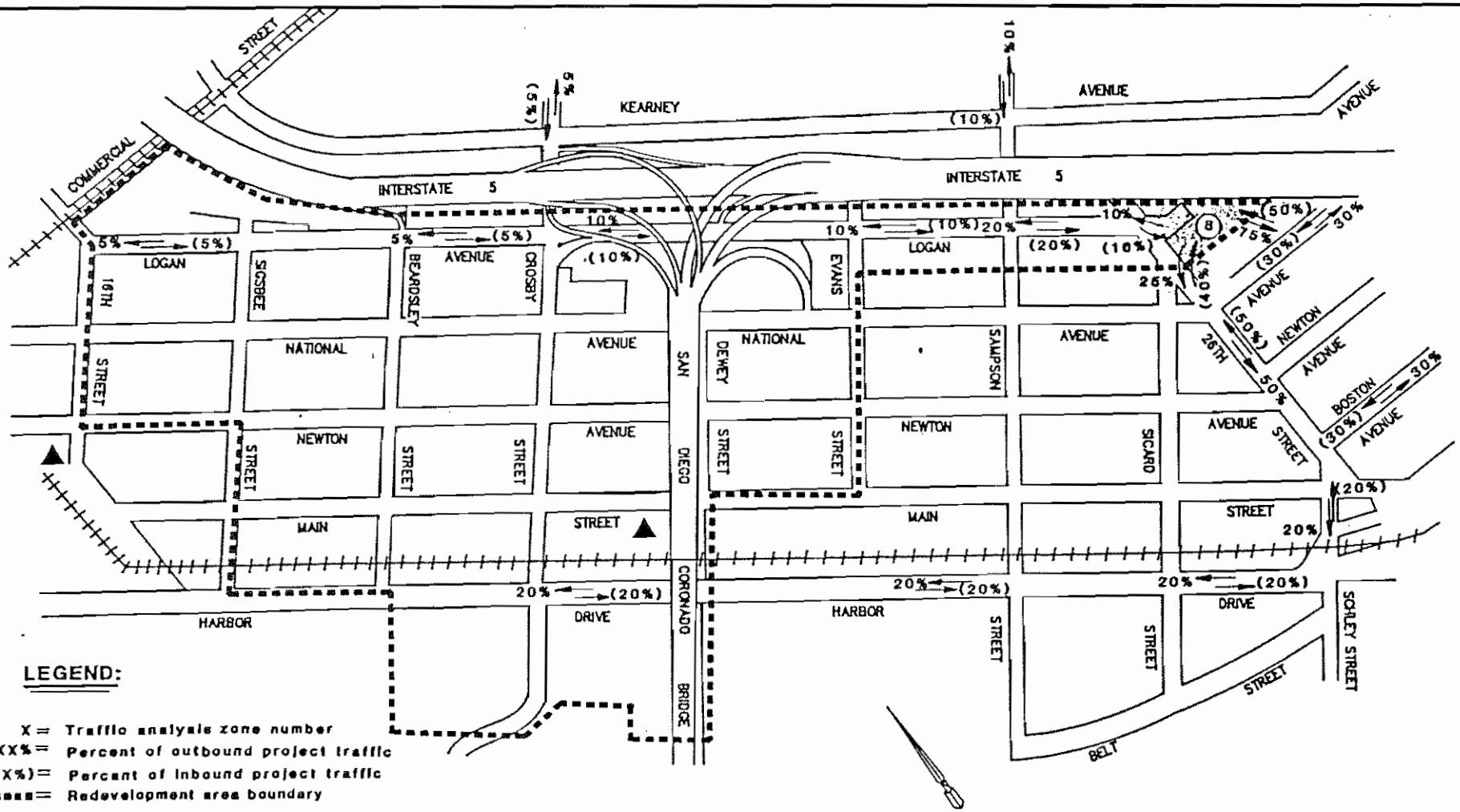
BDI
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 6



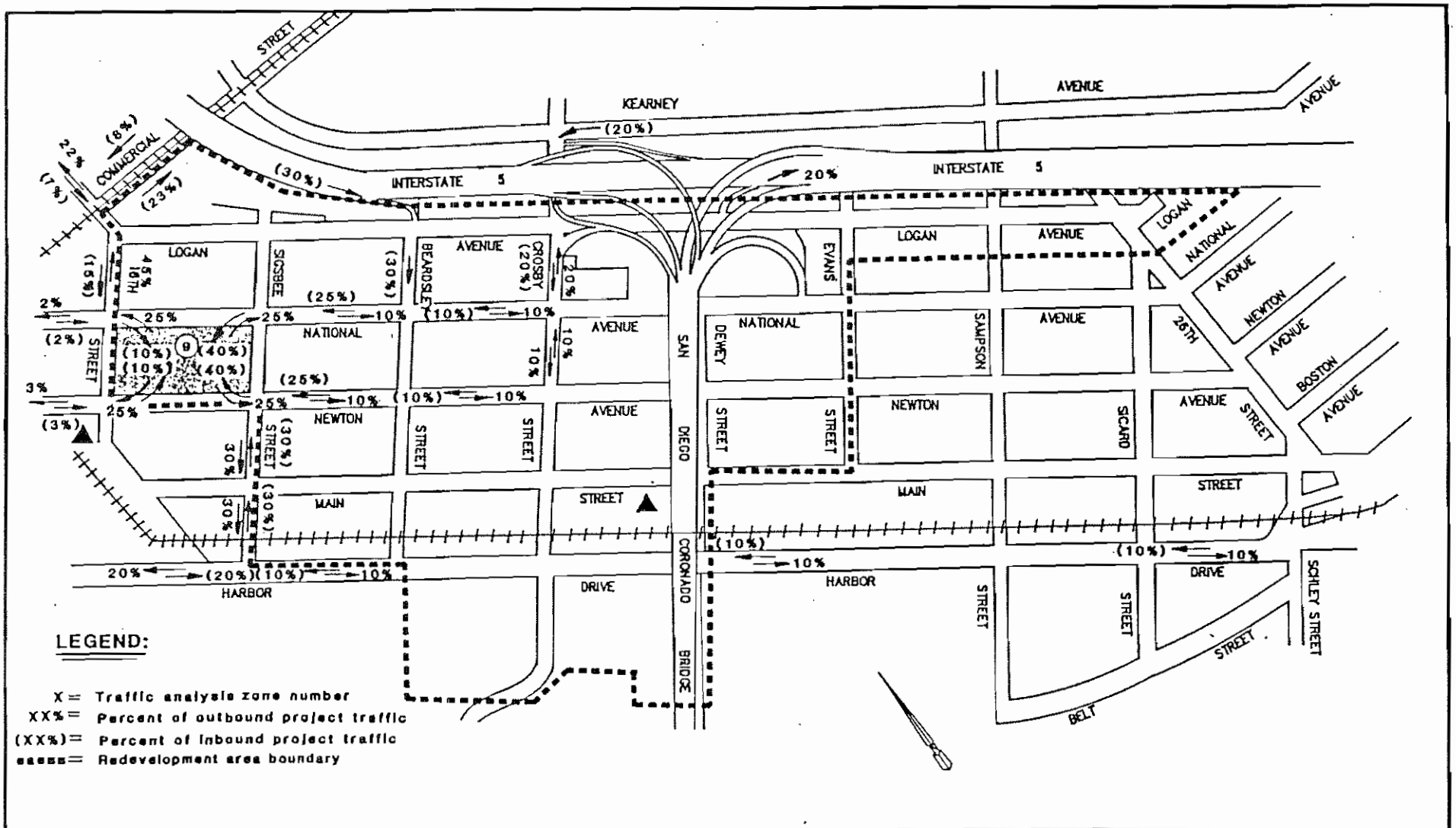
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 7



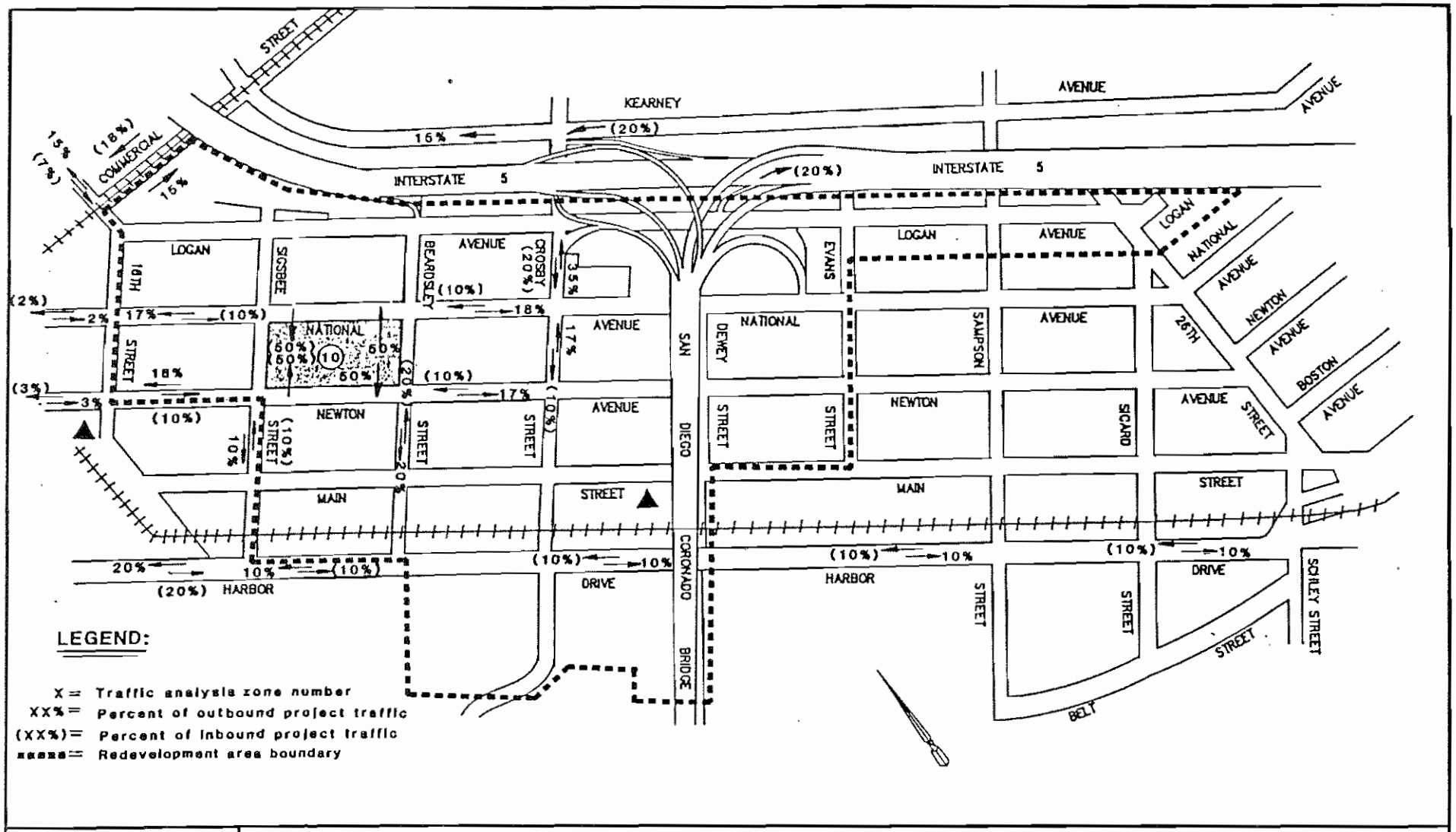
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 8



BASMACIYAN-DARNELL, INC.

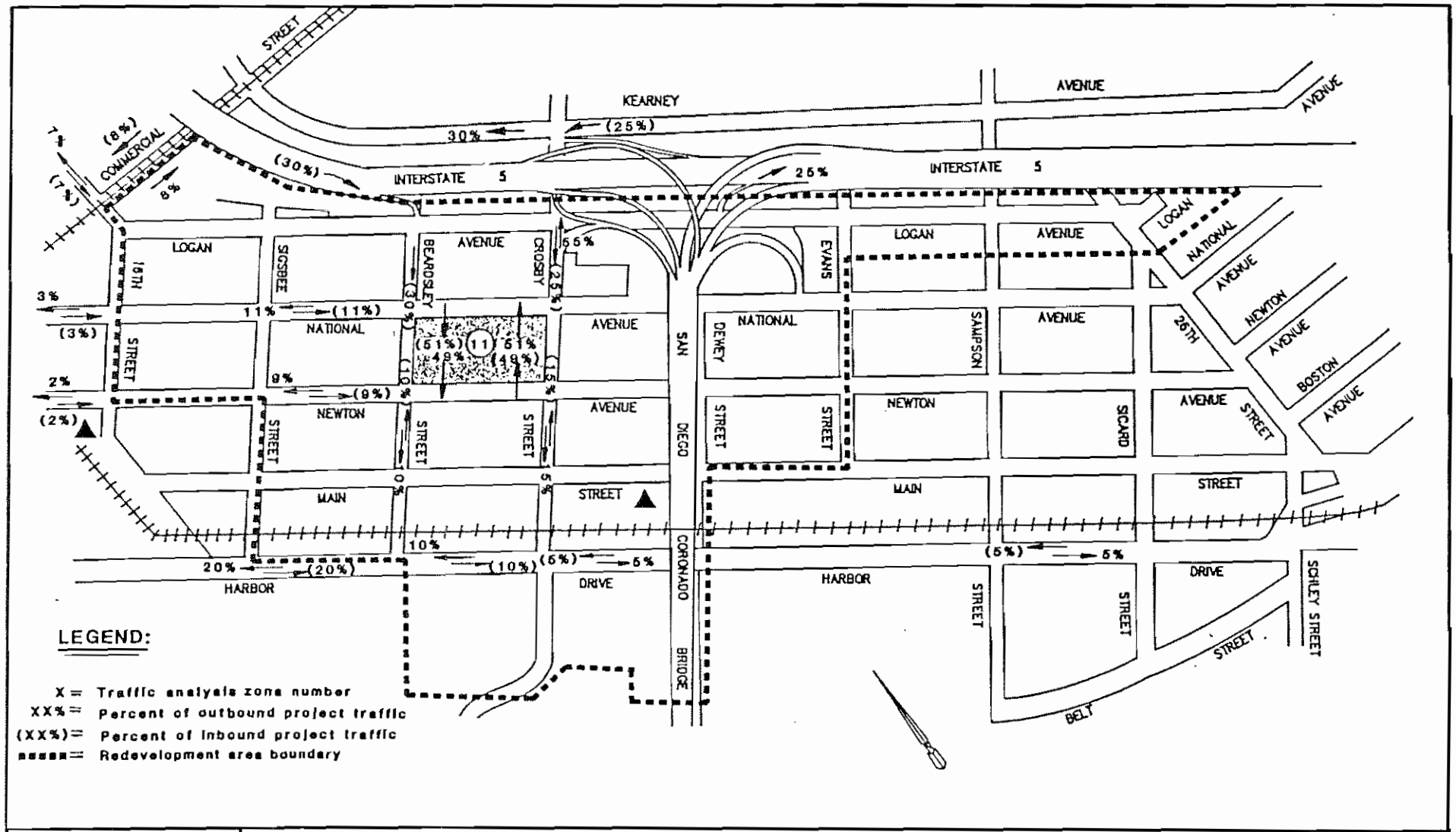
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 9



BASMACIYAN-DARNELL, INC.

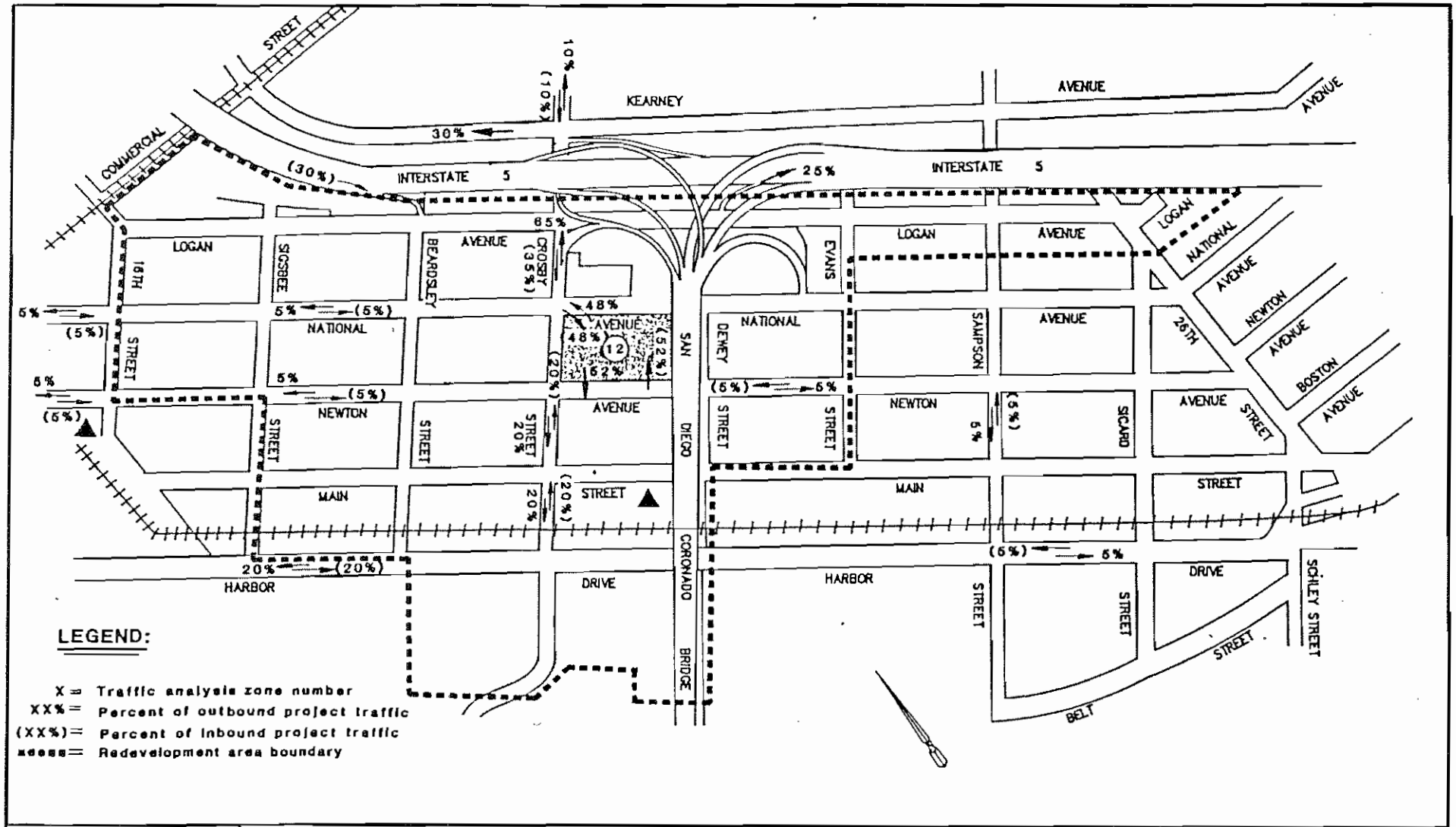
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 10

C-12



BASMACIYAN-DARNELL, INC.

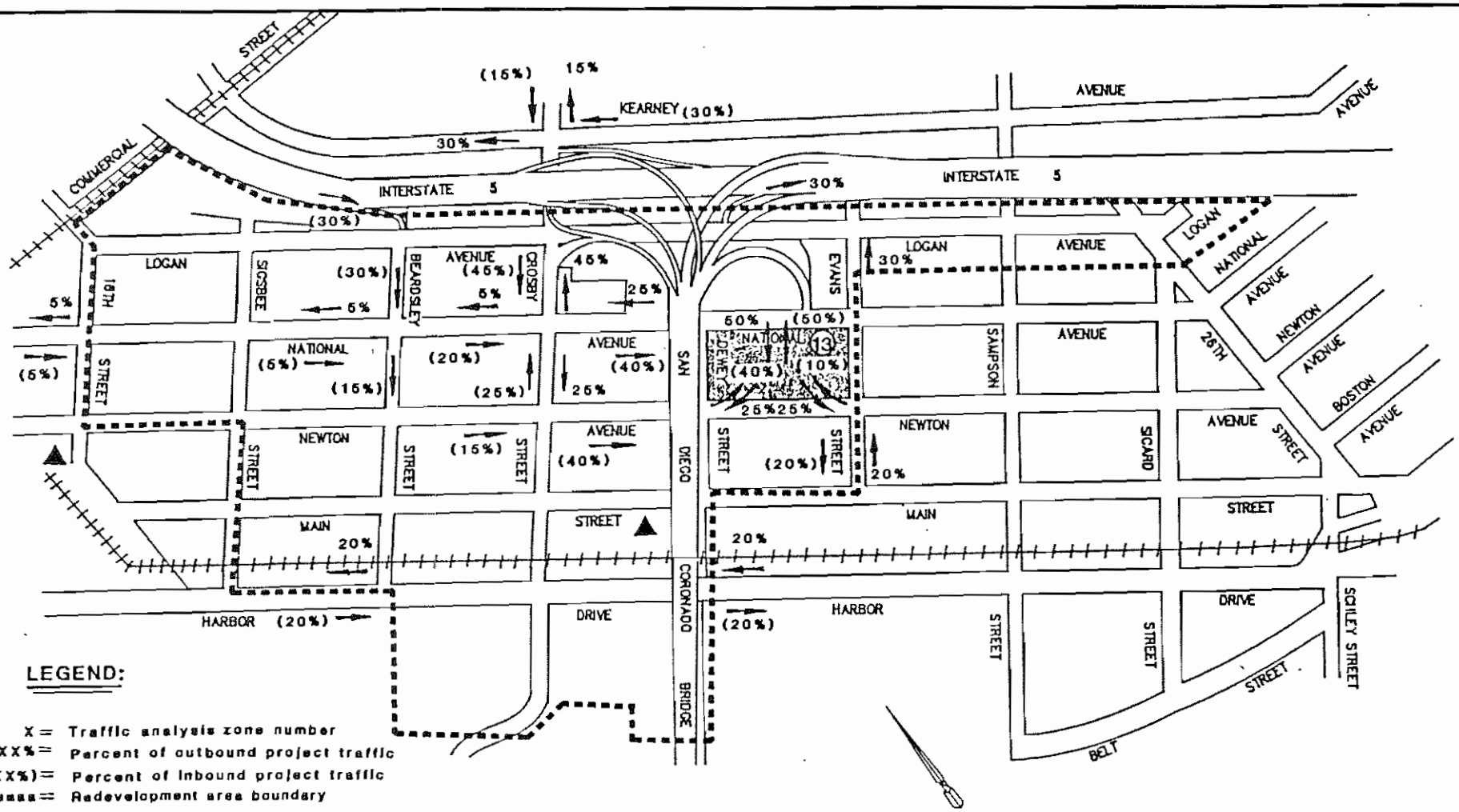
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 11



BDI
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 12

C-14



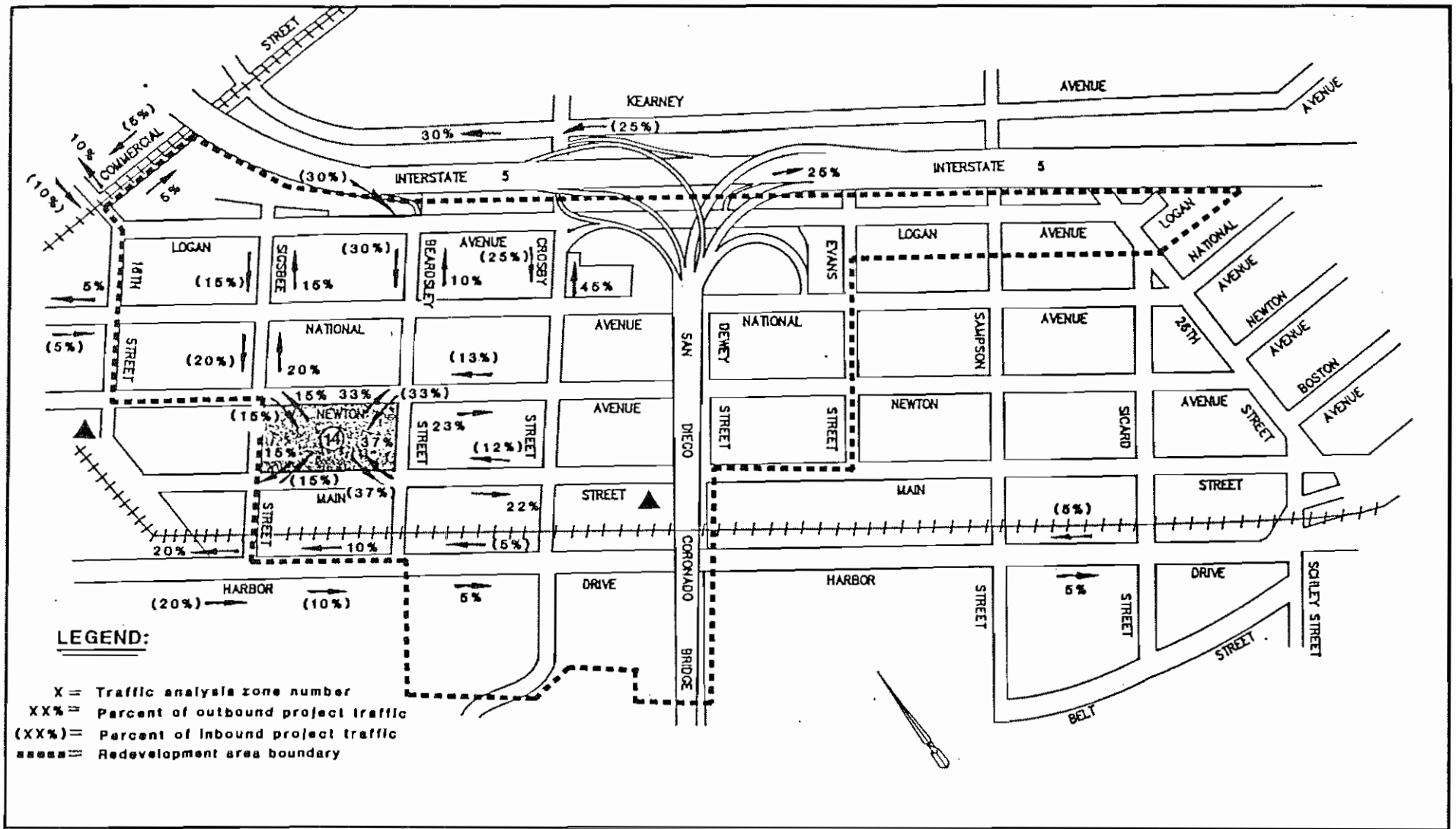
LEGEND:

X = Traffic analysis zone number
XX% = Percent of outbound project traffic
(XX%) = Percent of inbound project traffic
===== = Redevelopment area boundary

BASMACIYAN-DARNELL, INC.

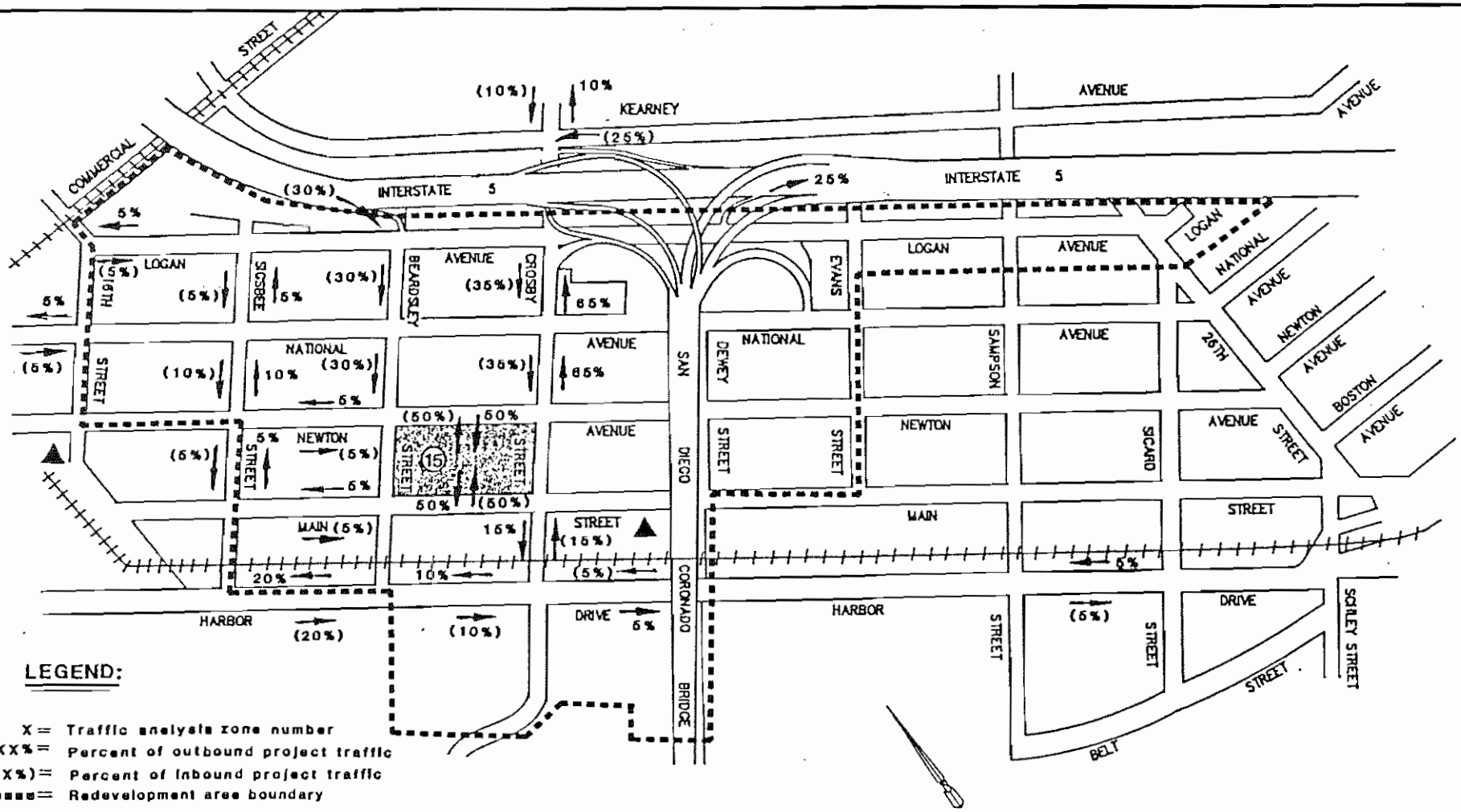
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 13

C-15



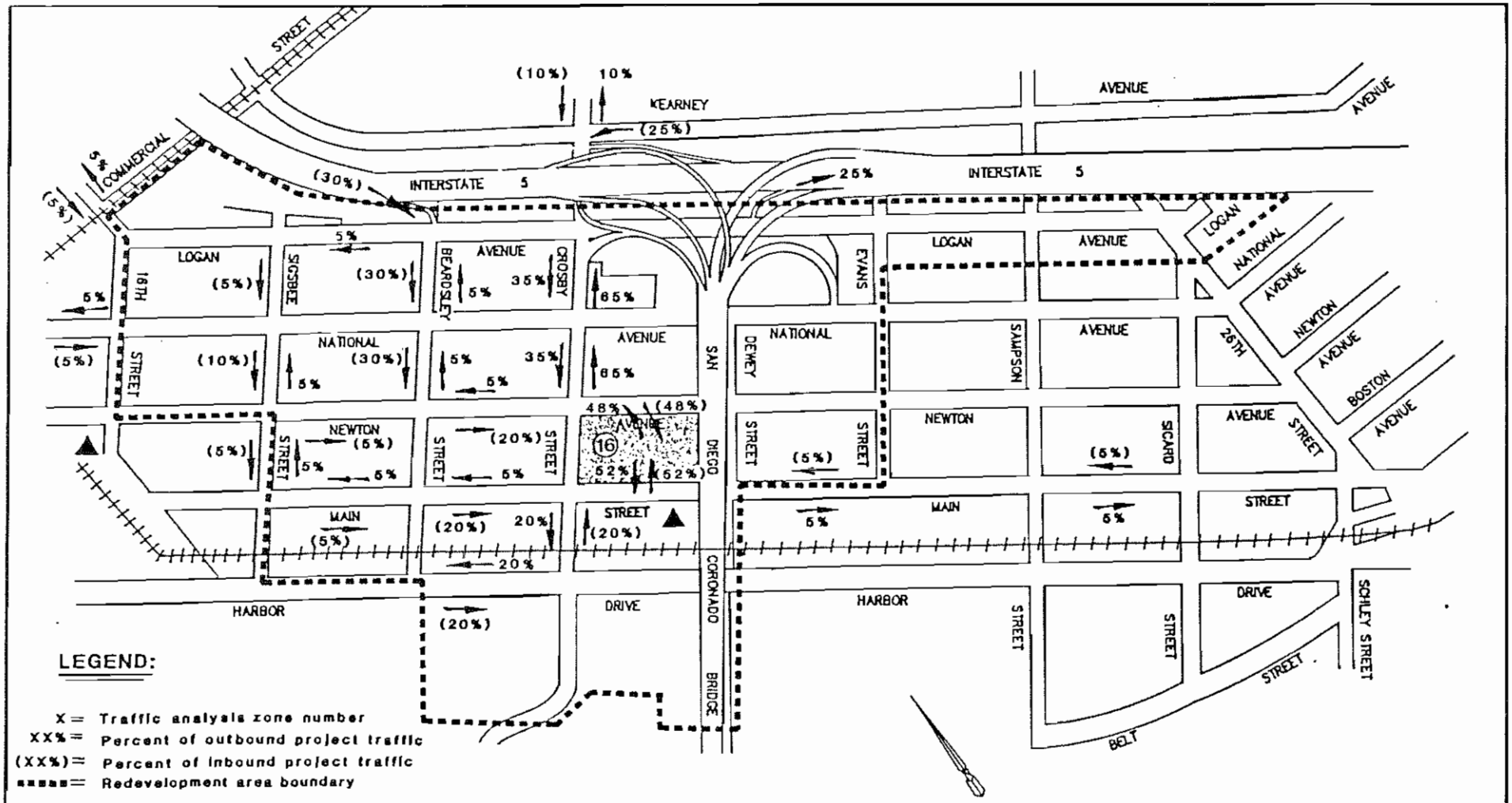
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 14



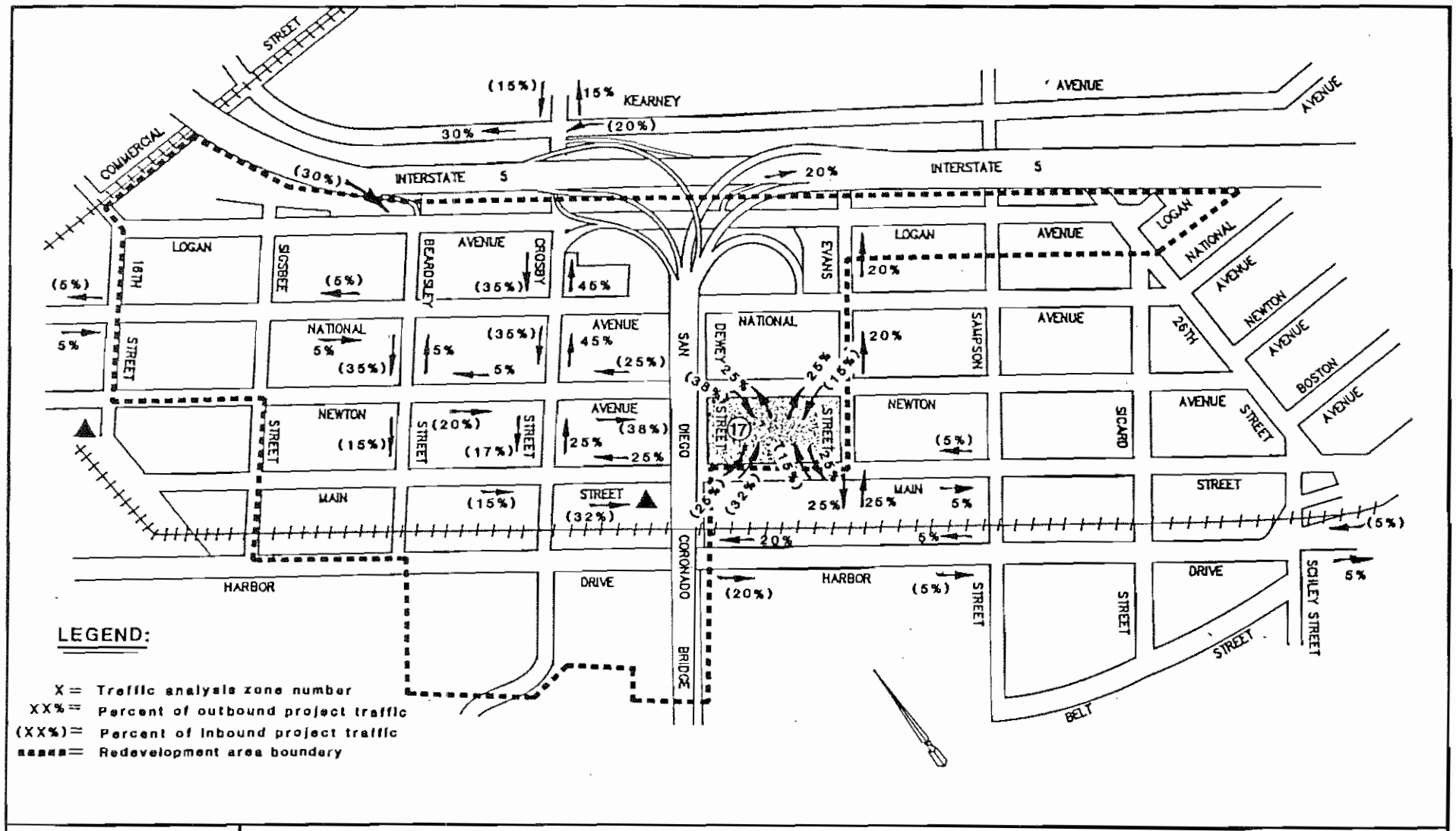
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 15



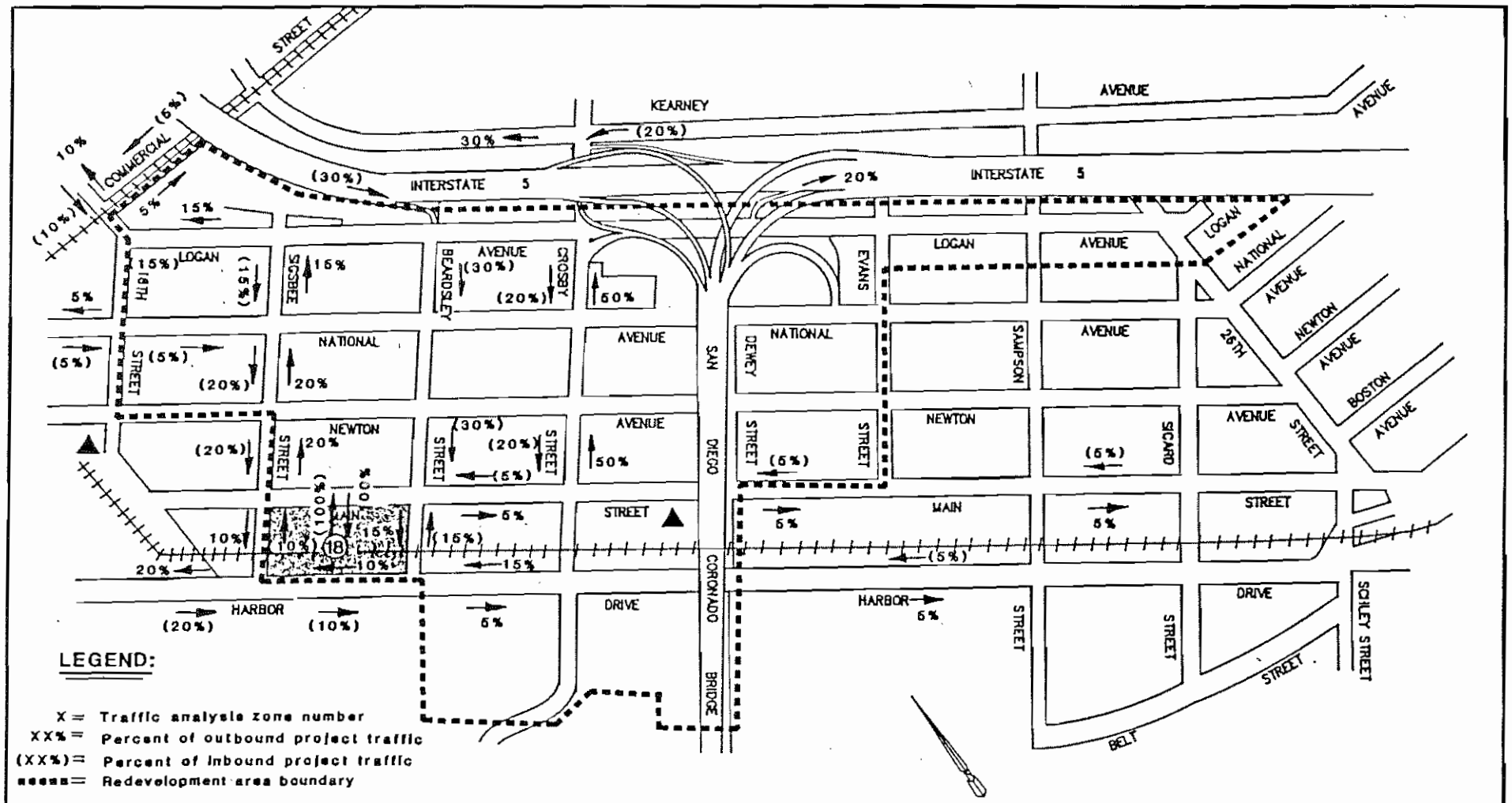
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 16



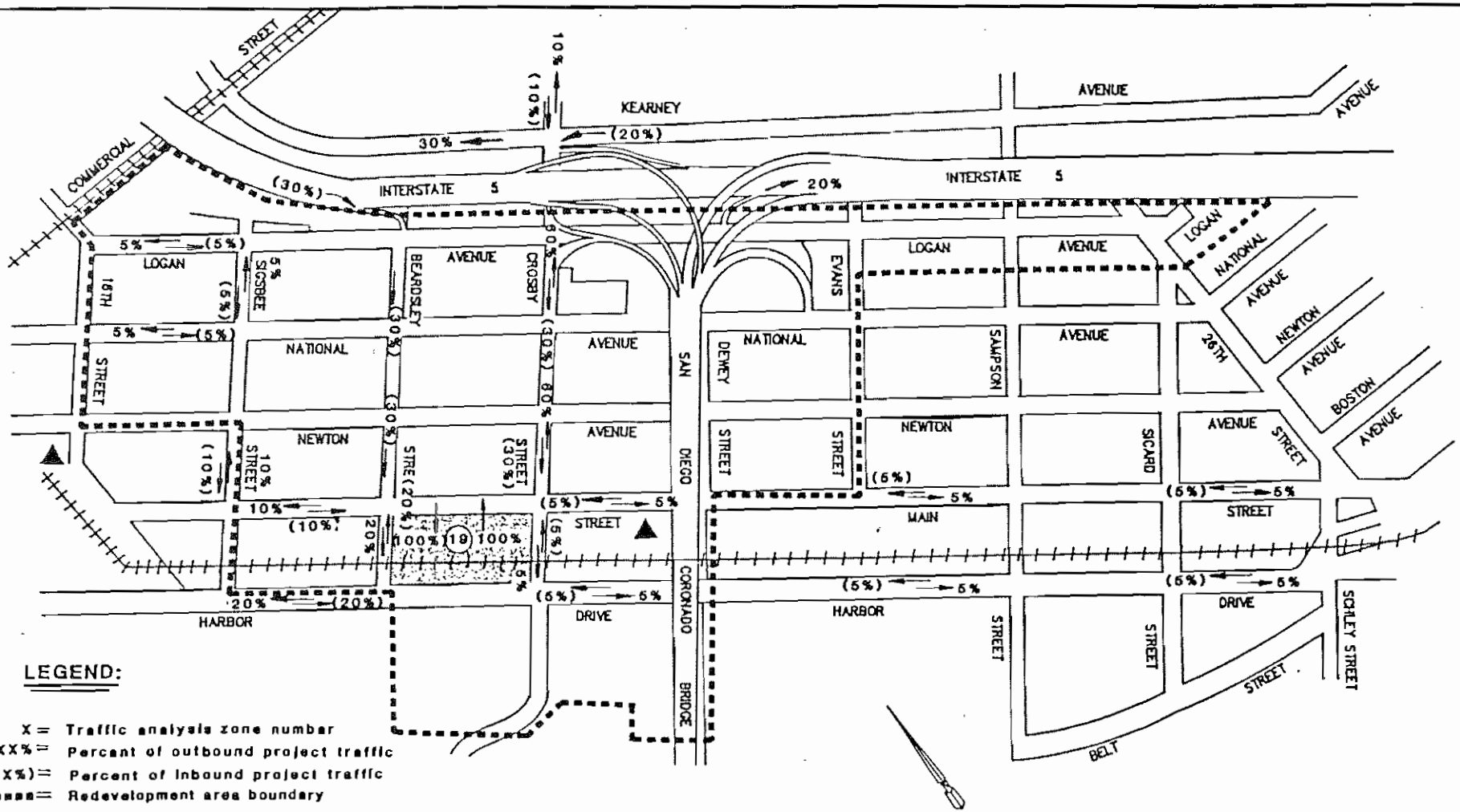
BDI
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 17



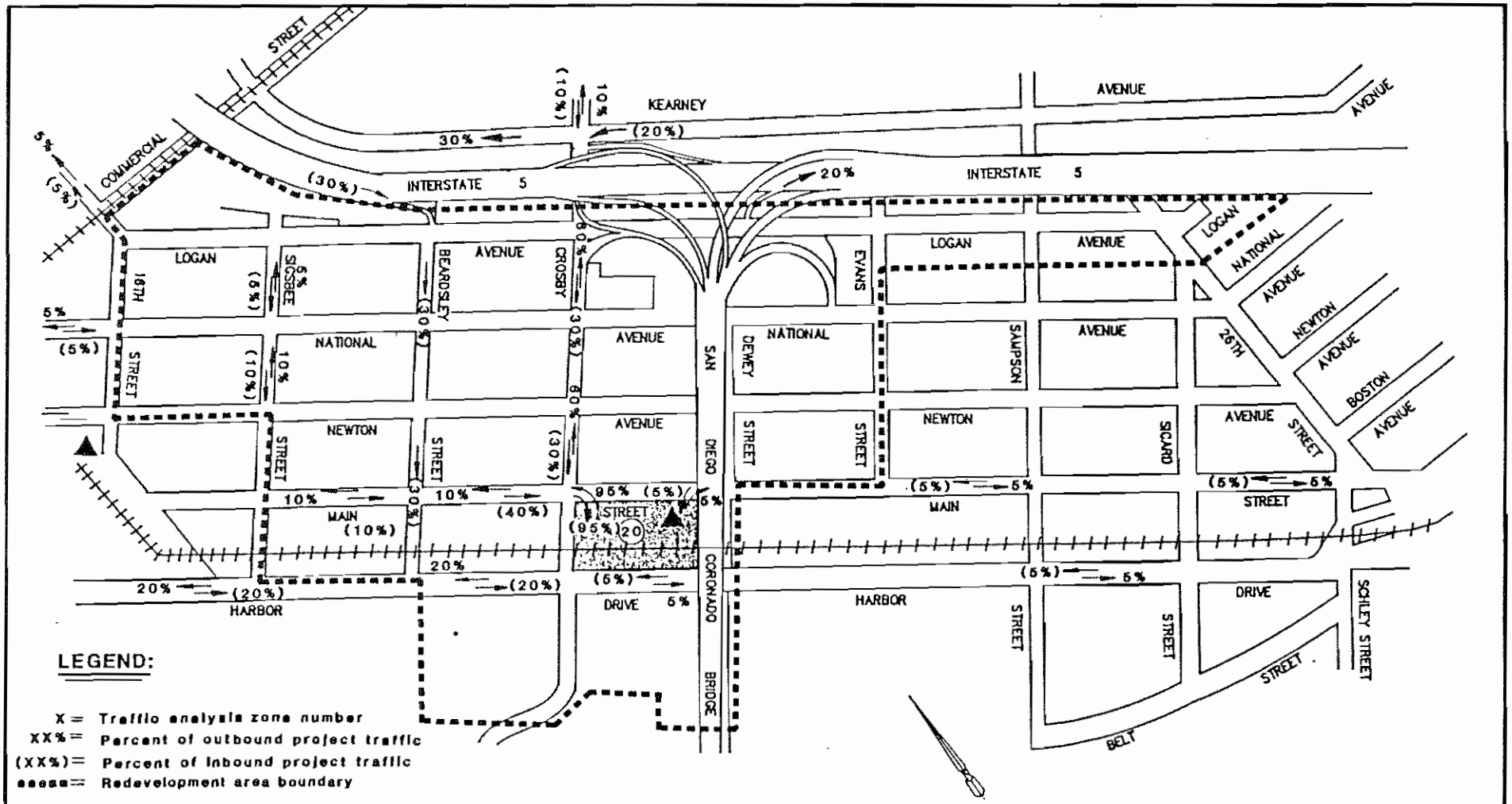
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 18



BASMACIYAN-DARNELL, INC.

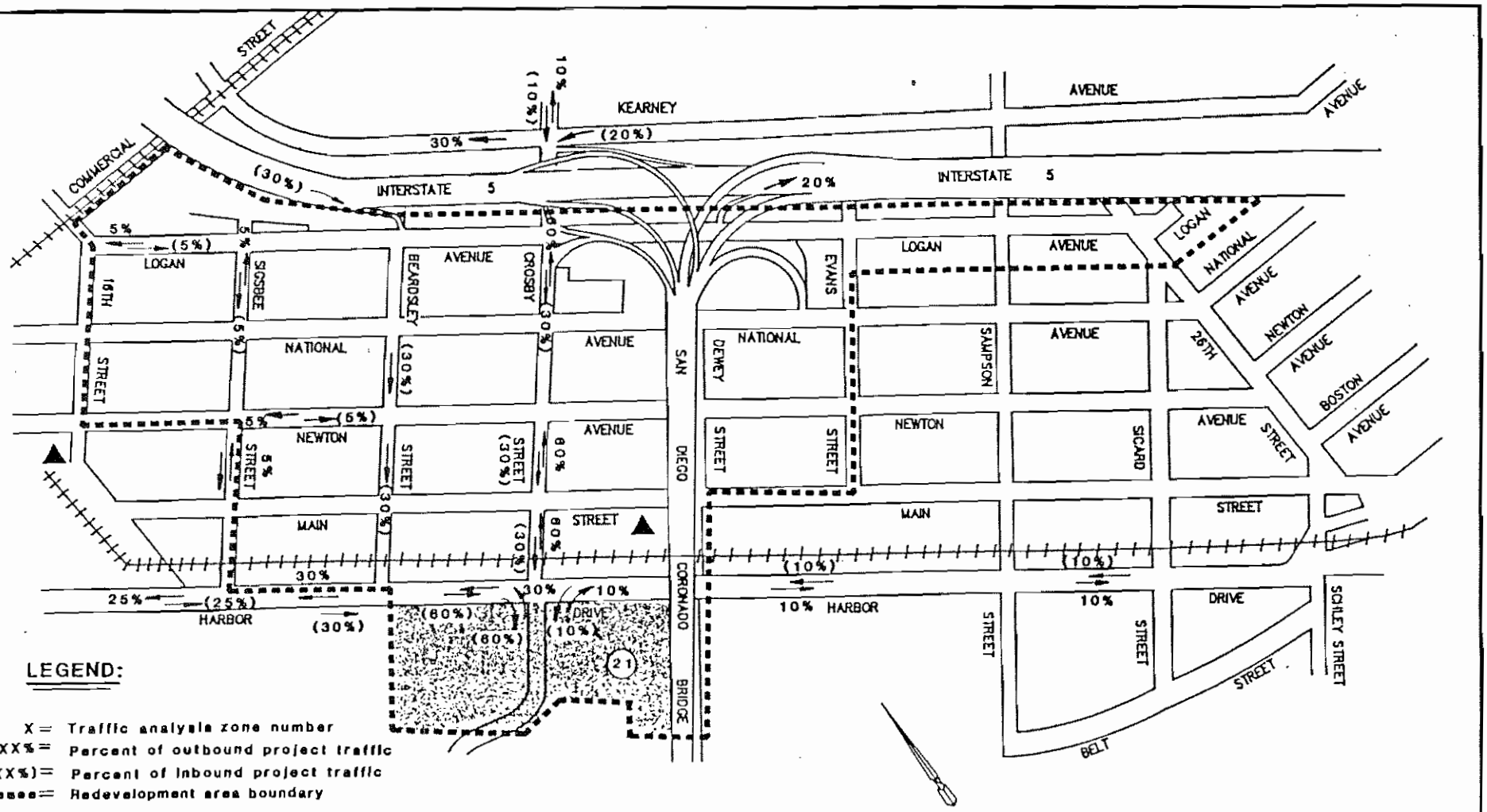
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 19



BDI
BASMACIYAN-DARNELL, INC.

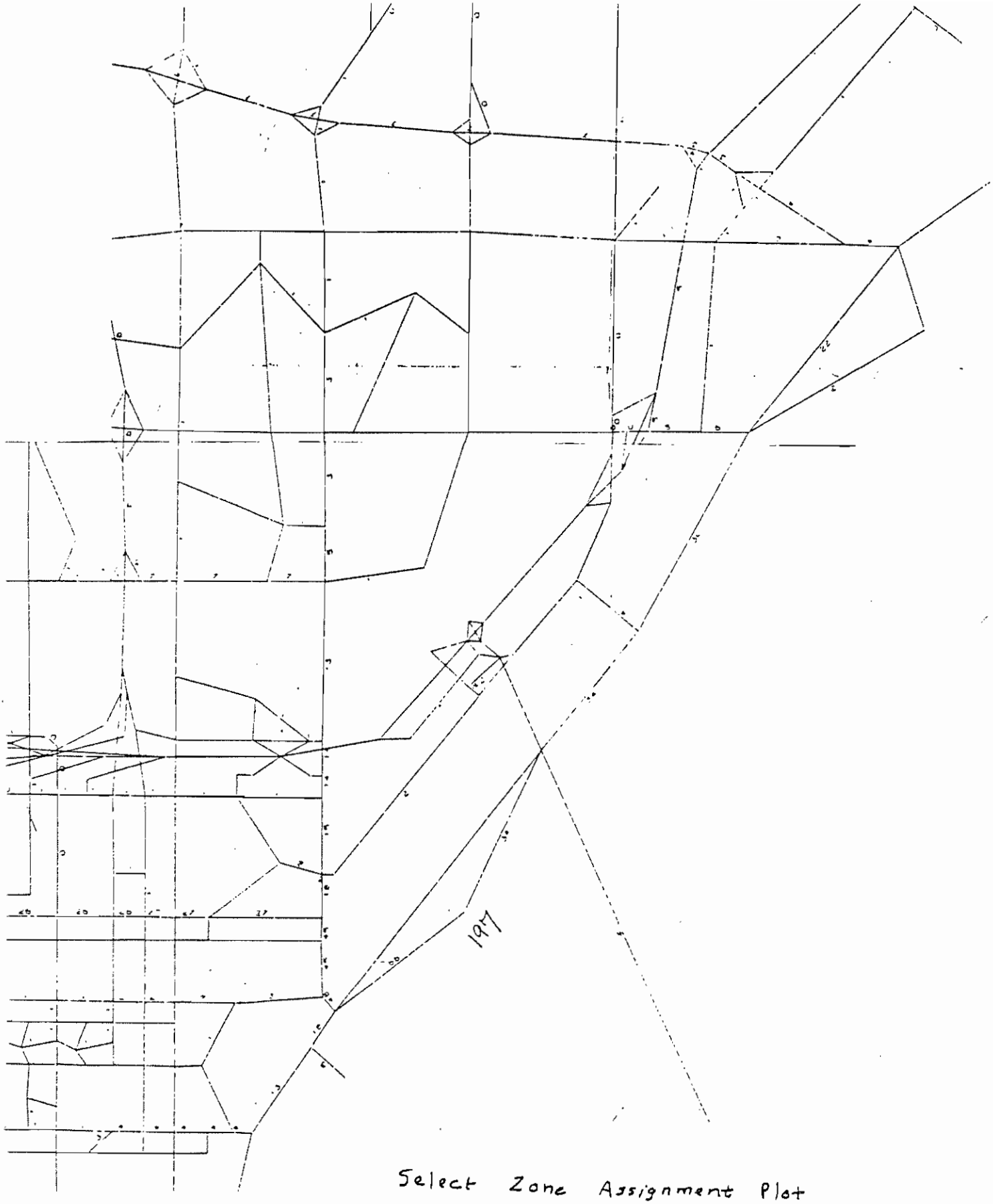
PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 20

C-22



BDI
BASMACIYAN-DARNELL, INC.

PERCENT DISTRIBUTION OF PROJECT TRAFFIC
ZONE 21



Select Zone Assignment Plot
SANDAG Series VII Regional Plot

Traffic Zone	Existing ADT	Existing Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	Adjusted Proposed ADT(a)	Adjusted Proposed Peak Hour Trips(a): AM Peak In	AM Peak Out	PM Peak In	PM Peak Out
Zone 1:	160	16	2	4	15	6,621	268	86	283	386
Zone 2:	688	29	13	29	40	3,802	218	55	143	257
Zone 3:	773	22	29	42	35	3,697	147	81	169	201
Zone 4:	1040	31	18	46	53	3,903	156	84	178	213
Zone 5:	107	11	1	3	10	2,098	30	22	98	92
Zone 6:	1615	37	35	78	73	11,800	490	167	502	686
Zone 7:	762	18	16	37	35	6,924	287	97	294	403
Zone 8:	177	12	6	7	12	3,708	150	48	158	216
Zone 9:	746	39	11	28	49	2,109	209	23	51	202
Zone 10:	527	22	15	25	29	1,074	34	40	58	49
Zone 11:	352	14	17	20	18	2,298	75	79	122	108
Zone 12:	283	22	7	10	23	3,849	54	40	180	169
Zone 13:	665	15	30	39	26	1,140	18	73	80	34
Zone 14:	564	88	59	8	20	798	124	83	12	28
Zone 15:	623	24	16	29	34	2,418	83	77	124	118
Zone 16:	267	26	3	6	26	4,202	59	43	197	184
Zone 17:	373	37	4	9	36	5,254	74	54	246	231
Zone 18:	373	37	4	9	36	1,784	177	20	43	171
Zone 19:	373	37	4	9	36	1,947	193	21	47	187
Zone 20:	848	41	10	31	54	6,600	212	80	291	355
Zone 21:	1599	158	18	38	154	9,409	931	103	226	903
Total=	12,915	736	318	507	814	85,435	3,990	1,376	3,501	5,193

(a) Includes 5% reduction in estimated total future trips for zones within 1/4 mile of the trolley station.

Traffic Zone	Proposed - Existing Peak Hour Trips: AM Peak In	AM Peak Out	PM Peak In	PM Peak Out	Proposed-Existing ADT
Zone 1:	252	84	279	371	6,461
Zone 2:	189	42	114	217	3,114
Zone 3:	125	52	127	166	2,924
Zone 4:	125	66	132	160	2,863
Zone 5:	19	21	95	82	1,991
Zone 6:	453	132	424	613	10,185
Zone 7:	269	81	257	368	6,162
Zone 8:	138	42	151	204	3,531
Zone 9:	170	12	23	153	1,363
Zone 10:	12	25	33	20	547
Zone 11:	61	62	102	90	1,946
Zone 12:	32	33	170	146	3,566
Zone 13:	3	43	41	8	475
Zone 14:	36	24	4	8	234
Zone 15:	59	61	95	84	1,795
Zone 16:	33	40	191	158	3,935
Zone 17:	37	50	237	195	4,881
Zone 18:	140	16	34	135	1,411
Zone 19:	156	17	38	151	1,574
Zone 20:	171	70	260	301	5,752
Zone 21:	773	85	188	749	7,810
Total=	3,254	1,058	2,994	4,379	72,520

Intersection List

1 = Sigsbee Street/Logan Avenue
2 = Newton Avenue/Beardsley Street
3 = Harbor Drive/Sampson Street
4 = Newton Avenue/Crosby Street
5 = National Avenue/Beardsley Street
6 = Logan Avenue/Crosby Street
7 = Main Street/Crosby Street
8 = Harbor Drive/ Crosby Street
9 = National Avenue/26th Street
10 = National Avenue/Sigsbee Street
11 = National Avenue/Sampson Street
12 = Logan Avenue/Sampson Street
13 = National Avenue/Crosby Street
14 = Logan Avenue/Beardsley Street

Note: Intersection identifications numbers were assigned for future traffic calculations and do not correspond to locator numbers shown on the figures presented in this report's main body.

List of Street Segments

Street Segments	Segment Number
Logan Avenue:	
16th St. - Sigsbee St.	1
Sigsbee St. - Beardsley St.	2
Beardsley St. - Crosby St.	3
Crosby St. - s/o Crosby St.	4
Evans St. - Sampson St.	5
Sampson St. - 26th St.	6
National Avenue:	
16th St. - Sigsbee St.	7
Sigsbee St. - Beardsley St.	8
Beardsley St. - Crosby St.	9
Crosby St. - Dewey St.	10
Dewey St. - Evans St.	11
Evans St. - Sampson St.	12
Sampson St. - 26th St.	13
26th St. - s/o 25th St.	14
Newton Avenue:	
Sigsbee St. - Beardsley St.	15
Beardsley St. - Crosby St.	16
Crosby St. - Dewey St.	17
Main Street:	
Sigsbee St. - Beardsley St.	18
Beardsley St. - Crosby St.	19
Crosby St. - Dewey St.	20
Dewey St. - Evans St.	21
Harbor Drive:	
n/o Crosby Street	22
Crosby St. - Sampson St.	23
s/o Sampson St.	24
16th Street:	
National Ave. - Logan Ave.	25
Sigsbee Street:	
Harbor Dr. - Main St.	26
Newton Ave. - National Ave.	27
National Ave. - Logan Ave.	28

List of Street Segments (continued)

Street Segments	Segment Number
Beardsley Street:	
Harbor Dr. - Main St.	29
Main St. - Newton Ave.	30
Newton Ave. - National Ave.	31
National Ave. - Logan Ave.	32
I-5 SB off-ramp at Beardsley St.	33
Crosby Street:	
w/o Harbor Dr.	34
Harbor Dr. - Main St.	35
Main St. - Newton Ave.	36
Newton Ave. - National Ave.	37
National Ave. - Logan Ave.	38
Logan Ave. - Kearny Ave.	39
Kearny Ave. - e/o	40
Sampson Street:	
Harbor Dr. - Main St.	41
Main St. - Newton Ave.	42
Newton Ave. - National Ave.	43
National Ave. - Logan Ave.	44
Logan Ave. - e/o Logan Ave.	45
26th Street:	
Newton Ave. - National Ave.	46
National Ave. - Logan Ave.	47

BARRIO LOGAN REDEVELOPMENT AREA
INCREASE IN TRIP ENDS BY ZONE

Traffic Zone	Increase in Trip Ends
1	6,461
2	3,114
3	2,924
4	2,863
5	1,991
6	10,185
7	6,162
8	3,531
9	1,363
10	547
11	1,946
12	3,566
13	475
14	234
15	1,795
16	3,935
17	4,881
18	1,411
19	1,574
20	5,752
21	7,810
Total =	72,520

BARRIO LOGÁN REDEVELOPMENT AREA
PROJECT DAILY TRIP ASSIGNMENT
FUTURE CONDITION

% OF ADT BY ROADWAY SEGMENT

Roadway% Traffic egment% Zone ->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	50	20	19	7	3	5	5	5	0	0	0	0	0	15	5	5	0	15	5	5	5
2	30	30	28	7	3	5	5	5	0	0	0	0	0	0	0	3	0	0	0	0	0
3	30	30	30	32	8	20	5	5	0	0	0	0	0	5	0	0	0	0	0	0	0
4	15	15	15	15	13	65	10	10	10	10	13	13	0	13	13	13	0	10	10	10	10
5	0	0	0	0	0	55	25	10	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	50	20	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	20	17	5	0	0	0	0	33	14	11	5	5	5	5	5	5	5	5	5	0
8	0	0	28	5	0	0	0	0	18	32	11	5	5	0	0	0	5	0	0	0	0
9	0	0	0	32	10	0	0	0	10	14	28	13	13	0	0	0	0	0	0	0	0
10	0	0	0	0	65	0	0	0	0	0	0	48	33	0	0	0	0	0	0	0	0
11	0	0	0	0	5	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0
12	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	5	0	45	35	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	18	31	9	5	0	33	5	3	0	0	0	0	0
16	0	0	0	0	0	0	0	0	10	14	28	13	8	13	33	13	13	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	47	33	0	0	48	32	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	37	5	5	0	75	10	10	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	17	33	13	8	40	55	10	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	29	5	5	95	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	29	5	5	5	0
22	0	0	0	10	20	20	15	20	10	10	10	20	20	5	10	20	20	5	0	20	45
23	0	0	0	0	0	20	15	20	10	10	5	0	20	5	5	0	20	5	5	5	10
24	0	0	0	0	0	0	0	20	10	10	5	5	0	5	5	0	5	5	5	5	10
25	0	24	15	0	0	0	0	0	30	23	15	0	0	0	0	0	0	0	0	0	0
26	20	20	10	0	0	0	0	0	30	10	0	0	0	10	0	0	0	10	0	0	5
27	20	20	10	0	0	0	0	0	15	5	0	0	0	15	10	8	0	20	10	10	5
28	20	25	10	0	0	0	0	0	0	0	0	0	0	15	5	3	0	15	5	5	5
29	0	0	10	10	0	0	0	0	0	20	10	0	0	15	10	0	0	15	20	0	15
30	0	0	10	10	0	0	0	0	0	20	10	0	0	15	13	8	8	15	15	15	15
31	0	0	10	10	0	0	0	0	0	18	13	8	8	20	15	18	20	15	15	15	15
32	0	0	25	13	10	0	0	0	15	15	15	15	15	20	15	18	15	15	15	15	15
33	0	0	0	15	10	30	0	0	15	15	15	15	15	15	15	15	15	15	15	15	15
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100
35	0	0	0	10	20	0	0	0	0	0	15	20	0	0	15	20	0	0	5	25	45
36	0	0	0	10	20	0	0	0	0	0	15	20	0	17	28	35	21	35	45	45	45
37	0	0	0	10	20	0	0	0	0	14	27	35	25	35	50	50	40	35	45	45	45
38	0	0	0	32	65	0	0	0	20	20	40	50	45	35	50	50	40	35	45	45	45
39	15	15	15	38	43	45	5	5	10	13	28	38	45	28	38	38	40	25	35	35	45
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43	0	0	0	0	0	20	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	20	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	5	50	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	50	33	0	0	0	0	0	0	0	0	0	0	0	0	0

Barrio Logan Redevelopment Area
Projected Average Weekday Traffic Volumes
By Roadway Segment
Future Condition

Roadway Segment	Existing ADT	Increase in ADT	Total Existing Plus Project ADT (a)
1	4,600	6,953	11,553
2	4,500	5,063	9,563
3	6,600	7,358	13,958
4	8,800	13,490	22,290
5	3,800	7,495	11,295
6	2,400	3,787	6,187
7	2,700	3,185	5,885
8	3,900	2,042	5,942
9	3,900	2,398	6,298
10	5,200	3,163	8,363
11	5,200	256	5,456
12	4,100	100	4,200
13	10,300	100	10,400
14	10,300	4,108	14,408
15	1,200	1,053	2,253
16	1,100	3,028	4,128
17	1,100	5,283	6,383
18	2,700	2,164	4,864
19	2,700	3,539	6,239
20	2,600	8,879	11,479
21	2,400	2,049	4,449
22	12,800	12,236	30,156
23	10,900	6,346	21,606
24	14,400	2,736	22,896
25	1,900	2,013	3,913
26	1,300	3,226	4,526
27	2,300	4,374	6,674
28	1,600	3,574	5,174
29	1,500	2,795	4,295
30	2,700	4,338	7,038
31	4,000	5,736	9,736
32	5,000	6,725	11,725
33	3,700	8,977	12,677
34	2,000	7,810	9,810
35	6,400	7,777	14,177
36	7,000	11,939	18,939
37	8,000	14,858	22,858
38	9,000	17,572	26,572
39	10,800	21,835	32,635
40	6,900	5,787	12,687
41	5,200	3,140	8,340
42	3,900	3,140	7,040
43	3,600	2,961	6,561
44	3,900	2,961	6,861
45	4,300	969	5,269
46	2,100	2,074	4,174
47	3,700	4,246	7,946

(a) Includes a 40% increase in existing Harbor Drive traffic to account for regional growth and a 5% reduction in estimated trips for zones within 1/4 mile of the trolley station.

BARRIO LOGAN REDEVELOPMENT AREA
PEAK HOUR TURNING MOVEMENT SUMMARY
FUTURE CONDITION

TOTAL PROJECT TURNING MOVEMENTS (Net Increase)

	Int. #1		Int. #2		Int. #3		Int. #4		Int. #5		Int. #6		Int. #7		Int. #8		Int. #9		Int.#10		Int.#11		Int.#12		Int.#13		Int.#14	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NL	31	25	6	9	0	0	7	30	6	13	0	0	22	91	77	19	0	0	4	9	0	0	12	55	6	27	22	27
NT	172	223	13	13	141	122	6	25	30	24	29	50	24	42	58	103	11	56	76	84	1	5	37	168	4	8	168	207
NR	0	0	5	18	2	9	45	140	0	0	66	304	67	280	19	20	186	197	0	0	0	0	12	57	30	91	0	0
SL	4	22	1	0	131	123	49	74	8	25	13	30	42	185	73	171	0	0	9	37	0	0	0	0	46	99	0	0
ST	74	228	17	34	68	183	21	126	40	67	245	420	82	192	60	128	1	4	30	70	1	4	41	41	14	69	98	257
SR	105	121	1	0	0	0	8	11	11	20	6	22	7	16	464	113	0	0	32	56	26	123	0	0	11	13	5	16
EL	88	156	11	16	0	0	8	13	10	19	14	18	14	11	26	225	14	15	56	57	91	85	14	15	42	147	6	6
ET	1	3	29	31	0	0	184	971	11	15	221	867	89	555	51	449	24	64	93	159	40	39	91	85	223	1013	0	0
ER	13	39	3	5	0	0	7	36	9	12	113	467	46	84	9	75	0	0	7	8	0	0	40	39	3	14	16	32
WL	0	0	23	103	2	7	23	117	21	74	217	204	63	151	11	31	38	126	0	0	0	0	27	26	18	104	166	214
WT	3	2	406	263	0	0	397	293	493	344	508	514	266	152	232	56	39	56	110	149	12	55	26	123	441	353	536	425
WR	27	8	8	6	30	141	42	37	27	8	194	181	88	31	52	171	35	38	28	17	0	0	0	0	53	61	19	19

EXISTING TURNING MOVEMENTS (Harbor Dr. through trips increased by 40% for regional growth)

	Int. #1		Int. #2		Int. #3		Int. #4		Int. #5		Int. #6		Int. #7		Int. #8		Int. #9		Int.#10		Int.#11		Int.#12		Int.#13		Int.#14	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NL	63	23	3	5	127	108	1	2	41	33	8	10	14	18	47	26	5	15	25	15	69	58	2	11	48	31	85	57
NT	84	125	14	30	428	393	10	20	103	102	101	213	40	55	372	559	7	34	82	98	91	116	38	56	79	69	134	104
NR	0	0	4	31	19	121	21	24	12	32	72	162	33	37	53	92	19	168	7	27	14	33	10	52	38	98	0	0
SL	0	0	6	40	24	113	16	33	7	11	88	173	7	21	30	178	20	96	6	7	6	42	24	64	25	112	0	0
ST	92	167	8	32	281	731	25	27	69	142	247	177	42	65	507	1033	13	20	57	108	53	162	30	90	48	117	105	241
SR	33	40	1	4	79	42	8	12	6	14	140	58	5	8	48	15	1	7	17	24	18	25	21	31	12	21	14	29
EL	35	70	5	4	49	58	3	11	5	16	55	79	17	29	25	34	1	4	13	48	23	19	12	41	11	16	25	33
ET	0	0	9	104	84	197	135	358	23	96	140	317	327	109	29	76	77	331	58	92	63	266	44	260	83	388	0	0
ER	28	63	4	8	126	163	3	11	29	39	53	34	23	26	9	67	7	23	26	42	30	74	3	16	8	20	29	151
WL	0	0	20	24	11	18	23	32	29	101	2	4	3	8	53	42	107	43	11	12	18	35	32	35	23	49	113	110
WT	0	0	312	85	199	157	250	138	205	113	43	52	88	325	67	25	324	217	61	30	83	81	172	92	152	156	216	112
WR	0	0	21	24	47	32	32	31	22	18	33	45	7	23	99	84	28	92	8	12	28	35	25	46	45	55	50	24

TOTAL FUTURE TURNING MOVEMENTS

	Int. #1		Int. #2		Int. #3		Int. #4		Int. #5		Int. #6		Int. #7		Int. #8		Int. #9		Int.#10		Int.#11		Int.#12		Int.#13		Int.#14	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
NL	94	48	9	14	127	108	8	32	47	46	8	10	36	109	124	45	5	15	29	24	69	58	14	66	54	58	107	84
NT	256	348	27	43	569	515	16	45	133	126	130	263	64	97	430	662	18	90	158	182	92	121	75	224	83	77	302	311
NR	0	0	9	49	21	130	66	164	12	32	138	466	100	317	72	112	205	365	7	27	14	33	22	109	68	189	0	0
SL	4	22	7	40	155	236	65	107	15	36	101	203	49	206	103	349	20	96	15	44	6	42	24	64	71	211	0	0
ST	166	395	25	66	349	914	46	153	109	209	492	597	124	257	367	1161	14	24	87	178	54	166	71	131	62	186	203	498
SR	138	161	2	4	79	42	16	23	17	34	146	80	12	24	512	128	1	7	49	80	44	148	21	31	23	34	19	45
EL	123	226	16	20	49	58	11	24	15	35	69	97	31	40	51	259	15	19	69	105	114	104	26	56	53	163	31	39
ET	1	3	38	135	84	197	319	1329	34	111	361	1184	416	664	80	525	101	395	151	251	103	305	135	345	306	1401	0	0
ER	41	102	7	13	126	163	10	47	38	51	166	501	69	110	18	142	7	23	33	50	30	74	43	55	11	34	45	183
WL	0	0	43	127	13	25	46	149	50	175	219	208	66	159	64	73	145	169	11	12	18	35	59	61	41	153	279	324
WT	3	2	718	348	199	157	647	431	698	457	551	566	354	477	299	81	363	273	171	179	95	136	198	215	593	509	752	537
WR	27	8	29	30	77	173	74	68	49	26	227	226	95	54	151	255	63	130	36	29	28	35	25	46	98	116	69	43

PEAK HOUR TURNING MOVEMENTS DISTRIBUTION

Project Distribution - Planning Area #1

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT	30%		30%																									
NR																												
SL																												
ST		30%		30%																		30%		30%				
SR		20%		20%																								
EL	20%		20%																									
ET																												
ER																												
WL																												
WT																												
WR																					30%		30%					

PROJECT DISTRIBUTION - Planning Area #2

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL	15%		15%																									
NT	15%		15%																									
NR																												
SL		10%		10%																								
ST		15%		15%																		30%		30%				
SR																												
EL	10%		10%																									
ET																												
ER		15%		15%																								
WL																												
WT																												
WR																					30%		30%					

Planning Area 1 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																								30%		30%	
																									30%		30%
								20%		20%																	
									20%		20%																

Planning Area 2 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																								30%		30%	
									15%		15%																
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									10%		10%																
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PROJECT DISTRIBUTION - Planning Area #3

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL		5%		5%																								
NT		26%		26%																								
NR																												
SL																		15%		15%								
ST	11%		11%																			30%		30%				
SR																		5%		5%								
EL																	5%		5%									
ET					10%		10%										5%		5%									
ER	5%		5%																									
WL																												
WT						10%		10%										5%		5%								
WR																	30%		30%		30%		30%					

PROJECT DISTRIBUTION - Planning Area #4

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																		5%		5%								
NT		7%		7%														5%		5%								
NR																												
SL																						19%		19%				
ST	7%		7%														20%		20%			15%		15%				
SR																						5%		5%				
EL																					5%		5%					
ET					10%		10%						10%		10%		5%		5%			19%		19%	10%		10%	
ER																	5%		5%			15%		15%				
WL																												
WT						10%		10%						10%		10%		5%		5%	19%		19%			10%		10%
WR																					19%		19%					

Planning Area 3 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
									5%		5%														15%		15%
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								9%		9%															15%		15%
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Planning Area 4 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
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									5%		5%														7%		7%
10%		10%																			34%		34%				
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	10%		10%																	19%		19%					

PROJECT DISTRIBUTION - Planning Area #5

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT		5%		5%																								
NR																												
SL																												
ST	5%		5%																									
SR																					15%		15%					
EL																						5%		5%				
ET													20%		20%							45%		45%	20%		20%	
ER																						25%		25%				
WL																	20%		20%									
WT														20%		20%					40%		40%			20%		20%
WR																												

PROJECT DISTRIBUTION - Planning Area #6

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT	5%		5%																		5%		5%					
NR																						45%		45%				
SL									20%		20%																	
ST	5%		5%																		35%		35%					
SR																												
EL																												
ET																												
ER																												
WL																					45%		45%					
WT																												
WR										20%		20%																

Planning Area 5 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																					15%		15%				
				5%		5%						5%		5%													
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	20%		20%																								

Planning Area 6 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
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																								30%		30%	

PROJECT DISTRIBUTION - Planning Area #7

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT		5%		5%																		5%		5%				
NR																												
SL									15%		15%																	
ST	5%		5%						5%		5%										5%		5%					
SR																												
EL																												
ET																												
ER																												
WL																					5%		5%					
WT										5%		5%																
WR										15%		15%										5%		5%				

Planning Area 5 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																					15%		15%				
				5%		5%						5%		5%													
																					50%		50%				
20%		20%																									
					5%		5%						5%		5%					20%		20%		5%		5%	
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																				30%		30%		10%		10%	
																					5%		5%	20%		20%	
	20%		20%																								

Planning Area 6 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
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												20%		20%													
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																								30%		30%	
																	20%		20%								

PROJECT DISTRIBUTION - Planning Area #7

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT		5%		5%																		5%		5%				
NR																												
SL									15%		15%																	
ST	5%		5%						5%		5%										5%		5%					
SR																												
EL																												
ET																												
ER																												
WL																					5%		5%					
WT										5%		5%																
WR										15%		15%										5%		5%				

Planning Area 7 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																	15%		15%								
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15%		15%														10%		10%						5%		5%	
				5%		5%						15%		15%													
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Project Distribution - Planning Area #11

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL						5%		5%										5%		5%								
NT						9%		9%	5%		5%							11%		11%								
NR																												
SL														27%		27%												
ST					9%		9%			5%		5%					11%		11%									
SR														8%		8%												
EL					15%		15%						8%		8%													
ET						5%		5%					7%		7%							30%		30%	15%		15%	
ER																	5%		5%			25%		25%				
WL																	15%		15%									
WT					5%		5%							7%		7%	15%		15%		25%		25%			15%		15%
WR					5%		5%						12%		12%													

PROJECT DISTRIBUTION - Planning Area #8

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT		5%		5%						20%		20%										5%		5%				
NR																						5%		5%				
SL																												
ST	5%		5%						20%		20%										5%		5%					
SR																												
EL																					5%		5%					
ET																												
ER																												
WL																												
WT																												
WR																												

Planning Area 11 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
									11%		11%																
5%		5%																									
10%		10%																			28%		28%				
								11%		11%																	
																					7%		7%				
																				7%		7%					
																					27%		27%				
	5%		5%																								
																				12%		12%		30%		30%	
	10%		10%																	13%		13%					

Planning Area 8 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
					25%		25%										10%		10%						5%		5%
				15%	10%	15%	10%										10%		10%								
																10%		10%						5%		5%	
				10%		10%										10%		10%									
					25%		25%																				
				10%		10%																					
				25%		25%																					
				25%		25%																					

PROJECT DISTRIBUTION - Planning Area #9

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT	10%		10%						10%		10%						10%		10%									
NR																												
SL														10%		10%												
ST		10%		10%						10%		10%						10%		10%								
SR																												
EL																												
ET																												
ER																						20%		20%				
WL																												
WT																	15%		15%		20%		20%					
WR	15%		15%										10%		10%		15%		15%									

PROJECT DISTRIBUTION - Planning Area #10

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT	10%		10%						10%		10%						10%		10%									
NR																												
SL														17%		17%												
ST		17%		17%						10%		10%						18%		18%								
SR		10%		10%														10%		10%								
EL	10%		10%														10%		10%									
ET	10%		10%																			15%		15%				
ER																						20%		20%				
WL																												
WT		10%		10%													15%		15%		20%		20%					
WR	15%		15%										10%		10%		15%		15%									

Planning Area 9 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
10%		10%						25%		25%																	
																					10%		10%				
	10%		10%						10%		10%																
									5%		5%																
								15%		15%																	
																					10%		10%				
																				10%		10%		30%		30%	
																				10%		10%					

Planning Area 10 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
									5%		5%																
10%		10%							17%		17%																
																					18%		18%				
	10%		10%					10%		10%																	
																					17%		17%				
								5%		5%																	
																									30%		30%
																				10%		10%					

PROJECT DISTRIBUTION - Planning Area #12

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL														10%		10%												
NT														5%		5%												
NR									5%		5%			32%		32%												
SL																												
ST					5%		5%						20%		20%													
SR																												
EL																												
ET													10%		10%							40%		40%	20%		20%	
ER													10%		10%							25%		25%				
WL					15%		15%			5%		5%	17%		17%		15%		15%									
WT														10%		10%	15%		15%		35%		35%			20%		20%
WR																												

PROJECT DISTRIBUTION - Planning Area #13

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT																		5%		5%								
NR														25%		25%												
SL																												
ST													15%		15%		5%		5%									
SR																												
EL																												
ET																						45%		45%				
ER																												
WL					15%		15%						25%		25%		15%		15%									
WT																	15%		15%		45%		45%					
WR																												

Planning Area 12 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
																					10%		10%				
									5%		5%										5%		5%				
																					33%		33%				
20%		20%																									
								5%		5%										20%		20%					
																				18%		18%					
																				17%		17%					
																					32%		32%	30%		30%	
	20%		20%																	10%		10%					

Planning Area 13 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
	20%		20%						5%		5%										5%		5%				
																					20%		20%				
20%		20%						5%		5%										20%		20%					
																					25%		25%				
																				20%		20%					
																				25%		25%		30%		30%	

PROJECT DISTRIBUTION - Planning Area #14

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT					13%		13%		5%		5%																	
NR																												
SL						5%		5%						23%		23%										22%		22%
ST						23%		23%		5%		5%										10%		10%				
SR	15%		15%			5%		5%																				
EL		15%		15%	5%		5%																					
ET						5%		5%						22%		22%		10%		10%		30%		30%				
ER																						15%		15%				
WL													12%		12%													
WT					15%		15%										30%		30%		25%		25%					
WR					15%		15%						13%		13%										12%		12%	

Planning Area 14 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
5%		5%																									
	5%		5%																								
								5%		5%																	
									5%		5%																
									15%		15%										45%		45%				
																									10%		10%
								15%		15%										25%		25%		30%		30%	

Project Distribution - Planning Area #15

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL						5%		5%																				
NT						5%		5%	5%		5%																	
NR																												
SL														35%		35%										30%		30%
ST					5%		5%			5%		5%																
SR	5%		5%											5%		5%										10%		10%
EL		5%		5%									5%		5%										10%		10%	
ET														30%		30%						40%		40%	5%		5%	
ER					5%		5%															25%		25%				
WL					15%		15%																					
WT					5%		5%						15%		15%		30%		30%		35%		35%			5%		5%
WR													20%		20%											15%		15%

PROJECT DISTRIBUTION - Planning Area #16

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL														10%		10%										10%		10%
NT		5%		5%										5%		5%										5%		5%
NR						5%		5%						33%		33%										32%		32%
SL																												
ST					5%		5%						20%		20%										20%		20%	
SR	5%		5%																									
EL																												
ET														32%		32%		5%		5%		40%		40%	10%		10%	
ER													10%		10%							25%		25%	10%		10%	
WL					5%		5%						18%		18%										17%		17%	
WT					15%		15%						17%		17%		30%		30%		35%		35%			10%		10%
WR																												

Planning Area 15 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
5%		5%						5%		5%																	
10%		10%																									
									5%		5%																
									5%		5%										65%		65%				
	5%		5%																								
								5%		5%										35%		35%		30%		30%	
	10%		10%																								

Planning Area 16 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
20%		20%																									
								5%		5%															5%		5%
									5%		5%										65%		65%				
																				35%		35%		30%		30%	
								5%		5%																	
	20%		20%																								

PROJECT DISTRIBUTION - Planning Area #17

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT									5%		5%			5%		5%												
NR						5%		5%						20%		20%										25%		25%
SL																												
ST										5%		5%	20%		20%										15%		15%	
SR																	5%		5%									
EL																		5%		5%								
ET														25%		25%						45%		45%				
ER																												
WL					20%		20%						18%		18%										17%		17%	
WT					15%		15%						17%		17%						35%		35%					
WR																												

PROJECT DISTRIBUTION - Planning Area #18

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT									5%		5%														5%		5%	
NR																												
SL																										50%		50%
ST										5%		5%														5%		5%
SR	15%		15%																									
EL		15%		15%																								
ET														50%		50%						30%		30%				
ER																						20%		20%				
WL																												
WT					30%		30%						20%		20%		30%		30%		20%		20%					
WR																									20%		20%	

Planning Area 17 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
	20%		20%						5%		5%																
20%		20%						5%		5%																	
																					45%		45%				
																				35%		35%		30%		30%	

Planning Area 18 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
5%		5%																									
	5%		5%																								
								5%		5%																	
									5%		5%																
									15%		15%										50%		50%				
								15%		15%										20%		20%		30%		30%	

PROJECT DISTRIBUTION - Planning Area #19

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT									5%		5%														5%		5%	
NR																												
SL																										60%		60%
ST										5%		5%														5%		5%
SR	5%		5%																							5%		5%
EL		5%		5%																					5%		5%	
ET														60%		60%						40%		40%				
ER																						20%		20%				
WL																												
WT					30%		30%						30%		30%		30%		30%		30%		30%					
WR																									30%		30%	

PROJECT DISTRIBUTION - Planning Area #20

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																										25%		25%
NT									5%		5%															10%		10%
NR																										60%		60%
SL																												
ST										5%		5%													40%		40%	
SR	5%		5%																									
EL		5%		5%																								
ET														60%		60%						40%		40%				
ER																						20%		20%	25%		25%	
WL																									30%		30%	
WT					30%		30%						30%		30%		30%		30%		30%		30%					
WR																												

Planning Area 19 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
5%		5%																									
								5%		5%																	
									5%		5%																
									5%		5%										60%		60%				
	5%		5%																								
								5%		5%										30%		30%		30%		30%	

Planning Area 20 (cont.)

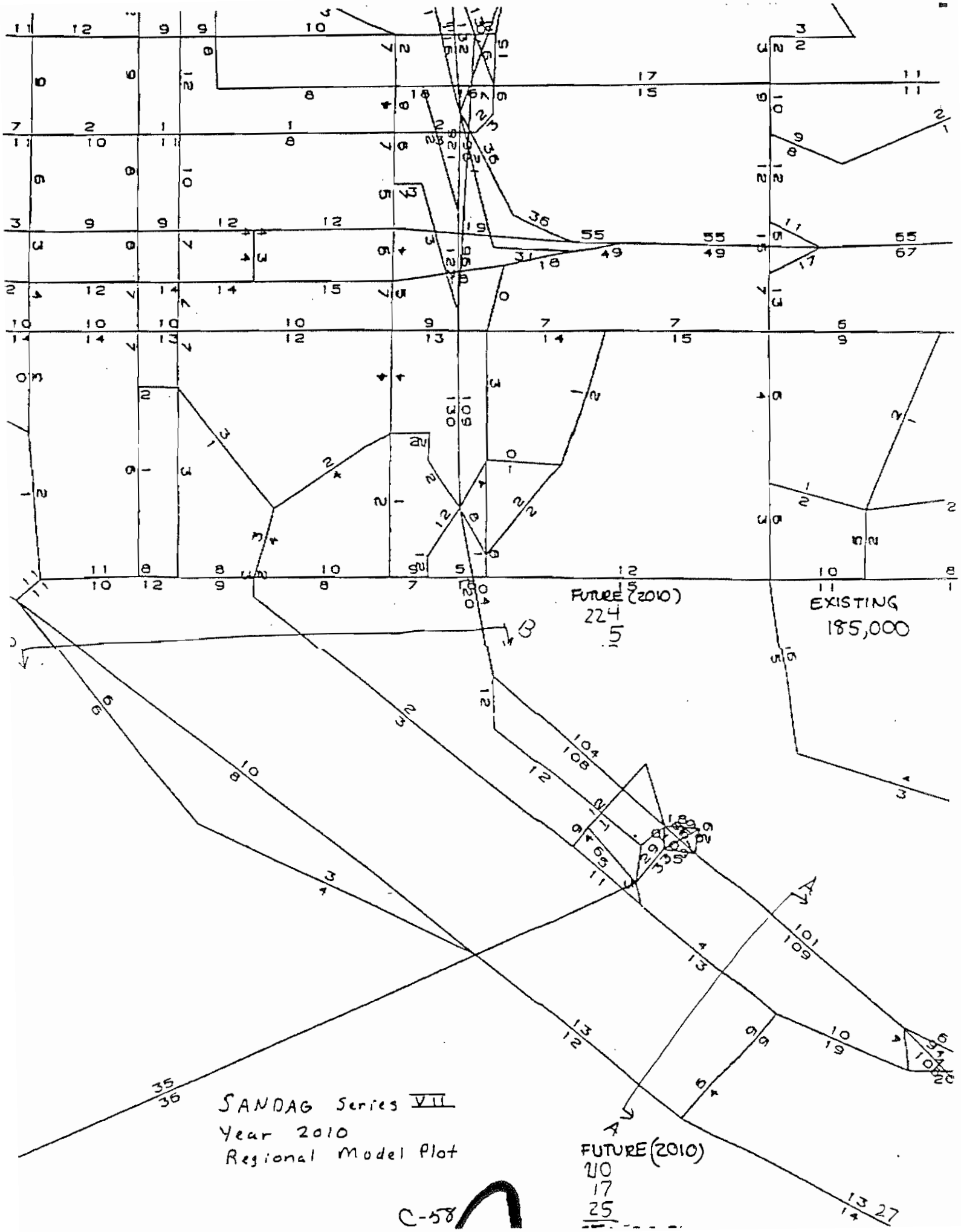
Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
5%		5%																									
20%		20%																									
								5%		5%																	
									5%		5%																
									5%		5%										60%		60%				
	5%		5%																								
								5%		5%										30%		30%		30%		30%	
	20%		20%																								

PROJECT DISTRIBUTION - Planning Area #21

	Int. #: 1				Int. #: 2				Int. #: 3				Int. #: 4				Int. #: 5				Int. #: 6				Int. #: 7			
	AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
NL																												
NT									10%		10%																	
NR																												
SL																												
ST										10%		10%																
SR	5%		5%																									
EL		5%		5%																								
ET														60%		60%						40%		40%		60%		60%
ER																						20%		20%				
WL																												
WT					30%		30%						30%		30%		30%		30%		30%		30%		30%		30%	
WR																												

Planning Area 21 (cont.)

Int. #: 8				Int. #: 9				Int. #: 10				Int. #: 11				Int. #: 12				Int. #: 13				Int. #: 14			
AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM		AM		PM	
I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O	I	O
10%		10%																									
60%		60%																									
	30%		30%																								
	60%		60%						5%		5%										60%		60%				
	10%		10%																								
30%		30%						5%		5%										30%		30%		30%		30%	


FUTURE (2010)
224
5
EXISTING
185,000
SANDAG Series VII
Year 2010
Regional Model Plot
FUTURE (2010)
20
17
25

April 20, 1989

TRANSPORTATION PLANNING DIVISION
PARKING RATES USED FOR DISCRETIONARY REVIEW

LAND USE	RATE
Single family residential	2 per dwelling unit
Multi-family residential [see Worksheet]	
one bedroom or less	1.3 per dwelling unit*
two bedrooms or more	1.6 per dwelling unit*
*guest parking	
under 25 units	add 1 per dwelling unit
25 to 74 units	add 0.9 per dwelling unit
75 to 149 units	add 0.8 per dwelling unit
150 to 299 units	add 0.7 per dwelling unit
300 units and over	add 0.6 per dwelling unit
Hotel	1 per guest room
Restaurant	
Free-standing building	1 per 60 gross sq. ft.
Combined in project	1 per 80 gross sq. ft.
Banquet room	1 per 80 gross sq. ft.
Retail	1 per 200 gross sq. ft.
Medical office	1 per 250 gross sq. ft.
Commercial office	1 per 300 gross sq. ft.
Library	
with high meeting room use	1 per 175 gross sq. ft.
without high meeting room use	1 per 200 gross sq. ft.
Daycare center	
Staff	1 per each adult* (1 per 6 students)
*Loading/unloading area	add 1 per 12 students
Hospital	
with transit	1.75 per bed
without transit	2 per bed
Convalescent hospital	1 per 3 beds
Theatre	1 per 3 seats
Church	1 per 3 seats
Health club	1 per 150 gross sq. ft.
Marina	1 per 3 boat slips
General aviation airport	
parking in hangars/tiedowns	9 per 100 hangars/tiedowns
no parking in hangars/tiedowns	27 per 100 hangars/tiedowns
Industrial	1 per 400 gross sq. ft.
Warehousing	
Storage area	1 per 1,000 gross sq. ft.
Office area	1 per 300 gross sq. ft.

Nodal Corridor/Transfer Node (Mixed Use)

APPENDIX B - PARKING WORKSHEET

11/07/89

I. RESIDENT CALCULATIONS

Studios		x	1.00	=	(Studios of 400 sq. ft. or less)
1 BR		x	1.25	=	
2 BR	148	x	1.50	=	222
3 BR +		x	1.75	=	

= 222 Total Required Resident Spaces

II. SUPPLEMENTAL CALCULATIONS

A. BASE SUPPLEMENTAL REQUIREMENT

Resident Requirement (From Step I) 222 x 0.30* = 67 Gross Supplemental Requirement

* 0.50 for Beach or Campus Impact Areas

B. SUPPLEMENTAL CALIBRATION (Reduction Factors)

Proximity to Transit	*Reduction*	*Achieved Density* (Units/NRA)	*Reduction*	*Commercial Use* Gross Floor Area	*Reduction*
Transit Corridor:	0.10				
Nodal Corridor/Transfer Node:	0.20	42 - 72 :	0.10	4 to 8.9 percent:	0.10
Transit Node:	0.30	73 - 142 :	0.20	9 to 12.9 percent:	0.20
Transit Hub:	0.60	143+ :	0.30	13+ percent:	0.30

Total Supplemental Calibration= Transit Calibration 0.20 + Density Calibration 0.10 + Commercial (Mixed Use) Calibration 0.30

67 Gross Supplemental Requirement x 0.60 Total Supplemental Calibration = 40 Supplemental Reduction Factor

67 Gross Supplemental Requirement − 40 Supplemental Reduction Factor = 27 Total Required Supplemental Spaces

III. TOTAL REQUIRED SPACES

222 Total Required Resident Spaces + 27 Total Required Supplemental Spaces + N.A. Curb Cut Replacement =

249 Total Required Off-Street Spaces (Round to nearest whole)

Notes:

1. Curb Cut Replacement: One space per 20 feet of curb cut or part thereof. If alley access available, three spaces for second and subsequent cuts.

2. Discretionary permits in urbanizing areas, as identified in the General Plan, require that common area parking in the amount of 20 percent of the total resident and supplemental spaces required, be provided on-or off-street.

Transit Node (No Mixed Use)

APPENDIX B - PARKING WORKSHEET

11/07/89

I. RESIDENT CALCULATIONS

Studios	_____	x	1.00	=	_____ (Studios of 400 sq. ft. or less)
1 BR	_____	x	1.25	=	_____
2 BR	888	x	1.50	=	1332
3 BR +	_____	x	1.75	=	_____

= 1332 Total Required Resident Spaces

II. SUPPLEMENTAL CALCULATIONS

A. BASE SUPPLEMENTAL REQUIREMENT

Resident Requirement (From Step I) 1332 x 0.30* = 400 Gross Supplemental Requirement

* 0.50 for Beach or Campus Impact Areas

B. SUPPLEMENTAL CALIBRATION (Reduction Factors)

Proximity to Transit	*Reduction*	*Achieved Density* (Units/NRA)	*Reduction*	*Commercial Use* Gross Floor Area	*Reduction*
Transit Corridor:	0.10				
Nodal Corridor/Transfer Node:	0.20	42 - 72 :	0.10	4 to 8.9 percent:	0.10
Transit Node:	0.30	73 - 142 :	0.20	9 to 12.9 percent:	0.20
Transit Hub:	0.60	143+ :	0.30	13+ percent:	0.30

Total Supplemental Calibration= Transit Calibration 0.30 + Density Calibration 0.10 + Commercial (Mixed Use) Calibration N.A.

400 Gross Supplemental Requirement x 0.40 Total Supplemental Calibration = 160 Supplemental Reduction Factor

400 Gross Supplemental Requirement − 160 Supplemental Reduction Factor = 240 Total Required Supplemental Spaces

III. TOTAL REQUIRED SPACES

1332 Total Required Resident Spaces + 240 Total Required Supplemental Spaces + N.A. Curb Cut Replacement =

1572 Total Required Off-Street Spaces (Round to nearest whole)

Notes:

1. Curb Cut Replacement: One space per 20 feet of curb cut or part thereof. If alley access available, three spaces for second and subsequent cuts.

2. Discretionary permits in urbanizing areas, as identified in the General Plan, require that common area parking in the amount of 20 percent of the total resident and supplemental spaces required, be provided on-or off-street.

Transit Node (mixed Use)

APPENDIX B - PARKING WORKSHEET

11/07/89

I. RESIDENT CALCULATIONS

Studios	_____	x 1.00	=	_____	(Studios of 400 sq. ft. or less)
1 BR	_____	x 1.25	=	_____	
2 BR	80	x 1.50	=	_____	
3 BR +	_____	x 1.75	=	_____	

= 120 Total Required Resident Spaces

II. SUPPLEMENTAL CALCULATIONS

A. BASE SUPPLEMENTAL REQUIREMENT

Resident Requirement (From Step I) 120 x 0.30* = 36 Gross Supplemental Requirement

* 0.50 for Beach or Campus Impact Areas

B. SUPPLEMENTAL CALIBRATION (Reduction Factors)

Proximity to Transit	*Reduction*	*Achieved Density* (Units/NRA)	*Reduction*	*Commercial Use* Gross Floor Area	*Reduction*
Transit Corridor:	0.10				
Nodal Corridor/Transfer Node:	0.20	42 - 72 :	0.10	4 to 8.9 percent:	0.10
Transit Node:	0.30	73 - 142 :	0.20	9 to 12.9 percent:	0.20
Transit Hub:	0.60	143+ :	0.30	13+ percent:	0.30

Total Supplemental Calibration= Transit Calibration 0.30 + Density Calibration 0.10 + Commercial (Mixed Use) Calibration 0.30

36 Gross Supplemental Requirement x 0.70 Total Supplemental Calibration = 26 Supplemental Reduction Factor

36 Gross Supplemental Requirement − 26 Supplemental Reduction Factor = 10 Total Required Supplemental Spaces

III. TOTAL REQUIRED SPACES

120 Total Required Resident Spaces + 10 Total Required Supplemental Spaces + N.A. Curb Cut Replacement =

130 Total Required Off-Street Spaces (Round to nearest whole)

Notes:

1. Curb Cut Replacement: One space per 20 feet of curb cut or part thereof. If alley access available, three spaces for second and subsequent cuts.

2. Discretionary permits in urbanizing areas, as identified in the General Plan, require that common area parking in the amount of 20 percent of the total resident and supplemental spaces required, be provided on-or off-street.

Nodal Corridor / Transfer Node (No Mixed Use)

APPENDIX B - PARKING WORKSHEET

11/07/89

I. RESIDENT CALCULATIONS

Studios _____ x 1.00 = _____ (Studios of 400 sq. ft. or less)

1 BR _____ x 1.25 = _____

2 BR 82 x 1.50 = _____

3 BR + _____ x 1.75 = _____

= 123 Total Required Resident Spaces

II. SUPPLEMENTAL CALCULATIONS

A. BASE SUPPLEMENTAL REQUIREMENT

Resident Requirement 123 x 0.30* = 37 Gross Supplemental Requirement
(From Step I)

* 0.50 for Beach or Campus Impact Areas

B. SUPPLEMENTAL CALIBRATION (Reduction Factors)

Proximity to Transit	*Reduction*	*Achieved Density* (Units/NRA)	*Reduction*	*Commercial Use* Gross Floor Area	*Reduction*
Transit Corridor:	0.10				
Nodal Corridor/Transfer Node:	0.20	42 - 72 :	0.10	4 to 8.9 percent:	0.10
Transit Node:	0.30	73 - 142 :	0.20	9 to 12.9 percent:	0.20
Transit Hub:	0.60	143+ :	0.30	13+ percent:	0.30

Total Supplemental Calibration= Transit Calibration 0.20 + Density Calibration 0.10 + Commercial (Mixed Use) Calibration N.A.

37 Gross Supplemental Requirement x 0.30 Total Supplemental Calibration = 11 Supplemental Reduction Factor

37 Gross Supplemental Requirement – 11 Supplemental Reduction Factor = 26 Total Required Supplemental Spaces

III. TOTAL REQUIRED SPACES

123 Total Required Resident Spaces + 26 Total Required Supplemental Spaces + N.A. Curb Cut Replacement =

149 Total Required Off-Street Spaces (Round to nearest whole)

Notes:

1. Curb Cut Replacement: One space per 20 feet of curb cut or part thereof. If alley access available, three spaces for second and subsequent cuts.

2. Discretionary permits in urbanizing areas, as identified in the General Plan, require that common area parking in the amount of 20 percent of the total resident and supplemental spaces required, be provided on-or off-street.

APPENDIX D

FUTURE CONDITIONS:
- TRAFFIC SIGNAL WARRANTS
- INTERSECTION CAPACITY WORKSHEETS
(BASED ON EXISTING STREET SYSTEM)

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	X 1	8,000 (10,600)	5,600	2,400 (2,600)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	X 1	12,000 (10,600)	8,400	1,200 (2,600)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 9,600			

3. Combination

Satisfied ___X___ Not Satisfied _____

2 Warrants	2 Warrants	

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES (1) ___ YES (2) ___

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Future Conditions

Logan Ave. / Sigsbee St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	8,000 (8350)	5,600	2,400 (1600)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

80% = 1920

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	12,000 (8350)	8,400	1,200 (1600)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

80% = 9600

3. Combination

Satisfied _____ Not Satisfied ___X___

2 Warrants | 2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ NO (1) NO (2)

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Future Conditions
Beardsley St. / Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements
EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	8,000 (20,900)	5,600	2,400 (2625)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	12,000 (20,900)	8,400	1,200 (2625)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ___X___ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ _____ (1) _____ (2)

2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Future Conditions
Crosby St./Newton Ave.

Figure 8-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	1	8,000(10,700)	5,600	2,400(3050)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	X 2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ____X____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X 1	1	12,000(10,700)	8,400	1,200(3050)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	X 2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 9,600			

3. Combination

Satisfied ____X____ Not Satisfied _____

	2 Warrants	2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES (1) YES (2)

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Future Conditions
National Ave./Beardsley St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements
EADT

1. Minimum Vehicular

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X1	X1	8,000(12,400)	5,600	2,400 (3050)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
X1	X1	12,000(12400)	8,400	1,200(3050)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ____X____ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ _____ 1 _____ 2

2 Warrants

2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Future Conditions

National Ave./26th St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	X 1	8,000 (8750)	5,600	2,400 (3050)	1,680
X 2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___
(may warrant signalization)

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	X 1	12,000 (8750)	8,400	1,200 (3050)	850
X 2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 9600			

3. Combination

Satisfied _____ Not Satisfied ___X___

		Vehicles per day on major street (total of both approaches)	Vehicles per day on higher-volume minor-street approach (one direction only)
No one warrant satisfied but following warrants fulfilled 80% or more	YES 1 / NO 2	2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Future Conditions

Logan Ave. / Sampson St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN _____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied X Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	8,000 (24,750)	5,600	2,400 (3675)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied X Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	12,000 (24,750)	8,400	1,200 (3675)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied X Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ _____ 1 _____ 2

2 Warrants — 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Future Conditions

National Ave./Crosby St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	8,000 (11,800)	5,600	2,400 (5850)	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
X 1	X 1	12,000 (11,900)	8,400	1,200 (5850)	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120
		80% = 9600			

3. Combination

Satisfied ____X____ Not Satisfied _____

	2 Warrants	2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES 1 YES 2

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Future Conditions

Logan Ave. / I-5 SB OH Ramp (Beardsley)

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

	Minimum Requirements EADT			
1. Minimum Vehicular Satisfied ___X___ Not Satisfied _____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 / 1	8,000	5,600	2,400	1,680
2 or more / 1	9,600	6,720	2,400	1,680
2 or more / 2 or more	9,600	6,720	3,200	2,240
X 1 / 2 or more	8,000 22,600	5,600	3,200 6,075	2,240
2. Interruption of Continuous Traffic Satisfied ___X___ Not Satisfied _____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 / 1	12,000	8,400	1,200	850
2 or more / 1	14,400	10,080	1,200	850
2 or more / 2 or more	14,400	10.080	1,600	1,120
X 1 / 2 or more	12,000 22,600	8,400	1,600 6,075	1,120
3. Combination Satisfied ___X___ Not Satisfied _____	2 Warrants		2 Warrants	
No one warrant satisfied but following warrants fulfilled 80% or more ___ 1 - 2				

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Future Conditions
Crosby St./Kearney Ave.

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: AM PEAK

(LOGSIG2.ICU/2-22-91)

Future CONDITIONS

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	NA	NA	41	NA	NA	0
	LEFT	1	1500	123	0.11	0.11	1
Southbound	RIGHT	NA	NA	198	NA	NA	0
	THROUGH	1	1700	166	0.21	0.21	1
Northbound	LEFT	1	1500	94	0.06	0.10	1
	THROUGH	1	1700	256	0.15	0.15	0

Eastbound	Component	0.11
North/South	Component	0.31
Rt.Tn.	Component	0.00
	ICU	0.42

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: PM PEAK

(LOGSIG2.ICU/2-22-91)

Future CONDITIONS

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	NA	NA	161	NA	NA	0
	LEFT	1	1500	226	0.15	0.15	1
Southbound	RIGHT	NA	NA	161	NA	NA	0
	THROUGH	1	1700	395	0.33	0.33	1
Northbound	LEFT	1	1500	48	0.03	0.10	1
	THROUGH	1	1700	348	0.20	0.20	0

Eastbound	Component	0.15
North/South	Component	0.43
Rt.Tn.	Component	0.00
	ICU	0.58

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

```
LOCATION:Beardsley St./Newton Ave.          NAME:Future AM
-----------------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    2                |
                              |  V12                |        ^
                              |   |   25            |        N
                              |   |  V11            |
                              |   |   |    7        |
      ======================    |   |  V10        ======================
         N= 1                   <|   v   |>       ^----------V6-- 29
Grade 0%                                          <----------V5-- 718  N= 1
         16 --V1------------^                     v----------V4-- 43
         38 --V2------------>                        major road        Grade 0%
          7 --V3------------v        <|   ^   |>    Beardsley St.
      ======================        V7   |   |   ======================
                              |        9   |   |   | STOP xx
                              |            V8   |   | YIELD
                              |  N= 1      27   |   | Date of Counts:2/14/91
                              |                V9   | Time Period:AM Peak
                              | minor road      9   | Prevailing Speed:
                              | Newton Ave.         | PHF:0.92
                              |   Grade 0 %         | Population:
=====================================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------------
Movement no.        |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------------
Volume (vph)        |  16|  38|   7|  43| 718|  29|   9|  27|   9|   7|  25|   2|
-----------------------------------------------------------------------------------
Vol(pcph),Tab.10.1|  18|XXXX|XXXX|  47|XXXX|XXXX|  10|  30|  10|   8|  28|   2|
=====================================================================================

VOLUMES IN PCPH               |                     |
                              |    2                |
                              |  V12                |
                              |   |   28            |
                              |   |  V11            |
                              |   |   |    8        |
      ======================    |   |  V10        ======================
                                <|   v   |>       ^----------V6-- ==
                                                  <----------V5-- ==
         18 --V1------------^                     v----------V4--  47
         == --V2------------>
         == --V3------------v        <|   ^   |>
      ======================        V7   |   |   ======================
                              |        10  |   |   |
                              |            V8   |   |
                              |            30   |   |
                              |                V9   |
                              |                10   |
```

LOCATION:Beardsley St./Newton Ave. NAME:Future AM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9 4+ 38= 42 vph	1/2 V6+V5=Vc12 15+ 718= 733 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 465 pcph
% of Cp utilized	(V9/Cp9)x100= 1%	(V12/Cp12)x100= .4%
Impedance Factor, P (Fig.10.5)	P9= .99	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 465 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4 7+ 38= 45 vph	V6+V5=Vc1 29+ 718= 747 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 537 pcph
% of Cp utilized	(V4/Cp4)x100= 4.7%	(V1/Cp1)x100= 3.4%
Impedance Factor, P (Fig.10.5)	P4= .97	P1= .98
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 537 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 4+ 38+ 16+ 29+ 718+ 43= 848 vph	.5V6+V5+V4+V3+V2+V1=Vc11 15+ 718+ 43+ 7+ 38+ 16= 837 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 338 pcph	Cp11 = 343 pcph
% of Cp utilized	(V8/Cp8)x100= 8.9%	(V11/Cp11)x100= 8.2%
Impedance Factor, P (Fig.10.5)	P8= .95	P11= .95
Actual Capacity, Cm	Cm8=Cp8xP1xP4 321= 338x.98x.97pcph	Cm11=Cp11xP1xP4 326= 343x.98x.97pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 848+ 25+ 2= 875vph	Vc11(step3)+V8+V9=Vc10 837+ 27+ 9= 873vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 280 pcph	Cp10 = 281 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 280x.98x.97x.95x 1 = 253 pcph	Cm10=Cp10xP4xP1xP8xP9 = 281x.97x.98x.95x.99 = 251 pcph

LOCATION:Beardsley St./Newton Ave. NAME:Future AM

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	10	253	350	243	300	C	B
8	30	321	350	291	300	C	B
9	10	1000	350	990	300	A	B

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	8	251	311	243	273	C	C
11	28	326	311	298	273	C	C
12	2	465	311	463	273	A	C

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	18	537	519	A
4	47	1000	953	A

COMMENTS:

```
LOCATION:Beardsley St./Newton Ave.          NAME:Future PM
-------------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |            N = 1      |
                              |    4                  |
                              |  V12                  |        ^
                              |   |   66              |        N
                              |   |  V11              |
                              |   |   |   40          |
       ======================     |   |  V10          ======================
          N= 1                  <|   v   |>         ^----------V6-- 30
Grade 0%                                             <----------V5-- 348  N= 1
          20 --V1------------^                       v----------V4-- 127
         135 --V2------------>                          major road        Grade 0%
          13 --V3------------v        <|   ^   |>      Beardsley St.
       ======================         V7   |   |     ======================
                              |        14   |   |     | STOP xx
                              |             V8  |     | YIELD
                              |  N= 1       43  |     | Date of Counts:2/14/91
                              |                 V9    | Time Period:PM Peak
                              | minor road      49    | Prevailing Speed:
                              | Newton Ave.           | PHF:0.77
                              |   Grade 0 %           | Population:
=================================================================================
VOLUME ADJUSTMENTS
-------------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-------------------------------------------------------------------------------
Volume (vph)       |  20| 135|  13| 127| 348|  30|  14|  43|  49|  40|  66|   4
-------------------------------------------------------------------------------
Vol(pcph),Tab.10.1|  22|XXXX|XXXX| 140|XXXX|XXXX|  15|  47|  54|  44|  73|   4
=================================================================================

VOLUMES IN PCPH               |                       |
                              |    4                  |
                              |  V12                  |
                              |   |   73              |
                              |   |  V11              |
                              |   |   |   44          |
       ======================     |   |  V10          ====================
                                 <|   v   |>         ^----------V6-- ==
                                                      <----------V5-- ==
          22 --V1------------^                       v----------V4-- 140
          == --V2------------>
          == --V3------------v        <|   ^   |>
       ======================         V7   |   |     ======================
                              |        15   |   |     |
                              |             V8  |     |
                              |             47  |     |
                              |                 V9    |
                              |                 54    |
```

LOCATION:Beardsley St./Newton Ave. NAME:Future PM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	7+ 135= 142 vph	15+ 348= 363 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 951 pcph	Cp12 = 731 pcph
% of Cp utilized	(V9/Cp9)x100= 5.7%	(V12/Cp12)x100= .5%
Impedance Factor, P (Fig.10.5)	P9= .97	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 951 pcph	Cm12=Cp12= 731 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	13+ 135= 148 vph	30+ 348= 378 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 819 pcph
% of Cp utilized	(V4/Cp4)x100= 14%	(V1/Cp1)x100= 2.7%
Impedance Factor, P (Fig.10.5)	P4= .91	P1= .98
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 819 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	7+ 135+ 20+ 30+	15+ 348+ 127+ 13+
	348+ 127= 667 vph	135+ 20= 658 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 436 pcph	Cp11 = 442 pcph
% of Cp utilized	(V8/Cp8)x100= 10.8%	(V11/Cp11)x100= 16.5%
Impedance Factor, P (Fig.10.5)	P8= .93	P11= .89
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	389= 436x.98x.91pcph	394= 442x.98x.91pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	667+ 66+ 4= 737vph	658+ 43+ 49= 750vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 345 pcph	Cp10 = 338 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 345x.98x.91x.89x 1	= 338x.91x.98x.93x.97
	= 274 pcph	= 272 pcph

LOCATION: Beardsley St./Newton Ave. NAME: Future PM

SHARED LANE CAPACITY

APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	15	274	499	259	383	C	B
8	47	389	499	342	383	B	B
9	54	951	499	897	383	A	B

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	44	272	343	228	222	C	C
11	73	394	343	321	222	B	C
12	4	731	343	727	222	A	C

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	22	819	797	A
4	140	1000	860	A

COMMENTS:

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: AM PEAK HOUR

(HARSAM2.ICU/2-16-91)

FUTURE CONDITIONS

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	127	0.08	0.10	0
NR	NA	NA	21	NA	NA	0
NT	2	3400	560	0.17	0.17	1
SL	1	1500	155	0.10	0.10	1
SR	NA	NA	79	NA	NA	0
ST	2	3400	349	0.13	0.13	0
EL	NA	NA	49	NA	NA	1
ER	NA	NA	126	NA	NA	0
ET	1	1700	84	0.15	0.15	0
WL	NA	NA	13	NA	NA	0
WR	NA	NA	77	NA	NA	0
WT	1	1700	199	0.17	0.17	1

N/S component	0.27
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.54

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(HARSAM2.ICU/2-16-91)

FUTURE CONDITIONS

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	108	0.07	0.10	1
NR	NA	NA	150	NA	NA	0
NT	2	3400	515	0.20	0.20	0
SL	1	1500	236	0.16	0.16	0
SR	NA	NA	42	NA	NA	0
ST	2	3400	914	0.28	0.28	1
EL	NA	NA	58	NA	NA	0
ER	NA	NA	163	NA	NA	0
ET	1	1700	197	0.25	0.25	1
WL	NA	NA	25	NA	NA	1
WR	NA	NA	173	NA	NA	0
WT	1	1700	157	0.21	0.21	0

N/S component	0.38
E/W component	0.35
Rt.Tn. comp.	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: AM PEAK HOUR

(CRONEW2.ICU/2-16-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	8	NA	NA	0
NR	NA	NA	66	NA	NA	0
NT	1	1700	16	0.05	0.10	0
SL	NA	NA	65	NA	NA	0
SR	NA	NA	16	NA	NA	0
ST	1	1700	46	0.07	0.10	0
EL	NA	NA	11	NA	~~NA~~ .10	1
ER	1	1500	10	0.01	0.10	0
ET	1	1700	319	0.19	0.19	0
WL	NA	NA	46	NA	NA	0
WR	1	1500	74	0.05	0.10	0
WT	1	1700	647	0.41	0.41	1

N/S component	~~0.10~~ 0.20
E/W component	~~0.41~~ 0.51
Rt.Tn. comp.	0.00
ICU	~~0.51~~ 0.71

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: PM PEAK HOUR

(CRONEW2.ICU/2-16-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	32	NA	.1 ~~NA~~	1
NR	NA	NA	164	NA	NA	0
NT	1	1700	45	0.14	0.14	0
SL	NA	NA	107	NA	NA	0
SR	NA	NA	23	NA	NA	0
ST	1	1700	153	0.17	0.17	1
EL	NA	NA	24	NA	NA	0
ER	1	1500	47	0.03	0.10	0
ET	1	1700	1329	0.80	0.80	1
WL	NA	NA	149	NA	~~NA~~ .10	1
WR	1	1500	68	0.05	0.10	0
WT	1	1700	431	0.34	0.34	0

N/S component	~~0.17~~ 0.27
E/W component	~~0.80~~ 0.90
Rt.Tn. comp.	0.00
ICU	~~0.97~~ 1.17

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATBER2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	47	NA	NA	0
NR	NA	NA	12	NA	NA	0
NT	2	3400	133	0.06	0.10	0
SL	NA	NA	15	NA	NA	0
SR	NA	NA	17	NA	NA	0
ST	2	3400	109	0.04	0.10	0
EL	NA	NA	15	NA	~~NA~~ 0.101	
ER	1	1500	38	0.03	0.10	0
ET	1	1700	34	0.03	0.10	0
WL	NA	NA	50	NA	NA	0
WR	1	1500	49	0.03	0.10	0
WT	1	1700	698	0.44	0.44	1

N/S component	~~0.10~~ 0.20
E/W component	~~0.44~~ 0.54
Rt.Tn. comp.	0.00
ICU	~~0.54~~ 0.74

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATBER2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	46	NA	NA	0
NR	NA	NA	32	NA	NA	0
NT	2	3400	126	0.06	0.10	0
SL	NA	NA	36	NA	NA	0
SR	NA	NA	34	NA	NA	0
ST	2	3400	209	0.08	0.10	0
EL	NA	NA	35	NA	~~NA~~ .101	
ER	1	1500	51	0.03	0.10	0
ET	1	1700	111	0.09	0.10	0
WL	NA	NA	175	NA	NA	0
WR	1	1500	26	0.02	0.10	0
WT	1	1700	457	0.37	0.37	1

N/S component	~~0.10~~ 0.20
E/W component	~~0.37~~ 0.47
Rt.Tn. comp.	0.00
ICU	~~0.47~~ 0.67

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: AM PEAK HOUR

(LOGCR02.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	8	NA	NA	1
NR	NA	NA	138	NA	NA	0
NT	2	3400	130	0.08	0.10	0
SL	NA	NA	101	NA	NA	0
SR	NA	NA	146	NA	NA	0
ST	2	3400	492	0.22	0.22	1
EL	NA	NA	69	NA	NA	1
ER	1	1500	166	0.11	0.11	0
ET	1	1700	361	0.25	0.25	0
WL	NA	NA	219	NA	NA	0
WR	1	1500	227	0.15	0.15	0
WT	1	1700	551	0.45	0.45	1

N/S component	0.32
E/W component	0.55
Rt.Tn. comp.	0.00
ICU	0.87

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: PM PEAK HOUR

(LOGCR02.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	10	NA	NA	1
NR	NA	NA	466	NA	NA	0
NT	2	3400	263	0.22	0.22	0
SL	NA	NA	203	NA	NA	0
SR	NA	NA	80	NA	NA	0
ST	2	3400	597	0.26	0.26	1
EL	NA	NA	97	NA	NA	0
ER	NA	NA	501	NA	NA	0
ET	1	1700	1189	1.05	1.05	1
WL	NA	NA	208	NA	NA	1
WR	1	1500	226	0.15	0.15	0
WT	1	1700	566	0.46	0.46	0

N/S component	0.36
E/W component	1.15
Rt.Tn. comp.	0.00
ICU	1.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: AM PEAK HOUR

(CROMAIN2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	36	NA	~~NA~~ .10	1
NR	1	1500	100	0.07	0.10	0
NT	1	1700	64	0.06	0.10	0
SL	NA	NA	49	NA	NA	0
SR	NA	NA	12	NA	NA	0
ST	1	1700	124	0.11	0.11	1
EL	NA	NA	31	NA	~~NA~~ .10	1
ER	1	1500	69	0.05	0.10	0
ET	1	1700	416	0.26	0.26	0
WL	NA	NA	66	NA	NA	0
WR	NA	NA	95	NA	NA	0
WT	1	1700	354	0.30	0.30	1

N/S component ~~0.11~~ .21
E/W component ~~0.30~~ .40
Rt.Tn. comp. 0.00

ICU ~~0.41~~ 0.61

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: PM PEAK HOUR

(CROMAIN2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	109	NA	~~NA~~ .10	1
NR	1	1500	317	0.21	0.21	0
NT	1	1700	97	0.12	0.12	0
SL	NA	NA	206	NA	NA	0
SR	NA	NA	24	NA	NA	0
ST	1	1700	257	0.29	0.29	1
EL	NA	NA	40	NA	NA	0
ER	1	1500	110	0.07	0.10	0
ET	1	1700	664	0.41	0.41	1
WL	NA	NA	159	0.09	0.10	1
WR	NA	NA	54	NA	NA	0
WT	1	1700	477	0.31	0.31	0

N/S component ~~0.29~~ .39
E/W component 0.51
Rt.Tn. comp. 0.00

ICU ~~0.80~~ 0.90

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CROHAR2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	124	0.08	0.10	1
NR	1	1500	72	0.05	0.10	0
NT	2	3400	430	0.13	0.13	0
SL	1	1500	103	0.07	0.10	0
SR	NA	NA	512	NA	NA	0
ST	2	3400	567	0.32	0.32	1
EL	NA	NA	51	NA	NA	1
ER	NA	NA	18	NA	NA	0
ET	1	1700	80	0.09	0.10	0
WL	NA	NA	64	NA	NA	0
WR	1	1500	151	0.10	0.10	0
WT	1	1700	299	0.21	0.21	1

N/S component	0.42
E/W component	0.31
Rt.Tn. comp.	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CROHAR2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	45	0.03	0.10	1
NR	1	1500	112	0.07	0.10	0
NT	2	3400	662	0.19	0.19	0
SL	1	1500	349	0.23	0.23	0
SR	NA	NA	128	NA	NA	0
ST	2	3400	1161	0.38	0.38	1
EL	NA	NA	259	NA	NA	0
ER	NA	NA	142	NA	NA	0
ET	1	1700	525	0.54	0.54	1
WL	NA	NA	73	0.09	0.10	1
WR	1	1500	255	0.17	0.17	0
WT	1	1700	81	0.05	0.10	0

N/S component	0.48
E/W component	0.64
Rt.Tn. comp.	0.00
ICU	1.12

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NAT262.ICU/2-22-91)

FUTURE CONDITIONS

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	5	NA	NA	0
NR	NA	NA	205	NA	NA	0
NT	1	1700	18	0.13	0.13	1
SL	NA	NA	20	NA	~~NA~~ .10	1
SR	1	1500	1	0.00	0.10	0
ST	1	1700	14	0.02	0.10	0
EL	NA	NA	15	NA	~~NA~~ .10	1
ER	1	1500	7	0.00	0.10	0
ET	1	1700	101	0.07	0.10	0
WL	NA	NA	145	NA	NA	0
WR	1	1500	63	0.04	0.10	0
WT	1	1700	363	0.30	0.30	1

N/S component	~~0.13~~ 0.23
E/W component	~~0.30~~ .40
Rt.Tn. comp.	0.00
ICU	~~0.43~~ 0.63

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NAT262.ICU/2-22-91)

FUTURE CONDITIONS

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	15	NA	NA	0
NR	NA	NA	365	NA	NA	0
NT	1	1700	90	0.28	0.28	1
SL	NA	NA	96	NA	~~NA~~ .10	1
SR	1	1500	7	0.00	0.10	0
ST	1	1700	24	0.07	0.10	0
EL	NA	NA	19	NA	NA	0
ER	1	1500	23	0.02	0.10	0
ET	1	1700	395	0.24	0.24	1
WL	NA	NA	169	0.09	0.10	1
WR	1	1500	130	0.09	0.10	0
WT	1	1700	273	0.16	0.16	0

N/S component	~~0.28~~ 0.38
E/W component	0.34
Rt.Tn. comp.	0.00
ICU	~~0.62~~ 0.72

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATSIG2.ICU/2-25-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	29	NA	NA	0
NR	NA	NA	7	NA	NA	0
NT	2	3400	158	0.06	0.10	0
SL	NA	NA	15	NA	NA	0
SR	NA	NA	49	NA	NA	0
ST	2	3400	87	0.04	0.10	0
EL	NA	NA	69	NA	NA	0
ER	NA	NA	33	NA	NA	0
ET	1	1700	151	0.15	0.15	1
WL	NA	NA	11	NA	NA	1
WR	NA	NA	36	NA	NA	0
WT	1	1700	171	0.13	0.13	0

N/S component ~~0.10~~ .20
E/W component ~~0.15~~ .25
Rt.Tn. comp. 0.00

ICU ~~0.25~~ .45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATSIG2.ICU/2-25-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	24	NA	NA	0
NR	NA	NA	27	NA	NA	0
NT	2	3400	182	0.07	0.10	0
SL	NA	NA	44	NA	NA	0
SR	NA	NA	80	NA	NA	0
ST	2	3400	178	0.09	0.10	0
EL	NA	NA	105	NA	NA	0
ER	NA	NA	50	NA	NA	0
ET	1	1700	251	0.24	0.24	1
WL	NA	NA	12	NA	NA	1
WR	NA	NA	29	NA	NA	0
WT	1	1700	179	0.13	0.13	0

N/S component ~~0.10~~ .20
E/W component ~~0.24~~ .34
Rt.Tn. comp. 0.00

ICU ~~0.34~~ .54

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: AM PEAK HOUR

(NATSAM2.ICU/2-25-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	69	NA	NA	0
NR	NA	NA	14	NA	NA	0
NT	2	3400	92	0.05	0.10	0
SL	NA	NA	6	NA	NA	0
SR	NA	NA	44	NA	NA	0
ST	2	3400	54	0.03	0.10	0
EL	NA	NA	114	NA	NA	0
ER	NA	NA	30	NA	NA	0
ET	1	1700	103	0.15	0.15	1
WL	NA	NA	18	NA	NA	1
WR	NA	NA	28	NA	NA	0
WT	1	1700	95	0.08	0.10	0

N/S component ~~0.10~~ .20
E/W component ~~0.15~~ .25
Rt.Tn. comp. 0.00

ICU ~~0.25~~ .45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: PM PEAK HOUR

(NATSAM2.ICU/2-25-91)

FUTURE CONDITIONS

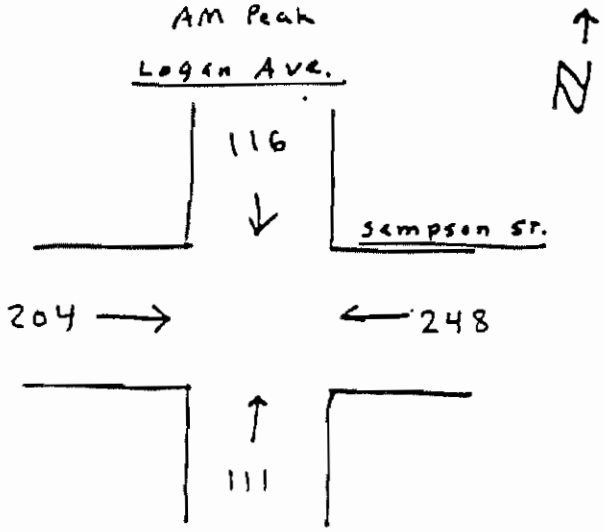
Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	58	NA	NA	0
NR	NA	NA	33	NA	NA	0
NT	2	3400	121	0.06	0.10	0
SL	NA	NA	42	NA	NA	0
SR	NA	NA	148	NA	NA	0
ST	2	3400	166	0.10	0.10	0
EL	NA	NA	104	NA	NA	0
ER	NA	NA	74	NA	NA	0
ET	1	1700	305	0.28	0.28	1
WL	NA	NA	35	NA	NA	1
WR	NA	NA	35	NA	NA	0
WT	1	1700	136	0.12	0.12	0

N/S component ~~0.10~~ .20
E/W component ~~0.28~~ .38
Rt.Tn. comp. 0.00

ICU ~~0.38~~ .58

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

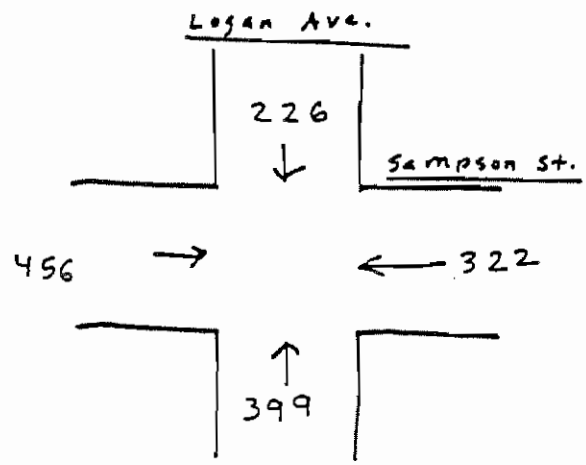
AM Peak



Lane Configuration: 2 x 4
Demand Split: 65/35
Total Volume: 679
Max. LOS C Volume
from Table 10-7: 1,630

LOS is better than C

PM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 1,403
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,200
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 18

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
Logan Ave./Sampson St.
Future Conditions

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATCR02.ICU/2-25-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	54	NA	NA	0
NR	NA	NA	68	NA	NA	0
NT	2	3400	83	0.06	0.10	0
SL	NA	NA	71	NA	NA	0
SR	NA	NA	23	NA	NA	0
ST	2	3400	62	0.05	0.10	0
EL	NA	NA	53	NA	NA	1
ER	NA	NA	11	NA	NA	0
ET	1	1700	306	0.22	0.22	0
WL	NA	NA	41	NA	NA	0
WR	NA	NA	98	NA	NA	0
WT	1	1700	593	0.43	0.43	1

N/S component	~~0.10~~ .20
E/W component	~~0.43~~ .53
Rt.Tn. comp.	0.00
ICU	~~0.53~~ .73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(NATCR02.ICU/2-25-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	58	NA	NA	1
NR	NA	NA	189	NA	NA	0
NT	2	3400	77	0.10	0.10	0
SL	NA	NA	211	NA	NA	0
SR	NA	NA	34	NA	NA	0
ST	2	3400	186	0.13	0.13	1
EL	NA	NA	163	NA	NA	0
ER	NA	NA	34	NA	NA	0
ET	1	1700	1401	0.94	0.94	1
WL	NA	NA	153	NA	NA	1
WR	NA	NA	98	NA	NA	0
WT	1	1700	593	0.50	0.50	0

N/S component	~~0.13~~ .23
E/W component	~~0.94~~ 1.04
Rt.Tn. comp.	0.00
ICU	~~1.07~~ 1.27

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 SB (Beardsley St.)
DATE: 2/12/91
TIME: AM PEAK HOUR

(LOGBER2.ICU/3-8-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	107	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	302	0.24	0.24	1
SL	NA	NA	19	NA	NA	1
SR	NA	NA	0	NA	NA	0
ST	1	1700	203	0.13	0.13	0
EL	1	1500	31	0.02	0.10	NA
ER	1	1500	45	0.03	0.10	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	279	NA	NA	0
WR	1	1500	69	0.05	0.10	0
WT	1	1700	752	0.61	0.61	1

N/S component	0.34
E/W component	0.61
Rt.Tn. comp.	0.00
ICU	0.95

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 SB (Beardsley St.)
DATE: 2/12/91
TIME: PM PEAK HOUR

LOGBER2.ICU/3-8-91

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	84	NA	NA	1
NR	NA	NA	0	NA	NA	0
NT	1	1700	311	0.23	0.23	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	45	NA	NA	0
ST	1	1700	498	0.32	0.32	1
EL	1	1500	39	0.03	0.10	NA
ER	1	1500	183	0.12	0.12	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	324	NA	NA	0
WR	1	1500	43	0.03	0.10	0
WT	1	1700	537	0.51	0.51	1

N/S component	0.42
E/W component	0.62
Rt.Tn. comp.	0.00
ICU	1.04

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: AM PEAK HOUR

(CROKER2.ICU/3-7-91)

Movement	No. Lanes	Cap.	FUTURE Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	1106	NA	NA	0
NR	1	1500	98	0.07	0.10	0
NT	2	3400	137	0.37	0.37	1
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	315	NA	NA	0
ER	NA	NA	100	NA	NA	0
ET	1	1700	175	0.35	0.35	1
WL	NA	NA	100	NA	NA	1
WR	NA	NA	23	NA	NA	0
WT	1	1700	384	0.30	0.30	0

N/S component	0.37
E/W component	0.45
Rt.Tn. comp.	0.00
ICU	0.82

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: PM PEAK HOUR

(CROKER2.ICU/3-7-91)

Movement	No. Lanes	Cap.	FUTURE Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	866	NA	NA	0
NR	1	1500	96	0.06	0.10	0
NT	2	3400	89	0.28	0.28	1
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	1076	NA	NA	0
ER	NA	NA	0	NA	NA	0
ET	1	1700	517	0.94	0.94	1
WL	NA	NA	0	NA	NA	1
WR	NA	NA	26	NA	NA	0
WT	1	1700	484	0.30	0.30	0

N/S component	0.28
E/W component	1.04
Rt.Tn. comp.	0.00
ICU	1.32

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

APPENDIX E

ALTERNATIVE 1:
- TRAFFIC SIGNAL WARRANTS
- INTERSECTION CAPACITY WORKSHEETS

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
X 1	2 or more	8,000 (8,350)	5,600	3,200 (4,650)	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000 (8,350)	8,400	1,600 (4,650)	1,120
		80% = 9,600			

3. Combination

Satisfied _____ Not Satisfied ___X___

No one warrant satisfied but following warrants fulfilled 80% or more ___ Yes (1) ___ No (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 1

Beardsley St. / Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
X 1	2 or more	8,000 (20,900)	5,600	3,200 (3,150)	2,240
				80% = 2,560	

2. Interruption of Continuous Traffic

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
X 1	2 or more	12,000 (20,900)	8,400	1,600 (3,150)	1,120

3. Combination

Satisfied ____X____ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ Yes (1) Yes (2)

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 1
Crosby St./Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	8,000	5,600	2,400	1,680
2 or more	1	9,600	6,720	2,400	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
X 1	2 or more	8,000 (10,700)	5,600	3,200 (4,650)	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach		Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	1	12,000	8,400	1,200	850
2 or more	1	14,400	10,080	1,200	850
2 or more	2 or more	14,400	10,080	1,600	1,120
X 1	2 or more	12,000 (10,700)	8,400	1,600 (4,650)	1,120
		80-/- = 9,600			

3. Combination

Satisfied ___X___ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ Yes (1) ___ Yes (2)

2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 1

National Ave./Beardsley St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	8,000	5,600	2,400	1,680
	2 or more	1	9,600	6,720	2,400	1,680
	2 or more	2 or more	9,600	6,720	3,200	2,240
X	1	2 or more	8,000 (24,750)	5,600	3,200 (3,150)	2,240
					80% = 2,560	

2. Interruption of Continuous Traffic

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	12,000	8,400	1,200	850
	2 or more	1	14,400	10,080	1,200	850
	2 or more	2 or more	14,400	10.080	1,600	1,120
X	1	2 or more	12,000 (24,750)	8,400	1,600 (3,150)	1,120

3. Combination

Satisfied ___X___ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ Yes (1) Yes (2)

2 Warrants	2 Warrants

NOTE:

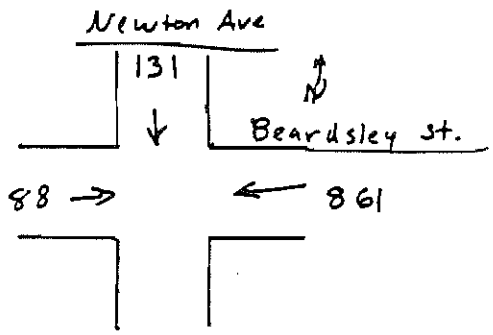
1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 1

National Ave./Crosby St.

AM Peak



Lane Configuration: 1 x 3*

Demand Split: 85/15

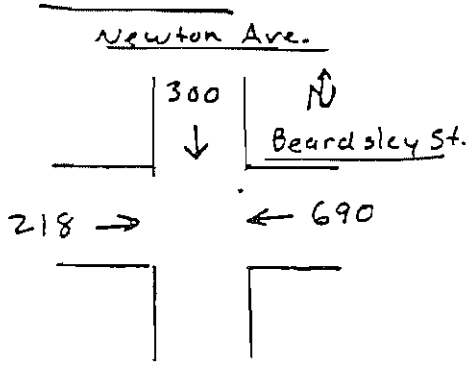
Total Volume: 1,080

Max. LOS C Volume

from Table A-1: < 816

LOS is worse than C

PM Peak



Lane Configuration: 1 x 3*

Demand Split: 75/25

Total Volume: 1,208

Max. LOS C Volume

from Table A-1: < 816

LOS is worse than C

* 1 by 2 lane configuration from Table A-1 was used to determine LOS. (Table A-1 is presented on page B-77)

BASMACIYAN-DARNELL, INC.

Three-Way Stop-Controlled Intersection Capacity Analysis
Newton Ave./Beardsley st.
Alternative 1

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: AM PEAK HOUR

(CRONEW3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	NA
NR	NA	NA	0	NA	NA	NA
NT	NA	NA	0	NA	NA	NA
SL	NA	NA	108	NA	NA	NA
SR	NA	NA	33	NA	NA	0
ST	3	5100	109	0.05	0.10	NA
EL	NA	NA	0	NA	NA	0
ER	NA	NA	47	NA	NA	0
ET	1	1700	330	0.22	0.22	1
WL	1	1500	87	0.06	0.10	1
WR	NA	NA	0	NA	NA	0
WT	1	1700	647	0.38	0.38	0

N/S component	0.10
E/W component	0.32
Rt.Tn. comp.	0.00
ICU	0.42

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: PM PEAK HOUR

(CRONEW3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	NA
NR	NA	NA	0	NA	NA	NA
NT	NA	NA	0	NA	NA	NA
SL	NA	NA	175	NA	NA	NA
SR	NA	NA	59	NA	NA	0
ST	3	5100	366	0.12	0.12	NA
EL	NA	NA	0	NA	NA	0
ER	NA	NA	47	NA	NA	0
ET	1	1700	1353	0.82	0.82	1
WL	1	1500	302	0.20	0.20	1
WR	NA	NA	0	NA	NA	0
WT	1	1700	431	0.25	0.25	0

N/S component	0.12
E/W component	1.02
Rt.Tn. comp.	0.00
ICU	1.14

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATBER3.ICU/3-7-91)

ALTERNATIVE 1

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	12	NA	NA	0
NR	NA	NA	47	NA	NA	0
NT	3	5100	218	0.05	0.10	1
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	1	1500	31	0.02	0.10	1
ER	NA	NA	0	NA	NA	0
ET	1	1700	49	0.03	0.10	0
WL	NA	NA	0	NA	NA	0
WR	1	1500	78	0.05	0.10	0
WT	1	1700	719	0.42	0.42	1

N/S component	0.20
E/W component	0.52
Rt.Tn. comp.	0.00
ICU	0.72

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATBER3.ICU/3-7-91)

ALTERNATIVE 1

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	46	NA	NA	0
NR	NA	NA	32	NA	NA	0
NT	3	5100	218	0.06	0.10	1
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	68	NA	NA	NA
ST	NA	NA	211	NA	NA	NA
EL	1	1500	55	0.04	0.10	1
ER	NA	NA	0	NA	NA	0
ET	1	1700	137	0.08	0.10	0
WL	NA	NA	0	NA	NA	0
WR	1	1500	56	0.04	0.10	0
WT	1	1700	602	0.35	0.35	1

N/S component	0.20
E/W component	0.45
Rt.Tn. comp.	0.00
ICU	0.65

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATSIG3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	58	0.04	0.10	0
NR	NA	NA	7	NA	NA	0
NT	2	3400	180	0.06	0.10	1
SL	1	1500	15	0.01	0.10	1
SR	1	1500	136	0.09	0.10	1
ST	NA	NA	0	NA	NA	0
EL	NA	NA	0	NA	NA	0
ER	NA	NA	36	NA	NA	0
ET	1	1700	182	0.13	0.13	0
WL	NA	NA	69	NA	NA	0
WR	NA	NA	0	NA	NA	0
WT	1	1700	151	0.13	0.13	0

N/S component	0.20
E/W component	0.23
Rt.Tn. comp.	0.00
ICU	0.43

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATSIG3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	1	1500	54	0.04	0.10	0
NR	NA	NA	27	NA	NA	0
NT	2	3400	220	0.07	0.10	1
SL	1	1500	44	0.03	0.10	1
SR	1	1500	258	0.17	0.17	1
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	0	NA	NA	1
ER	NA	NA	29	NA	NA	0
ET	1	1700	191	0.13	0.13	0
WL	NA	NA	105	NA	NA	0
WR	NA	NA	0	NA	NA	0
WT	1	1700	251	0.21	0.21	1

N/S component	0.20
E/W component	0.31
Rt.Tn. comp.	0.00
ICU	0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: AM PEAK HOUR

(NATSAM3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	54	NA	NA	NA
NR	NA	NA	14	NA	NA	0
NT	3	5100	102	0.03	0.10	NA
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	18	NA	NA	1
ER	NA	NA	43	NA	NA	0
ET	1	1700	80	0.08	0.10	0
WL	NA	NA	124	NA	NA	0
WR	NA	NA	70	NA	NA	0
WT	1	1700	103	0.17	0.17	1

N/S component	0.10
E/W component	~~0.17~~ .27
Rt.Tn. comp.	0.00
ICU	~~0.27~~ 0.37

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: PM PEAK HOUR

(NATSAM3.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	43	NA	NA	NA
NR	NA	NA	33	NA	NA	0
NT	3	5100	136	0.04	0.10	NA
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	35	NA	NA	1
ER	NA	NA	50	NA	NA	0
ET	1	1700	121	0.12	0.12	0
WL	NA	NA	154	NA	NA	0
WR	NA	NA	134	NA	NA	0
WT	1	1700	315	0.35	0.35	1

N/S component	0.10
E/W component	~~0.35~~ .45
Rt.Tn. comp.	0.00
ICU	~~0.45~~ 0.55

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movesen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATCR03.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	69	NA	NA	NA
NR	NA	NA	68	NA	NA	0
NT	3	5100	98	0.05	0.10	NA
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	0	NA	NA	0
ER	NA	NA	172	NA	NA	0
ET	1	1700	560	0.43	0.43	1
WL	NA	NA	74	NA	NA	1
WR	NA	NA	0	NA	NA	0
WT	1	1700	339	0.24	0.24	0

N/S component	0.10
E/W component	~~0.43~~ 0.53
Rt.Tn. comp.	0.00
ICU	~~0.53~~ 0.63

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(NATCR03.ICU/2-27-91)

ALTERNATIVE 1

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	73	NA	NA	NA
NR	NA	NA	189	NA	NA	0
NT	3	5100	92	0.07	0.10	NA
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	NA	NA	0	NA	NA	1
ER	NA	NA	184	NA	NA	0
ET	1	1700	594	0.46	0.46	0
WL	NA	NA	202	NA	NA	0
WR	NA	NA	0	NA	NA	0
WT	1	1700	1454	0.97	0.97	1

N/S component	0.10
E/W component	~~0.97~~ 1.07
Rt.Tn. comp.	0.00
ICU	~~1.07~~ 1.17

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

APPENDIX F

ALTERNATIVE 2:
- TRAFFIC SIGNAL WARRANTS
- INTERSECTION CAPACITY WORKSHEETS

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	8,000	5,600	2,400	1,680
X 2 or more	1	9,600 (16,500)	6,720	2,400 (2050)	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	12,000	8,400	1,200	850
X 2 or more	1	14,400 (16,500)	10,080	1,200 (2050)	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ___X___ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES 1 ___ YES 2 ___

2 Warrants | 2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Alternative 2

Beardsley St. / Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN X RURAL ____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied X Not Satisfied ____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	8,000	5,600	2,400	1,680
X 2 or more	1	9,600 (13,100)	6,720	2,400 (3,000)	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ____ Not Satisfied X

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	12,000	8,400	1,200	850
X 2 or more	1	14,400 (13,100)	10,080	1,200 (3,000)	850
2 or more	2 or more	14,400	10,080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied X Not Satisfied ____

2 Warrants | 2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES 1 YES 2

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 2
Crosby St./Newton Ave.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ___X___ Not Satisfied _____

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	8,000	5,600	2,400	1,680
X2 or more	1	9,600 (2,900)	6,720	2,400 (3,500)	1,680
2 or more	2 or more	9,600	6,720	3,200	2,240
1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied _____ Not Satisfied ___X___

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
1	1	12,000	8,400	1,200	850
X2 or more	1	14,400 (2,900)	10,080	1,200 (3,500)	850
2 or more	2 or more	14,400	10.080	1,600	1,120
1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ___X___ Not Satisfied _____

	Urban	Rural
	2 Warrants	2 Warrants

No one warrant satisfied but following warrants fulfilled 80% or more ___ YES 1 ___ YES 2

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 2

National Ave./Beardsley St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ___X___ RURAL _____

1. Minimum Vehicular	Minimum Requirements EADT			
Satisfied ___X___ Not Satisfied _____	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 / 1	8,000	5,600	2,400	1,680
*2 or more / 1	9,600 (15,900)	6,720	2,400 (4,125)	1,680
2 or more / 2 or more	9,600	6,720	3,200	2,240
1 / 2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic	Vehicles per day on major street (total of both approaches)		Vehicles per day on higher-volume minor-street approach (one direction only)	
Satisfied ___X___ Not Satisfied _____				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 / 1	12,000	8,400	1,200	850
*2 or more / 1	14,400 (15,900)	10,080	1,200 (4,125)	850
2 or more / 2 or more	14,400	10,080	1,600	1,120
1 / 2 or more	12,000	8,400	1,600	1,120

3. Combination		
Satisfied ___X___ Not Satisfied _____	2 Warrants	2 Warrants
No one warrant satisfied but following warrants fulfilled 80% or more ___ _____ 1 _____ 2		

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BASMACIYAN-DARNELL, INC.

Alternative 2

National Ave./Crosby St.

Figure 9-1C

TRAFFIC SIGNAL WARRANTS

(Based on Estimated Average Daily Traffic – See Note 2)

URBAN ____X____ RURAL _____

Minimum Requirements EADT

1. Minimum Vehicular

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	8,000	5,600	2,400	1,680
X	2 or more	1	9,600 (9,100)	6,720	2,400 (7,450)	1,680
	2 or more	2 or more	9,600	6,720	3,200	2,240
	1	2 or more	8,000	5,600	3,200	2,240

2. Interruption of Continuous Traffic

Satisfied ____X____ Not Satisfied _____

Number of lanes for moving traffic on each approach

	Major Street	Minor Street	Vehicles per day on major street (total of both approaches) Urban	Rural	Vehicles per day on higher-volume minor-street approach (one direction only) Urban	Rural
	1	1	12,000	8,400	1,200	850
X	2 or more	1	14,400 (19,100)	10,080	1,200 (7,450)	850
	2 or more	2 or more	14,400	10,080	1,600	1,120
	1	2 or more	12,000	8,400	1,600	1,120

3. Combination

Satisfied ____X____ Not Satisfied _____

No one warrant satisfied but following warrants fulfilled 80% or more ___ _____ 1 _____ 2

Urban	Rural
2 Warrants	2 Warrants

NOTE:

1. Left turn movements from the major street may be included with minor street volumes if a separate signal phase is to be provided for the left-turn movement.
2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

BDI

BASMACIYAN-DARNELL, INC.

Alternative 2

Logan Ave. / I-5 SB Off Ramp (Beardsley)

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Beardsley St./Newton Ave.
DATE: 2/14/91
TIME: AM PEAK HOUR

(BERNEW4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	17	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	43	0.04	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	18	NA	NA	0
ST	1	1700	16	0.02	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	195	NA	NA	NA
WR	NA	NA	103	NA	NA	0
WT	2	3400	1014	0.39	0.39	NA

N/S component	0.20
E/W component	0.39
Rt.Tn. comp.	0.00
ICU	0.59

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Beardsley St./Newton Ave.
DATE: 2/14/91
TIME: PM PEAK HOUR

(BERNEW4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	46	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	63	0.06	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	27	NA	NA	0
ST	1	1700	83	0.06	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	323	NA	NA	NA
WR	NA	NA	60	NA	NA	0
WT	2	3400	634	0.30	0.30	NA

N/S component	0.20
E/W component	0.30
Rt.Tn. comp.	0.00
ICU	0.50

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CRONEW4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	71	NA	NA	0
NT	1	1700	11	0.05	0.10	0
SL	NA	NA	72	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	195	0.16	0.16	1
EL	NA	NA	19	NA	NA	0
ER	NA	NA	17	NA	NA	0
ET	2	3400	357	0.12	0.12	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.26
E/W component	0.12
Rt.Tn. comp.	0.00
ICU	0.38

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CRONEW4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	189	NA	NA	0
NT	1	1700	20	0.12	0.12	0
SL	NA	NA	147	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	359	0.30	0.30	1
EL	NA	NA	44	NA	NA	0
ER	NA	NA	60	NA	NA	0
ET	2	3400	1464	0.46	0.46	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.40
E/W component	0.46
Rt.Tn. comp.	0.00
ICU	0.86

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATBER4.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	100	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	2	3400	137	0.07	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	40	NA	NA	0
ST	2	3400	101	0.04	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	189	NA	NA	0
WR	NA	NA	143	NA	NA	0
WT	2	3400	1171	0.44	0.44	1

N/S component	0.20
E/W component	0.44
Rt.Tn. comp.	0.00
ICU	0.64

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATBER4.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	105	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	2	3400	149	0.07	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	68	NA	NA	0
ST	2	3400	211	0.08	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	361	NA	NA	0
WR	NA	NA	56	NA	NA	0
WT	2	3400	897	0.39	0.39	1

N/S component	0.20
E/W component	0.39
Rt.Tn. comp.	0.00
ICU	0.59

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: AM PEAK HOUR

(LOGCR04.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	138	NA	NA	0
NT	2	3400	138	0.08	0.10	0
SL	NA	NA	101	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	492	0.17	0.17	1
EL	NA	NA	90	NA	NA	0
ER	NA	NA	188	NA	NA	0
ET	2	3400	51	0.10	0.10	1
WL	1	1500	219	0.15	0.15	1
WR	1	1500	778	0.52	0.52	1
WT	NA	NA	0	NA	NA	0

N/S component	0.27
E/W component	0.25
Rt.Tn. comp.	0.27
ICU	0.79

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: PM PEAK HOUR

(LOGCR04.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	466	NA	NA	0
NT	2	3400	273	0.22	0.22	0
SL	NA	NA	203	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	597	0.24	0.24	1
EL	NA	NA	178	NA	NA	0
ER	NA	NA	541	NA	NA	0
ET	2	3400	1274	0.59	0.59	1
WL	1	1500	208	0.14	0.14	1
WR	1	1500	792	0.53	0.53	1
WT	NA	NA	0	NA	NA	0

N/S component	0.34
E/W component	0.73
Rt.Tn. comp.	0.00
ICU	1.07

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: AM PEAK HOUR

(CROMAIN4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	1	1500	100	0.07	0.10	0
NT	1	1700	64	0.04	0.10	0
SL	NA	NA	83	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	282	0.21	0.21	1
EL	NA	NA	31	NA	NA	0
ER	NA	NA	69	NA	NA	0
ET	2	3400	443	0.16	0.16	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.31
E/W component	0.16
Rt.Tn. comp.	0.00
ICU	0.47

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: PM PEAK HOUR

(CROMAIN4.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	1	1500	317	0.21	0.21	1
NT	1	1700	97	0.06	0.10	0
SL	NA	NA	295	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	471	0.45	0.45	1
EL	NA	NA	40	NA	NA	0
ER	NA	NA	110	NA	NA	0
ET	2	3400	742	0.26	0.26	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.45
E/W component	0.26
Rt.Tn. comp.	0.00
ICU	0.71

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CROHAR4.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	124	0.08	0.10	1
NR	1	1500	72	0.05	0.10	0
NT	2	3400	377	0.11	0.11	0
SL	1	1500	103	0.07	0.10	0
SR	NA	NA	512	NA	NA	0
ST	2	3400	535	0.31	0.31	1
EL	NA	NA	51	NA	NA	NA
ER	NA	NA	18	NA	NA	0
ET	1	1700	80	0.09	0.10	NA
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.41
E/W component	0.10
Rt.Tn. comp.	0.00
ICU	0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CROHAR4.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	45	0.03	0.10	1
NR	1	1500	112	0.07	0.10	0
NT	2	3400	582	0.17	0.17	0
SL	1	1500	349	0.23	0.23	0
SR	NA	NA	1084	NA	NA	0
ST	2	3400	128	0.36	0.36	1
EL	NA	NA	259	NA	NA	NA
ER	NA	NA	142	NA	NA	0
ET	1	1700	525	0.54	0.54	NA
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.46
E/W component	0.54
Rt.Tn. comp.	0.00
ICU	1.00

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATCR04.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	0
NR	NA	NA	66	NA	NA	0
NT	2	3400	77	0.04	0.10	0
SL	NA	NA	86	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	201	0.08	0.10	0
EL	NA	NA	57	NA	NA	0
ER	NA	NA	26	NA	NA	0
ET	2	3400	337	0.12	0.12	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.20
E/W component	0.12
Rt.Tn. comp.	0.00
ICU	0.32

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(NATCR04.ICU/2-28-91)

ALTERNATIVE 2

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	205	NA	NA	0
NT	2	3400	61	0.08	0.10	0
SL	NA	NA	247	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	375	0.18	0.18	1
EL	NA	NA	186	NA	NA	0
ER	NA	NA	78	NA	NA	0
ET	2	3400	1534	0.53	0.53	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.28
E/W component	0.53
Rt.Tn. comp.	0.00
ICU	0.81

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 (Beardsley St.)
DATE: 2/7/91
TIME: AM PEAK HOUR

(LOGI54.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	666	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	333	0.59	0.59	1
SL	NA	NA	0	NA	NA	1
SR	NA	NA	77	NA	NA	0
ST	1	1700	145	0.13	0.13	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	191	NA	NA	0
WR	NA	NA	69	NA	NA	0
WT	2	3400	840	0.32	0.32	1

N/S component	0.68
E/W component	0.32
Rt.Tn. comp.	0.00
ICU	1.00

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 (Beardsley St.)
DATE: 6/1/91
TIME: PM PEAK HOUR

(LOGI54.ICU/2-28-91)

ALTERNATIVE 2

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	660	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	393	0.62	0.62	1
SL	NA	NA	0	NA	NA	1
SR	NA	NA	77	NA	NA	0
ST	1	1700	466	0.32	0.32	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	276	NA	NA	0
WR	NA	NA	43	NA	NA	0
WT	2	3400	588	0.27	0.27	1

N/S component	0.72
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.99

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

APPENDIX G

MITIGATION MEASURES:
- INTERSECTION CAPACITY WORKSHEETS
- PROPOSED INTERSECTION CONFIGURATION SCHEMATIC

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: AM PEAK

(LOGSIG4I.ICU/3-20-91) ALTERNATIVE 2 (W/ MITIGATION)

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	0 ~~1~~	~~1500~~ NA	41	~~0.03~~ NA	~~0.10~~ NA	0
	LEFT	1	1500	123	~~0.08~~ 0.11	~~0.10~~ 0.11	1
Southbound	RIGHT	1	1500	198	0.13	0.13	0
	THROUGH	1	1700	166	0.10	0.10	1
Northbound	LEFT	1	1500	94	0.06	0.10	1
	THROUGH	1	1700	256	0.15	0.15	0

Eastbound	Component	~~0.10~~ 0.11
North/South	Component	0.20
Rt.Tn.	Component	0.00
	ICU	~~0.30~~ 0.31

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: PM PEAK

(LOGSIG4I.ICU/3-20-91) ALTERNATIVE 2 (W/ MITIGATION)

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	0 ~~1~~	~~1500~~ NA	161	~~0.11~~ NA	~~0.11~~ NA	0
	LEFT	1	1500	226	~~0.15~~ 0.26	~~0.15~~ 0.26	1
Southbound	RIGHT	1	1500	161	0.11	0.11	0
	THROUGH	1	1700	395	0.23	0.23	1
Northbound	LEFT	1	1500	48	0.03	0.10	1
	THROUGH	1	1700	348	0.20	0.20	0

Eastbound	Component	~~0.15~~ 0.26
North/South	Component	0.33
Rt.Tn.	Component	0.00
	ICU	~~0.48~~ 0.59

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 (Beardsley St.)
DATE: 2/7/91
TIME: AM PEAK HOUR

(LOGI54I.ICU/2-28-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	499	0.33	0.33	1
NR	NA	NA	0	NA	NA	0
NT	1	1500	500	0.33	0.33	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	77	NA	NA	0
ST	2	3400	145	0.07	0.10	1
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	191	NA	NA	0
WR	NA	NA	69	NA	NA	0
WT	2	3400	840	0.32	0.32	1

N/S component	0.43
E/W component	0.32
Rt.Tn. comp.	0.00
ICU	0.75

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 (Beardsley St.)
DATE: 6/1/91
TIME: PM PEAK HOUR

(LOGI54I.ICU/2-28-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	1	1500	526	0.35	0.35	1
NR	NA	NA	0	NA	NA	0
NT	1	1500	527	0.35	0.35	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	77	NA	NA	0
ST	2	3400	466	0.16	0.16	1
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	276	NA	NA	0
WR	NA	NA	43	NA	NA	0
WT	2	3400	588	0.27	0.27	1

N/S component	0.51
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.78

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: AM PEAK HOUR

(LOGCR04I.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	138	NA	NA	0
NT	2	3400	138	0.08	0.10	0
SL	NA	NA	101	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	492	0.17	0.17	1
EL	1	1500	90	0.06	0.10	0
ER	1	1500	188	0.13	0.13	1
ET	2	3400	51	0.02	0.10	1
WL	1	1500	219	0.15	0.15	1
WR	1	1500	778	0.52	0.52	1
WT	NA	NA	0	NA	NA	0

N/S component	0.27
E/W component	0.20
Rt.Tn. comp.	0.27
ICU	0.74

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: PM PEAK HOUR

(LOGCR04I.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	466	NA	NA	0
NT	2	3400	273	0.22	0.22	0
SL	NA	NA	203	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	597	0.24	0.24	1
EL	1	1500	178	0.12	0.12	0
ER	1	1500	541	0.36	0.36	0
ET	2	3400	1274	0.37	0.37	1
WL	1	1500	208	0.14	0.14	1
WR	1	1500	792	0.53	0.53	1
WT	NA	NA	0	NA	NA	0

N/S component	0.34
E/W component	0.53
Rt.Tn. comp.	0.00
ICU	0.87

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

TERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: AM PEAK HOUR

(CROKER41.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

ovemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.	
NL	1	1500	621	0.41	0.41	1	
NR	1	1500	98	0.07	0.10	0	
NT	1	1500	622	0.41	0.41	0	*
SL	NA	NA	0	NA	NA	NA	
SR	NA	NA	0	NA	NA	NA	
ST	NA	NA	0	NA	NA	NA	
EL	1	1500	163	0.11	0.11	1	
ER	NA	NA	0	NA	NA	0	
ET	2	3000	327	0.11	0.11	0	*
WL	NA	NA	0	NA	NA	0	
WR	NA	NA	23	NA	NA	0	
WT	2	3400	384	0.12	0.12	1	

N/S component	0.41
E/W component	0.23
Rt.Tn. comp.	0.00
ICU	0.64

·itical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
'\ - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: PM PEAK HOUR

(CROKER41.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

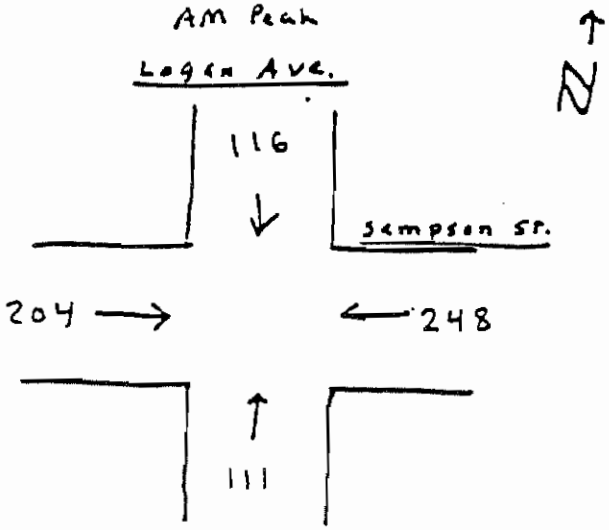
Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.	
NL	1	1500	477	0.32	0.32	1	
NR	1	1500	96	0.06	0.10	0	
NT	1	1500	478	0.32	0.32	0	*
SL	NA	NA	0	NA	NA	NA	
SR	NA	NA	0	NA	NA	NA	
ST	NA	NA	0	NA	NA	NA	
EL	1	1500	531	0.35	0.35	1	
ER	NA	NA	0	NA	NA	0	
ET	2	3000	1062	0.35	0.35	0	*
WL	NA	NA	0	NA	NA	0	
WR	NA	NA	26	NA	NA	0	
WT	2	3400	484	0.15	0.15	1	

N/S component	0.32
E/W component	0.50
Rt.Tn. comp.	0.00
ICU	0.82

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

* Indicates shared through/left lane. Volumes are adjusted to reflect lane use by left turning vehicles. See Figure 14 for recommended intersection configuration.

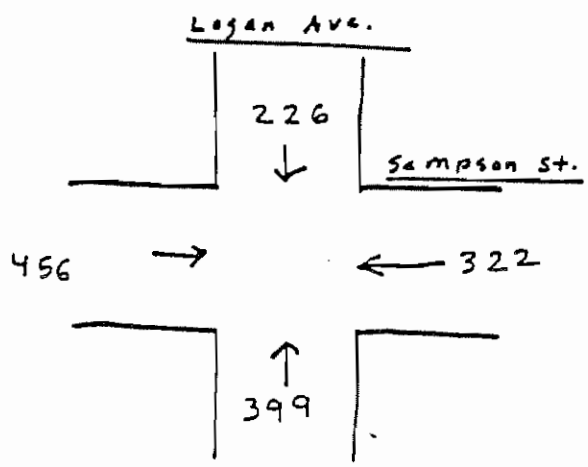
AM Peak



Lane Configuration: 2 x 4
Demand Split: 65/35
Total Volume: 679
Max. LOS C Volume
from Table 10-7: 1,630.

LOS is better than C

PM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 1,403
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,800	2,200
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
Logan Ave./Sampson St.
Alternative 2

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATSIG2.ICU/2-25-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	29	NA	NA	0
NR	NA	NA	7	NA	NA	0
NT	2	3400	158	0.06	0.10	0
SL	NA	NA	15	NA	NA	0
SR	NA	NA	49	NA	NA	0
ST	2	3400	87	0.04	0.10	0
EL	NA ~~1~~	NA ~~1500~~	69	NA ~~0.05~~	NA ~~0.10~~	1 ~~1~~ 0
ER	NA	NA	33	NA	NA	0
ET	1	1700	151	~~0.11~~ 0.15	~~0.11~~ 0.15	~~0~~ 1
WL	NA ~~1~~	NA ~~1500~~	11	NA ~~0.01~~	NA ~~0.10~~	~~0~~ 1
WR	NA	NA	36	NA	NA	0
WT	1	1700	171	~~0.12~~ 0.13	~~0.12~~ 0.13	~~1~~ 0

N/S component 0.20
E/W component ~~0.22~~ .25
Rt.Tn. comp. 0.00

ICU ~~0.42~~ 0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATSIG2.ICU/2-25-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	24	NA	NA	0
NR	NA	NA	27	NA	NA	0
NT	2	3400	182	0.07	0.10	0
SL	NA	NA	44	NA	NA	0
SR	NA	NA	80	NA	NA	0
ST	2	3400	178	0.09	0.10	0
EL	NA ~~1~~	NA ~~1500~~	105	NA ~~0.07~~	NA ~~0.10~~	0
ER	NA	NA	50	NA	NA	0
ET	1	1700	251	~~0.18~~ 0.24	~~0.18~~ 0.24	1
WL	NA ~~1~~	NA ~~1500~~	12	NA ~~0.01~~	NA ~~0.10~~	1
WR	NA	NA	29	NA	NA	0
WT	1	1700	179	~~0.12~~ 0.13	~~0.12~~ 0.13	0

N/S component 0.20
E/W component ~~0.28~~ 0.34
Rt.Tn. comp. 0.00

ICU ~~0.48~~ 0.54

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATBER4I.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	100	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	2	3400	137	0.07	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	40	NA	NA	0
ST	2	3400	101	0.04	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	189	NA	NA	0
WR	NA	NA	143	NA	NA	0
WT	3	~~5100~~ 4900	1171	~~0.29~~ 0.31	~~0.29~~ 0.31	1 *

N/S component 0.20
E/W component ~~0.29~~ 0.31
Rt.Tn. comp. 0.00

ICU ~~0.49~~ 0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATBER4I.ICU/3-20-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	105	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	2	3400	149	0.07	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	68	NA	NA	0
ST	2	3400	211	0.08	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	361	NA	NA	0
WR	NA	NA	56	NA	NA	0
WT	3	~~5100~~ 4900	897	~~0.26~~ 0.27	~~0.26~~ 0.27	1 *

N/S component 0.20
E/W component ~~0.26~~ 0.27
Rt.Tn. comp. 0.00

ICU ~~0.46~~ 0.47

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

* Indicates three-lane one-way approach with outside lanes shared by through and turning vehicles.

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

NTERSECTION: National Ave./Crosby St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATCR04.ICU/2-28-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	0
NR	NA	NA	66	NA	NA	0
NT	2	3400	77	0.04	0.10	0
SL	NA	NA	86	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	201	0.08	0.10	0
EL	NA	NA	57	NA	NA	0
ER	NA	NA	26	NA	NA	0
ET	3	5100	337	0.08	0.10	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.20
E/W component	0.10
Rt.Tn. comp.	0.00
ICU	0.30

ritical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
'A - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(NATCR04.ICU/2-28-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	205	NA	NA	0
NT	2	3400	61	0.08	0.10	0
SL	NA	NA	247	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	2	3400	375	0.18	0.18	1
EL	NA	NA	186	NA	NA	0
ER	NA	NA	78	NA	NA	0
ET	3	5100	1534	0.35	0.35	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.28
E/W component	0.35
Rt.Tn. comp.	0.00
ICU	0.63

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: AM PEAK HOUR

(NATSAM41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	69	NA	NA	0
NR	NA	NA	14	NA	NA	0
NT	2	3400	92	0.05	0.10	0
SL	NA	NA	6	NA	NA	0
SR	NA	NA	44	NA	NA	0
ST	2	3400	54	0.03	0.10	0
EL	~~NA~~ 1	~~1500~~ NA	114	~~0.08~~ NA	~~0.10~~ NA	0
ER	NA	NA	30	NA	NA	0
ET	1	1700	103	~~0.08~~ 0.15	~~0.10~~ 0.15	~~0~~ 1
WL	~~NA~~ 1	~~1500~~ NA	18	~~0.01~~ NA	~~0.10~~ NA	~~0~~ 1
WR	NA	NA	28	NA	NA	0
WT	1	1700	95	~~0.07~~ 0.08	0.10	0

N/S component 0.20
E/W component ~~0.20~~ 0.25
Rt.Tn. comp. 0.00

ICU ~~0.40~~ 0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: PM PEAK HOUR

(NATSAM41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	58	NA	NA	0
NR	NA	NA	33	NA	NA	0
NT	2	3400	121	0.06	0.10	0
SL	NA	NA	42	NA	NA	0
SR	NA	NA	148	NA	NA	0
ST	2	3400	166	0.10	0.10	0
EL	~~NA~~ 1	~~1500~~ NA	104	~~0.07~~ NA	~~0.10~~ NA	0
ER	NA	NA	74	NA	NA	0
ET	1	1700	305	~~0.22~~ 0.28	~~0.22~~ 0.28	1
WL	~~0~~ 1	~~1500~~ NA	35	~~0.02~~ NA	~~0.10~~ NA	1
WR	NA	NA	35	NA	NA	0
WT	1	1700	136	~~0.10~~ 0.12	~~0.10~~ 0.12	0

N/S component 0.20
E/W component ~~0.32~~ 0.38
Rt.Tn. comp. 0.00

ICU ~~0.52~~ 0.58

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

NTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NAT2641.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	5	NA	NA	0
NR	NA	NA	205	NA	NA	0
NT	2	3400	18	0.07	0.10	0
SL	NA	NA	20	NA	NA	0
SR	NA	NA	1	NA	NA	0
ST	2	3400	14	0.01	0.10	0
EL	NA	NA	15	NA	NA	1
ER	NA	NA	7	NA	NA	0
ET	2	3400	101	0.04	0.10	0
WL	NA	NA	145	NA	NA	0
WR	NA	NA	63	NA	NA	0
WT	2	3400	363	0.17	0.17	1

N/S component	0.20
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.47

ritical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NAT2641.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	15	NA	NA	0
NR	NA	NA	365	NA	NA	0
NT	2	3400	90	0.14	0.14	1
SL	NA	NA	96	NA	NA	1
SR	NA	NA	7	NA	NA	0
ST	2	3400	24	0.04	0.10	0
EL	NA	NA	19	NA	NA	0
ER	NA	NA	23	NA	NA	0
ET	2	3400	395	0.13	0.13	1
WL	NA	NA	169	0.09	0.10	1
WR	NA	NA	130	NA	NA	0
WT	2	3400	273	0.12	0.12	0

N/S component	0.24
E/W component	0.23
Rt.Tn. comp.	0.00
ICU	0.47

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Beardsley St./Newton Ave.
DATE: 2/14/91
TIME: AM PEAK HOUR

(BERNEW41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	17	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	43	0.04	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	18	NA	NA	0
ST	1	1700	16	0.02	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	195	NA	NA	NA
WR	NA	NA	103	NA	NA	0
WT	3	~~5100~~ 4900	1014	~~0.26~~ 0.27	~~0.26~~ 0.27	NA *

N/S component	0.20
E/W component	~~0.26~~ 0.27
Rt.Tn. comp.	0.00
ICU	~~0.40~~ 0.47

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Beardsley St./Newton Ave.
DATE: 2/14/91
TIME: PM PEAK HOUR

(BERNEW41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	46	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	1	1700	63	0.06	0.10	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	27	NA	NA	0
ST	1	1700	83	0.06	0.10	0
EL	NA	NA	0	NA	NA	NA
ER	NA	NA	0	NA	NA	NA
ET	NA	NA	0	NA	NA	NA
WL	NA	NA	323	NA	NA	NA
WR	NA	NA	60	NA	NA	0
WT	3	~~5100~~ 4900	634	~~0.20~~ 0.21	~~0.20~~ 0.21	NA *

N/S component	0.20
E/W component	~~0.20~~ 0.21
Rt.Tn. comp.	0.00
ICU	~~0.40~~ 0.41

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

* Indicates three-lane, one-way approach with outside lanes shared by through and turning vehicles.

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CRONEW41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	71	NA	NA	0
NT	1	1700	11	0.05	0.10	0
SL	NA	NA	72	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	195	0.16	0.16	1
EL	NA	NA	19	NA	NA	0
ER	NA	NA	17	NA	NA	0
ET	2	3400	357	0.12	0.12	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.26
E/W component	0.12
Rt.Tn. comp.	0.00
ICU	0.38

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CRONEW41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	1
NR	NA	NA	189	NA	NA	0
NT	1	1700	20	0.12	0.12	0
SL	NA	NA	147	NA	NA	0
SR	NA	NA	0	NA	NA	0
ST	1	1700	359	0.30	0.30	1
EL	NA	NA	44	NA	NA	0
ER	NA	NA	60	NA	NA	0
ET	3	5100	1464	0.31	0.31	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.40
E/W component	0.31
Rt.Tn. comp.	0.00
ICU	0.71

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

TERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: AM PEAK HOUR

(CROMAN41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

ovemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	0
NR	NA	NA	100	NA	NA	0
NT	2	3400	64	0.05	0.10	1
SL	1	1500	83	0.06	0.10	1
SR	NA	NA	0	NA	NA	0
ST	2	3400	282	0.08	0.10	0
EL	NA	NA	31	NA	NA	0
ER	NA	NA	69	NA	NA	0
ET	3	5100	443	0.11	0.11	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.20
E/W component	0.11
Rt.Tn. comp.	0.00
ICU	0.31

itical movement identified by a 1.
n lanes for a right turn indicates free movement.
. - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: PM PEAK HOUR

(CROMAN41.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	0	NA	NA	0
NR	NA	NA	317	NA	NA	0
NT	2	3400	97	0.12	0.12	1
SL	1	1500	295	0.20	0.20	1
SR	NA	NA	0	NA	NA	0
ST	2	3400	471	0.14	0.14	0
EL	NA	NA	40	NA	NA	0
ER	NA	NA	110	NA	NA	0
ET	3	5100	742	0.17	0.17	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.26
E/W component	0.17
Rt.Tn. comp.	0.00
ICU	0.43

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CROHAR4I.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	124	0.08	0.10	1
NR	NA	NA	72	NA	NA	0
NT	2	3400	377	0.13	0.13	0
SL	1	1500	103	0.07	0.10	0
SR	NA	NA	512	NA	NA	0
ST	2	3400	535	0.31	0.31	1
EL	NA	NA	51	NA	NA	0
ER	NA	NA	18	NA	NA	0
ET	2	3400	80	0.04	0.10	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.41
E/W component	0.10
Rt.Tn. comp.	0.00
ICU	0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CROHAR4I.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	45	0.03	0.10	1
NR	NA	NA	112	NA	NA	0
NT	2	3400	582	0.20	0.20	0
SL	1	1500	349	0.23	0.23	0
SR	NA	NA	1084	NA	NA	0
ST	2	3400	128	0.36	0.36	1
EL	NA	NA	259	NA	NA	0
ER	NA	NA	142	NA	NA	0
ET	2	3400	525	0.27	0.27	1
WL	NA	NA	0	NA	NA	NA
WR	NA	NA	0	NA	NA	NA
WT	NA	NA	0	NA	NA	NA

N/S component	0.46
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: AM PEAK HOUR

(HARSAM4I.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	127	0.08	0.10	0
NR	NA	NA	21	NA	NA	0
NT	2	3400	560	0.17	0.17	1
SL	1	1500	155	0.10	0.10	1
SR	NA	NA	79	NA	NA	0
ST	2	3400	349	0.13	0.13	0
EL	NA	NA	49	NA	NA	0
ER	NA	NA	126	NA	NA	0
ET	1	1700	84	0.15	0.15	1
WL	1	1500	13	0.01	0.10	1
WR	NA	NA	77	NA	NA	0
WT	1	1700	199	0.16	0.16	0

N/S component	0.27
E/W component	0.25
Rt.Tn. comp.	0.00
ICU	0.52

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(HARSAM4I.ICU/3-21-91)

ALTERNATIVE 2
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	108	0.07	0.10	1
NR	NA	NA	150	NA	NA	0
NT	2	3400	515	0.20	0.20	0
SL	1	1500	236	0.16	0.16	0
SR	NA	NA	42	NA	NA	0
ST	2	3400	914	0.28	0.28	1
EL	NA	NA	58	NA	NA	0
ER	NA	NA	163	NA	NA	0
ET	1	1700	197	0.25	0.25	1
WL	1	1500	25	0.02	0.10	1
WR	NA	NA	173	NA	NA	0
WT	1	1700	157	0.19	0.19	0

N/S component	0.38
E/W component	0.35
Rt.Tn. comp.	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: AM PEAK

(LOGSIGS.ICU/3-26-91) FUTURE CONDITIONS (W/ MITIGATION)

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	NA	NA	41	NA	NA	0
	LEFT	1	1500	123	0.11	0.11	1
Southbound	RIGHT	NA	NA	198	NA	NA	0
	THROUGH	2	3400	166	0.11	0.11	1
Northbound	LEFT	1	1500	94	0.06	0.10	1
	THROUGH	1	1700	256	0.15	0.15	0

Eastbound	Component	0.11
North/South	Component	0.21
Rt.Tn.	Component	0.00
	ICU	0.32

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION WORKSHEET
FOR A "T" INTERSECTION

INTERSECTION: Logan Ave./Sigsbee St.

DATE: 2/14/91
TIME: PM PEAK

(LOGSIGS.ICU/3-26-91) FUTURE CONDITIONS (W/ MITIGATION)

Direction	Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
Eastbound	RIGHT	NA	NA	161	NA	NA	0
	LEFT	1	1500	226	0.15	0.15	1
Southbound	RIGHT	NA	NA	161	NA	NA	0
	THROUGH	2	3400	395	0.16	0.16	1
Northbound	LEFT	1	1500	48	0.03	0.10	1
	THROUGH	1	1700	348	0.20	0.20	0

Eastbound	Component	0.15
North/South	Component	0.26
Rt.Tn.	Component	0.00
	ICU	0.41

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement
NA - Not Applicable

```
LOCATION:Beardsley St./Newton Ave.          NAME:Future w/ mitig. AM
-----------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    2                |
                              |  V12                |        ^
                              |   |   25            |        N
                              |   |  V11            |
                              |   |   |    7        |
       =====================   |   |  V10         =====================
          N= 1                 <|   v   |>       ^----------V6-- 29
Grade 0%                                         <----------V5-- 718  N= 2
          16 --V1------------^                   v----------V4-- 43
          38 --V2------------>                      major road        Grade 0%
           7 --V3------------v       <|   ^   |>   Beardsley St.
       =====================        V7   |   |   =====================
                              |        9   |   |   | STOP xx
                              |            V8   |   | YIELD
                              |  N= 1      27   |   | Date of Counts:2/14/91
                              |                V9   | Time Period:AM Peak
                              | minor road      9   | Prevailing Speed:
                              | Newton Ave.         | PHF:0.92
                              |   Grade 0 %         | Population:
=============================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------
Movement no.      |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12
-----------------------------------------------------------------------------
Volume (vph)      |  16|  38|   7|  43| 718|  29|   9|  27|   9|   7|  25|   2
-----------------------------------------------------------------------------
Vol(pcph),Tab.10.1|  18|XXXX|XXXX|  47|XXXX|XXXX|  10|  30|  10|   8|  28|   2
=============================================================================

VOLUMES IN PCPH               |                     |
                              |    2                |
                              |  V12                |
                              |   |   28            |
                              |   |  V11            |
                              |   |   |    8        |
       =====================   |   |  V10         =====================
                                <|   v   |>       ^----------V6-- ==
                                                   <----------V5-- ==
          18 --V1------------^                     v----------V4--  47
          == --V2------------>
          == --V3------------v       <|   ^   |>
       =====================        V7   |   |   =====================
                              |        10   |   |   |
                              |            V8   |   |
                              |            30   |   |
                              |                V9   |
                              |                10   |
```

LOCATION:Beardsley St./Newton Ave. NAME:Future w/ mitig. AM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9	1/2 V6+V5=Vc12
	4+ 38= 42 vph	15+ 718= 733 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 1000 pcph	Cp12 = 465 pcph
% of Cp utilized	(V9/Cp9)x100= 1%	(V12/Cp12)x100= .4%
Impedance Factor, P (Fig.10.5)	P9= .99	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 1000 pcph	Cm12=Cp12= 465 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4	V6+V5=Vc1
	7+ 38= 45 vph	29+ 718= 747 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 537 pcph
% of Cp utilized	(V4/Cp4)x100= 4.7%	(V1/Cp1)x100= 3.4%
Impedance Factor, P (Fig.10.5)	P4= .97	P1= .98
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 537 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8	.5V6+V5+V4+V3+V2+V1=Vc11
	4+ 38+ 16+ 29+	15+ 718+ 43+ 7+
	718+ 43= 848 vph	38+ 16= 837 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 338 pcph	Cp11 = 343 pcph
% of Cp utilized	(V8/Cp8)x100= 8.9%	(V11/Cp11)x100= 8.2%
Impedance Factor, P (Fig.10.5)	P8= .95	P11= .95
Actual Capacity, Cm	Cm8=Cp8xP1xP4	Cm11=Cp11xP1xP4
	321= 338x.98x.97pcph	326= 343x.98x.97pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7	Vc11(step3)+V8+V9=Vc10
	848+ 25+ 2= 875vph	837+ 27+ 9= 873vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 280 pcph	Cp10 = 281 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12	Cm10=Cp10xP4xP1xP8xP9
	= 280x.98x.97x.95x 1	= 281x.97x.98x.95x.99
	= 253 pcph	= 251 pcph

LOCATION:Beardsley St./Newton Ave. NAME:Future w/ mitig. AM

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	10	253	350	243	300	C	B
8	30	321	350	291	300	C	B
9	10	1000	350	990	300	A	B

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	8	251	311	243	273	C	C
11	28	326	311	298	273	C	C
12	2	465	311	463	273	A	C

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	18	537	519	A
4	47	1000	953	A

COMMENTS:

```
LOCATION:Beardsley St./Newton Ave.          NAME:Future w/ mitig. PM
-----------------------------------------------------------------------------------
HOURLY VOLUMES                  Grade 0%
                              |          N = 1      |
                              |    4                |
                              |  V12                |       ^
                              |   |   66            |       N
                              |   |  V11            |
                              |   |   |   40        |
      ======================    |   |  V10        ======================
         N= 1                   <|   v   |>       ^----------V6-- 30
Grade 0%                                          <----------V5-- 348  N= 2
         20 --V1------------^                     v----------V4-- 127
        135 --V2------------>                        major road        Grade 0%
         13 --V3------------v       <|   ^   |>     Beardsley St.
      ======================        V7   |   |   ======================
                              |       14   |   |   | STOP xx
                              |            V8   |   | YIELD
                              |  N= 1      43   |   | Date of Counts:2/14/91
                              |                V9   | Time Period:PM Peak
                              | minor road     49   | Prevailing Speed:
                              | Newton Ave.         | PHF:0.77
                              |   Grade 0 %         | Population:
=====================================================================================
VOLUME ADJUSTMENTS
-----------------------------------------------------------------------------------
Movement no.       |  1 |  2 |  3 |  4 |  5 |  6 |  7 |  8 |  9 | 10 | 11 | 12 |
-----------------------------------------------------------------------------------
Volume (vph)       |  20| 135|  13| 127| 348|  30|  14|  43|  49|  40|  66|   4|
-----------------------------------------------------------------------------------
Vol(pcph),Tab.10.1|  22|XXXX|XXXX| 140|XXXX|XXXX|  15|  47|  54|  44|  73|   4|
=====================================================================================

VOLUMES IN PCPH               |                     |
                              |    4                |
                              |  V12                |
                              |   |   73            |
                              |   |  V11            |
                              |   |   |   44        |
      ======================    |   |  V10        ======================
                                <|   v   |>       ^----------V6-- ==
                                                  <----------V5-- ==
         22 --V1------------^                     v----------V4-- 140
         == --V2------------>
         == --V3------------v       <|   ^   |>
      ======================        V7   |   |   ======================
                              |       15   |   |   |
                              |            V8   |   |
                              |            47   |   |
                              |                V9   |
                              |                54   |
```

LOCATION:Beardsley St./Newton Ave. NAME:Future w/ mitig. PM

STEP 1 : RT From Minor Street	/-> V9	<-/ V12
Conflicting Flows, Vc	1/2 V3+V2=Vc9 7+ 135= 142 vph	1/2 V6+V5=Vc12 15+ 348= 363 vph
Critical Gap, Tc (Tab.10.2)	5.5 (secs.)	5.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp9 = 951 pcph	Cp12 = 731 pcph
% of Cp utilized	(V9/Cp9)x100= 5.7%	(V12/Cp12)x100= .5%
Impedance Factor, P (Fig.10.5)	P9= .97	P12= 1
Actual Capacity, Cm	Cm9=Cp9= 951 pcph	Cm12=Cp12= 731 pcph

STEP 2 : LT From Major Street	v-- V4	--^ V1
Conflicting Flows, Vc	V3+V2=Vc4 13+ 135= 148 vph	V6+V5=Vc1 30+ 348= 378 vph
Critical Gap, Tc (Tab.10.2)	5 (secs.)	5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp4 = 1000 pcph	Cp1 = 819 pcph
% of Cp utilized	(V4/Cp4)x100= 14%	(V1/Cp1)x100= 2.7%
Impedance Factor, P (Fig.10.5)	P4= .91	P1= .98
Actual Capacity, Cm	Cm4=Cp4= 1000 pcph	Cm1=Cp1= 819 pcph

STEP 3 : TH From Minor Street	^ V8	v V11
Conflicting Flows, Vc	.5V3+V2+V1+V6+V5+V4=Vc8 7+ 135+ 20+ 30+ 348+ 127= 667 vph	.5V6+V5+V4+V3+V2+V1=Vc11 15+ 348+ 127+ 13+ 135+ 20= 658 vph
Critical Gap, Tc (Tab.10.2)	6 (secs.)	6 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp8 = 436 pcph	Cp11 = 442 pcph
% of Cp utilized	(V8/Cp8)x100= 10.8%	(V11/Cp11)x100= 16.5%
Impedance Factor, P (Fig.10.5)	P8= .93	P11= .89
Actual Capacity, Cm	Cm8=Cp8xP1xP4 389= 436x.98x.91pcph	Cm11=Cp11xP1xP4 394= 442x.98x.91pcph

STEP 4 : LT From Minor Street	<-\ V7	\-> V10
Conflicting Flows, Vc	Vc8(step3)+V11+V12=Vc7 667+ 66+ 4= 737vph	Vc11(step3)+V8+V9=Vc10 658+ 43+ 49= 750vph
Critical Gap, Tc (Tab.10.2)	6.5 (secs.)	6.5 (secs.)
Potential Capacity,Cp(Fig10.3)	Cp7 = 345 pcph	Cp10 = 338 pcph
Actual Capacity, Cm	Cm7=Cp7xP1xP4xP11xP12 = 345x.98x.91x.89x 1 = 274 pcph	Cm10=Cp10xP4xP1xP8xP9 = 338x.91x.98x.93x.97 = 272 pcph

LOCATION:Beardsley St./Newton Ave. NAME:Future w/ mitig. PM

SHARED LANE CAPACITY
APPROACH MOVEMENTS 7,8,9

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
7	15	274	499	259	383	C	B
8	47	389	499	342	383	B	B
9	54	951	499	897	383	A	B

APPROACH MOVEMENTS 10,11,12

MOVEMENT	V(PCPH)	CM(PCPH)	CSH(PCPH)	CR (CM-V)	CR (CSH-V)	LOS CM	LOS CSH
10	44	272	343	228	222	C	C
11	73	394	343	321	222	B	C
12	4	731	343	727	222	A	C

MAJOR STREET LEFT TURNS 1,4

MOVEMENT	V(PCPH)	CM(PCPH)	CR(CM-V)	LOS
1	22	819	797	A
4	140	1000	860	A

COMMENTS:

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: AM PEAK HOUR

(HARSAM5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	127	0.08	0.10	0
NR	NA	NA	21	NA	NA	0
NT	2	3400	560	0.17	0.17	1
SL	1	1500	155	0.10	0.10	1
SR	NA	NA	79	NA	NA	0
ST	2	3400	349	0.13	0.13	0
EL	NA	NA	49	NA	NA	1
ER	NA	NA	126	NA	NA	0
ET	1	1700	84	0.15	0.15	0
WL	NA	NA	13	NA	NA	0
WR	NA	NA	77	NA	NA	0
WT	1	1700	199	0.17	0.17	1

N/S component	0.27
E/W component	0.27
Rt.Tn. comp.	0.00
ICU	0.54

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Harbor Dr./Sampson St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(HARSAM5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	108	0.07	0.10	1
NR	NA	NA	150	NA	NA	0
NT	2	3400	515	0.20	0.20	0
SL	1	1500	236	0.16	0.16	0
SR	NA	NA	42	NA	NA	0
ST	2	3400	914	0.28	0.28	1
EL	NA	NA	58	NA	NA	0
ER	NA	NA	163	NA	NA	0
ET	1	1700	197	0.25	0.25	1
WL	NA	NA	25	NA	NA	1
WR	NA	NA	173	NA	NA	0
WT	1	1700	157	0.21	0.21	0

N/S component	0.38
E/W component	0.35
Rt.Tn. comp.	0.00
ICU	0.73

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: AM PEAK HOUR

(CRONEW5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	8	NA	NA	0
NR	NA	NA	66	NA	NA	0
NT	1	1700	16	0.05	0.10	0
SL	NA	NA	65	NA	NA	0
SR	NA	NA	16	NA	NA	0
ST	1	1700	46	0.07	0.10	0
EL	1	1500	11	0.01	0.10	1
ER	NA	NA	10	NA	NA	0
ET	2	3400	319	0.10	0.10	0
WL	1	1500	46	0.03	0.10	0
WR	NA	NA	74	NA	NA	0
WT	2	3400	647	0.21	0.21	1

N/S component	0.20
E/W component	0.31
Rt.Tn. comp.	0.00
ICU	0.51

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Newton Ave.
DATE: 2/14/91
TIME: PM PEAK HOUR

(CRONEW5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	32	NA	NA	1
NR	NA	NA	164	NA	NA	0
NT	1	1700	45	0.14	0.14	0
SL	NA	NA	107	NA	NA	0
SR	NA	NA	23	NA	NA	0
ST	1	1700	153	0.17	0.17	1
EL	1	1500	24	0.02	0.10	0
ER	NA	NA	47	NA	NA	0
ET	2	3400	1329	0.40	0.40	1
WL	1	1500	149	0.10	0.10	1
WR	NA	NA	68	NA	NA	0
WT	2	3400	431	0.15	0.15	0

N/S component	0.27
E/W component	0.50
Rt.Tn. comp.	0.00
ICU	0.77

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATBER2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	47	NA	NA	0
NR	NA	NA	12	NA	NA	0
NT	2	3400	133	0.06	0.10	0
SL	NA	NA	15	NA	NA	0
SR	NA	NA	17	NA	NA	0
ST	2	3400	109	0.04	0.10	0
EL	NA	NA	15	NA	NA	1
ER	NA	NA	38	NA	NA	0
ET	2	3400	34	0.03	0.10	0
WL	NA	NA	50	NA	NA	0
WR	NA	NA	49	NA	NA	0
WT	2	3400	698	0.23	0.23	1

N/S component	0.20
E/W component	0.33
Rt.Tn. comp.	0.00
ICU	0.53

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Beardsley St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATBER2.ICU/2-22-91)

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	46	NA	NA	0
NR	NA	NA	32	NA	NA	0
NT	2	3400	126	0.05	0.10	0
SL	NA	NA	36	NA	NA	0
SR	NA	NA	34	NA	NA	0
ST	2	3400	209	0.08	0.10	0
EL	NA	NA	35	NA	NA	1
ER	NA	NA	51	NA	NA	0
ET	2	3400	111	0.06	0.10	0
WL	NA	NA	175	NA	NA	0
WR	NA	NA	26	NA	NA	0
WT	2	3400	457	0.19	0.19	1

N/S component	0.20
E/W component	0.29
Rt.Tn. comp.	0.00
ICU	0.49

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: AM PEAK HOUR

(LOGCR05.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	8	NA	NA	0
NR	NA	NA	138	NA	NA	0
NT	2	3200	130	0.09	0.10	1
SL	1	1500	101	0.07	0.10	1
SR	NA	NA	146	NA	NA	0
ST	2	3400	492	0.19	0.19	0
EL	NA	NA	69	NA	NA	0
ER	1	1500	166	0.11	0.11	0
ET	2	3400	361	0.13	0.13	1
WL	1	1500	219	0.15	0.15	1
WR	NA	NA	227	NA	NA	0
WT	2	3200	551	0.24	0.24	0

N/S component	0.20
E/W component	0.28
Rt.Tn. comp.	0.00
ICU	0.48

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./Crosby St.
DATE: 3/7/90
TIME: PM PEAK HOUR

(LOGCR05.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	10	NA	NA	0
NR	NA	NA	466	NA	NA	0
NT	2	3200	263	0.23	0.23	1
SL	1	1500	203	0.14	0.14	1
SR	NA	NA	80	NA	NA	0
ST	2	3400	597	0.20	0.20	0
EL	1	1500	97	0.06	0.10	0
ER	1	1500	501	0.33	0.33	0
ET	2	3400	1189	0.35	0.35	1
WL	1	1500	208	0.14	0.14	1
WR	NA	NA	226	NA	NA	0
WT	2	3200	566	0.25	0.25	0

N/S component	0.37
E/W component	0.49
Rt.Tn. comp.	0.00
ICU	0.86

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: AM PEAK HOUR

(CROMAIN5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	36	NA	NA	0
NR	NA	NA	100	NA	NA	0
NT	2	3400	64	0.06	0.10	0
SL	NA	NA	49	NA	NA	0
SR	NA	NA	12	NA	NA	0
ST	2	3400	124	0.05	0.10	0
EL	1	1500	31	0.02	0.10	0
ER	NA	NA	69	NA	NA	0
ET	2	3400	416	0.14	0.14	1
WL	1	1500	66	0.04	0.10	1
WR	NA	NA	95	NA	NA	0
WT	2	3400	354	0.13	0.13	0

N/S component	0.20
E/W component	0.24
Rt.Tn. comp.	0.00
ICU	0.44

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Main St.
DATE: 3/14/90
TIME: PM PEAK HOUR

(CROMAIN5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	109	NA	NA	0
NR	NA	NA	317	NA	NA	0
NT	2	3400	97	0.15	0.15	1
SL	NA	NA	206	NA	NA	1
SR	NA	NA	24	NA	NA	0
ST	2	3400	257	0.14	0.14	0
EL	1	1500	40	0.03	0.10	1
ER	NA	NA	110	NA	NA	0
ET	2	3400	664	0.23	0.23	0
WL	NA	NA	159	0.09	0.10	0
WR	NA	NA	54	NA	NA	0
WT	1	1700	477	0.31	0.31	1

N/S component	0.25
E/W component	0.41
Rt.Tn. comp.	0.00
ICU	0.66

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: AM PEAK HOUR

(CROHAR5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	124	0.08	0.10	1
NR	NA	NA	72	NA	NA	0
NT	2	3400	430	0.15	0.15	0
SL	1	1500	103	0.07	0.10	0
SR	NA	NA	512	NA	NA	0
ST	2	3400	567	0.32	0.32	1
EL	NA	NA	51	NA	NA	1
ER	NA	NA	18	NA	NA	0
ET	2	3400	80	0.04	0.10	0
WL	1	1500	64	0.04	0.10	0
WR	NA	NA	151	NA	NA	0
WT	2	3400	299	0.13	0.13	1

N/S component	0.42
E/W component	0.23
Rt.Tn. comp.	0.00
ICU	0.65

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Harbor Dr.
DATE: 2/16/91
TIME: PM PEAK HOUR

(CROHAR5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	1	1500	45	0.03	0.10	1
NR	NA	NA	112	NA	NA	0
NT	2	3400	662	0.23	0.23	0
SL	1	1500	349	0.23	0.23	0
SR	NA	NA	128	NA	NA	0
ST	2	3400	1161	0.38	0.38	1
EL	NA	NA	259	NA	NA	0
ER	NA	NA	142	NA	NA	0
ET	2	3400	525	0.27	0.27	1
WL	NA	NA	73	0.09	0.10	1
WR	NA	NA	255	NA	NA	0
WT	1	1700	81	0.20	0.20	0

N/S component	0.48
E/W component	0.37
Rt.Tn. comp.	0.00
ICU	0.85

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NAT265.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	15	NA	NA	1
NR	1	1500	205	0.14	0.14	0 *
NT	1	1700	18	0.02	0.10	0
SL	NA	NA	20	NA	NA	0
SR	NA	NA	1	NA	NA	0
ST	2	3400	14	0.01	0.10	1
EL	NA	NA	15	NA	NA	1
ER	NA	NA	7	NA	NA	0
ET	2	3400	101	0.04	0.10	0
WL	1	1500	145	0.10	0.10	0
WR	NA	NA	63	NA	NA	0
WT	2	3400	363	0.13	0.13	1

N/S component	0.20
E/W component	0.23
Rt.Tn. comp.	0.00
ICU	0.43

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./26th St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NAT265.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	15	NA	NA	1
NR	1	1500	365	0.24	0.24	1 *
NT	1	1700	90	0.06	0.10	0
SL	NA	NA	96	NA	NA	0
SR	NA	NA	7	NA	NA	0
ST	2	3400	24	0.04	0.10	1
EL	NA	NA	19	NA	NA	0
ER	NA	NA	23	NA	NA	0
ET	2	3400	395	0.13	0.13	1
WL	1	1500	169	0.09	0.10	1
WR	NA	NA	130	NA	NA	0
WT	2	3400	273	0.12	0.12	0

N/S component	0.10
E/W component	0.23
Rt.Tn. comp.	0.04
ICU	0.37

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

* shared through/right lane.

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATSI65.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	29	NA	NA	0
NR	NA	NA	7	NA	NA	0
NT	2	3400	158	0.06	0.10	0
SL	NA	NA	15	NA	NA	0
SR	NA	NA	49	NA	NA	0
ST	2	3400	87	0.04	0.10	0
EL	NA	NA	69	NA	NA	0
ER	NA	NA	33	NA	NA	0
ET	1	1700	151	0.15	0.15	1
WL	NA	NA	11	NA	NA	1
WR	NA	NA	36	NA	NA	0
WT	1	1700	171	0.13	0.13	0

N/S component	0.20
E/W component	0.25
Rt.Tn. comp.	0.00
ICU	0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sigsbee St.
DATE: 2/12/91
TIME: PM PEAK HOUR

(NATSI65.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	24	NA	NA	0
NR	NA	NA	27	NA	NA	0
NT	2	3400	182	0.07	0.10	0
SL	NA	NA	44	NA	NA	0
SR	NA	NA	80	NA	NA	0
ST	2	3400	178	0.09	0.10	0
EL	NA	NA	105	NA	NA	0
ER	NA	NA	50	NA	NA	0
ET	1	1700	251	0.24	0.24	1
WL	NA	NA	12	NA	NA	1
WR	NA	NA	29	NA	NA	0
WT	1	1700	179	0.13	0.13	0

N/S component	0.20
E/W component	0.34
Rt.Tn. comp.	0.00
ICU	0.54

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: AM PEAK HOUR

(NATSAM5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	69	NA	NA	0
NR	NA	NA	14	NA	NA	0
NT	2	3400	92	0.05	0.10	0
SL	NA	NA	6	NA	NA	0
SR	NA	NA	44	NA	NA	0
ST	2	3400	54	0.03	0.10	0
EL	NA	NA	114	NA	NA	0
ER	NA	NA	30	NA	NA	0
ET	1	1700	103	0.15	0.15	1
WL	NA	NA	18	NA	NA	1
WR	NA	NA	28	NA	NA	0
WT	1	1700	95	0.08	0.10	0

N/S component	0.20
E/W component	0.25
Rt.Tn. comp.	0.00
ICU	0.45

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Sampson St.
DATE: 2/13/91
TIME: PM PEAK HOUR

(NATSAM5.ICU/3-26-91)

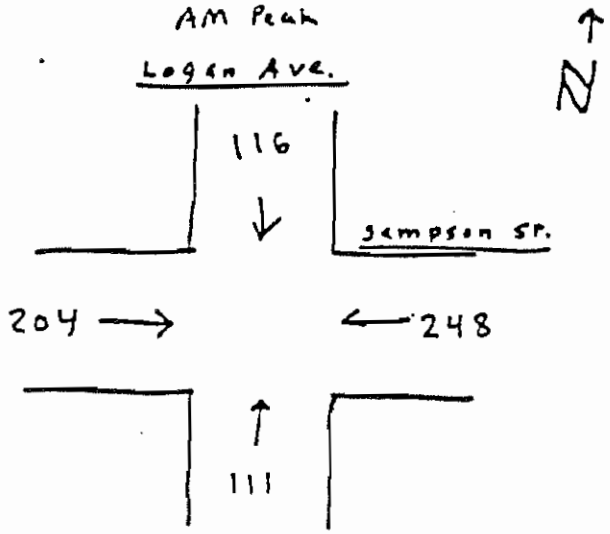
FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt
NL	NA	NA	58	NA	NA	0
NR	NA	NA	33	NA	NA	0
NT	2	3400	121	0.06	0.10	0
SL	NA	NA	42	NA	NA	0
SR	NA	NA	148	NA	NA	0
ST	2	3400	166	0.10	0.10	0
EL	NA	NA	104	NA	NA	0
ER	NA	NA	74	NA	NA	0
ET	1	1700	305	0.28	0.28	1
WL	NA	NA	35	NA	NA	1
WR	NA	NA	35	NA	NA	0
WT	1	1700	136	0.12	0.12	0

N/S component	0.20
E/W component	0.38
Rt.Tn. comp.	0.00
ICU	0.58

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

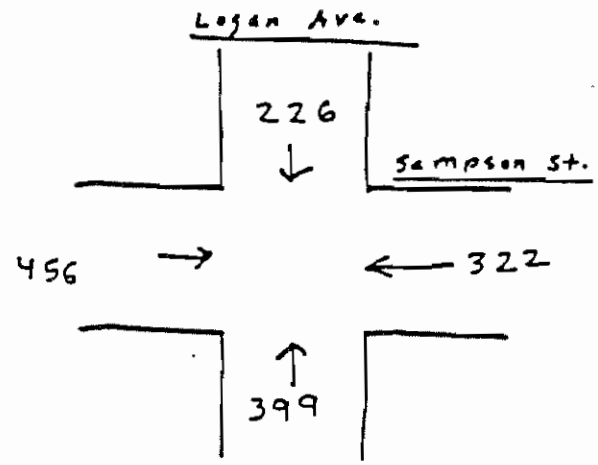
AM Peak



Lane Configuration: 2 x 4
Demand Split: 65/35
Total Volume: 679
Max. LOS C Volume
from Table 10-7: 1,630

LOS is better than C

PM Peak



Lane Configuration: 2 x 4
Demand Split: 55/45
Total Volume: 1,403
Max. LOS C Volume
from Table 10-7: 1,720

LOS is better than C

TABLE 10-7. APPROXIMATE LEVEL-OF-SERVICE C SERVICE VOLUMES FOR FOUR-WAY STOP-CONTROLLED INTERSECTIONS

DEMAND SPLIT	LOS C SERVICE VOLUME, VPH		
	NUMBER OF LANES		
	2 BY 2	2 BY 4	4 BY 4
50/50	1,200	1,600	2,500
55/45	1,140	1,720	2,070
60/40	1,080	1,660	1,970
65/35	1,010	1,630	1,880
70/30	960	1,610	1,820

SOURCE: Ref. 10

BASMACIYAN-DARNELL, INC.

Four-Way Stop-Controlled Intersection
Capacity Analysis
Logan Ave./Sampson St.
Future Conditions
(with mitigation)

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/12/91
TIME: AM PEAK HOUR

(NATCR05.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.	
NL	NA	NA	54	NA	NA	0	
NR	NA	NA	68	NA	NA	0	
NT	2	3400	83	0.06	0.10	1	
SL	1	1500	71	0.05	0.10	1	*
SR	NA	NA	23	NA	NA	0	
ST	1	1700	62	0.05	0.10	0	* *
EL	1	1500	53	0.04	0.10	1	
ER	NA	NA	11	NA	NA	0	
ET	2	3400	306	0.09	0.10	0	
WL	1	1500	41	0.03	0.10	0	
WR	NA	NA	98	NA	NA	0	
WT	2	3400	593	0.20	0.20	1	

N/S component	0.20
E/W component	0.30
Rt.Tn. comp.	0.00
ICU	0.50

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: National Ave./Crosby St.
DATE: 2/14/91
TIME: PM PEAK HOUR

(NATCR05.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit Mvmt	
NL	NA	NA	58	NA	NA	0	
NR	NA	NA	189	NA	NA	0	
NT	2	3400	77	0.10	0.10	1	
SL	1	1500	211	0.14	0.14	1	*
SR	NA	NA	34	NA	NA	0	
ST	1	1700	186	0.13	0.13	0	* *
EL	1	1500	163	0.11	0.11	0	
ER	NA	NA	34	NA	NA	0	
ET	2	3400	1401	0.42	0.42	1	
WL	1	1500	153	0.10	0.10	1	
WR	NA	NA	98	NA	NA	0	
WT	2	3400	593	0.20	0.20	0	

N/S component	0.24
E/W component	0.52
Rt.Tn. comp.	0.00
ICU	0.76

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movemen
NA - Not Applicable

* Shared left/through lane.

* * Shared right/through lane.

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 SB (Beardsley St.)
DATE: 2/12/91
TIME: AM PEAK HOUR

LOGBER5.ICU/3-26-91

FUTURE CONDITIONS
(W/ MITIGATION)

Movemnt	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	107	NA	NA	0
NR	NA	NA	0	NA	NA	0
NT	2	3400	302	0.12	0.12	1
SL	NA	NA	19	NA	NA	1
SR	NA	NA	0	NA	NA	0
ST	2	3400	203	0.07	0.10	0
EL	1	1500	31	0.02	0.10	1
ER	1	1500	45	0.03	0.10	0
ET	NA	NA	0	NA	NA	0
WL	NA	NA	279	NA	NA	0
WR	NA	NA	69	NA	NA	0
WT	2	3400	752	0.32	0.32	1

N/S component	0.22
E/W component	0.42
Rt.Tn. comp.	0.00
ICU	0.64

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Logan Ave./I-5 SB (Beardsley St.)
DATE: 2/12/91
TIME: PM PEAK HOUR

LOGBER5.ICU/3-26-91

FUTURE CONDITIONS

Movemnt	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	NA	NA	84	NA	NA	1
NR	NA	NA	0	NA	NA	0
NT	2	3400	311	0.12	0.12	0
SL	NA	NA	0	NA	NA	0
SR	NA	NA	45	NA	NA	0
ST	2	3400	498	0.16	0.16	1
EL	1	1500	39	0.03	0.10	1
ER	1	1500	183	0.12	0.12	0
ET	NA	NA	0	NA	NA	0
WL	NA	NA	324	NA	NA	0
WR	NA	NA	43	NA	NA	0
WT	2	3400	537	0.27	0.27	1

N/S component	0.26
E/W component	0.37
Rt.Tn. comp.	0.00
ICU	0.63

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: AM PEAK HOUR

(CROKER5.ICU/3-26-91)

FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	AM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	2	3000	1243	0.41	0.41	1 *
NR	1	1500	98	0.07	0.10	NA
NT	NA	NA	0	NA	NA	0
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	2	3000	315	0.11	0.11	1 *
ER	NA	NA	0	NA	NA	0
ET	1	1700	175	0.10	0.10	0
WL	NA	NA	100	NA	NA	0
WR	NA	NA	23	NA	NA	0
WT	2	3400	384	0.15	0.15	1

N/S component	0.41
E/W component	0.26
Rt.Tn. comp.	0.00
ICU	0.67

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

INTERSECTION CAPACITY UTILIZATION
WORKSHEET

INTERSECTION: Crosby St./Kearney Ave.
DATE: 2/19/91
TIME: PM PEAK HOUR

(CROKER5.ICU/3-26-91)

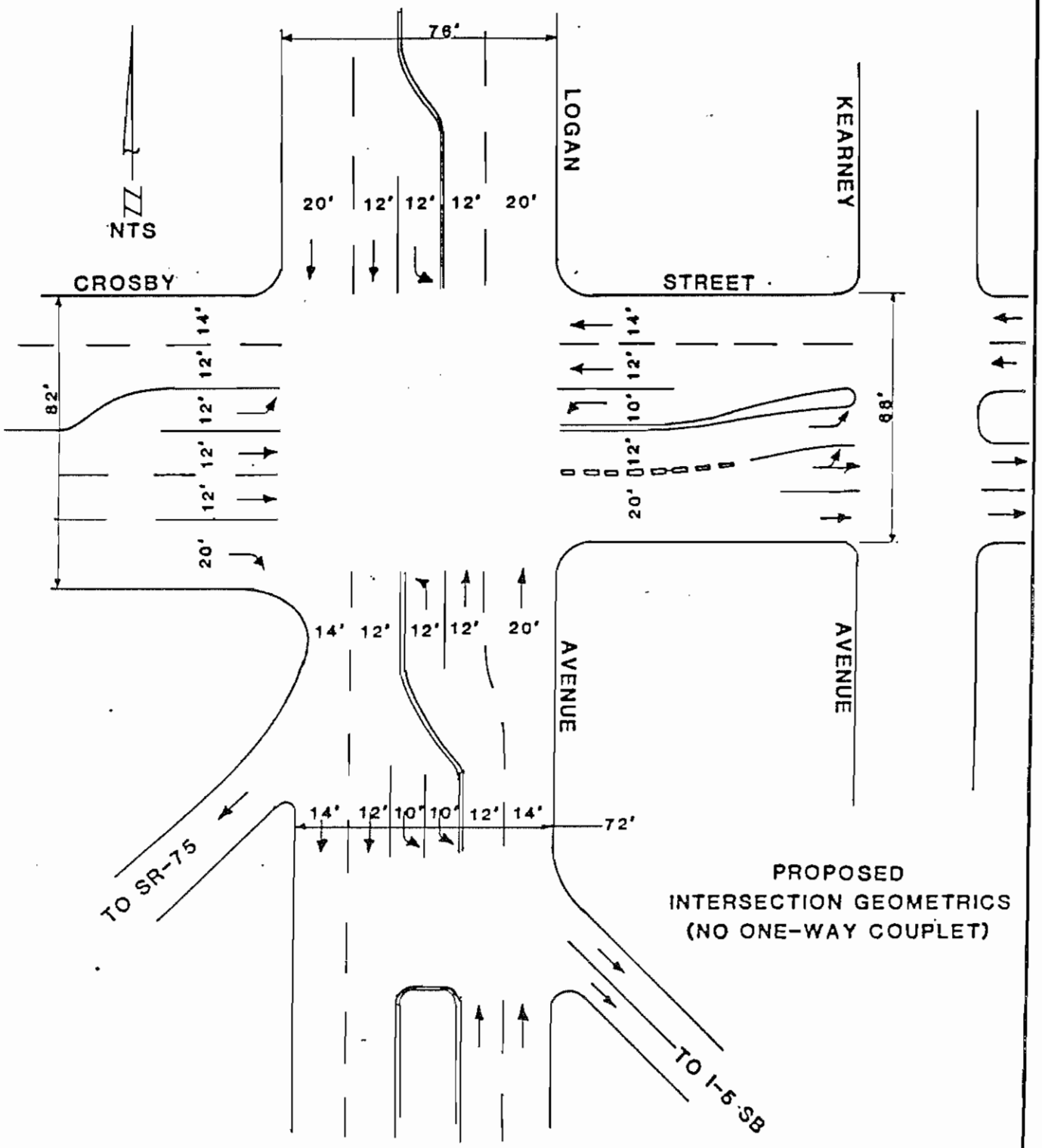
FUTURE CONDITIONS
(W/ MITIGATION)

Movement	No. Lanes	Cap.	Vol.	PM Peak V/C	0.10 Min.	Crit. Mvmt.
NL	2	3000	955	0.32	0.32	1 *
NR	1	1500	96	0.06	0.10	NA
NT	NA	NA	0	NA	NA	0
SL	NA	NA	0	NA	NA	NA
SR	NA	NA	0	NA	NA	NA
ST	NA	NA	0	NA	NA	NA
EL	2	3000	1076	0.36	0.36	1 *
ER	NA	NA	0	NA	NA	0
ET	1	1700	517	0.30	0.30	0
WL	NA	NA	0	NA	NA	0
WR	NA	NA	26	NA	NA	0
WT	2	3400	484	0.15	0.15	1

N/S component	0.32
E/W component	0.51
Rt.Tn. comp.	0.00
ICU	0.83

Critical movement identified by a 1.
Ten lanes for a right turn indicates free movement.
NA - Not Applicable

* Includes one shared/through lane

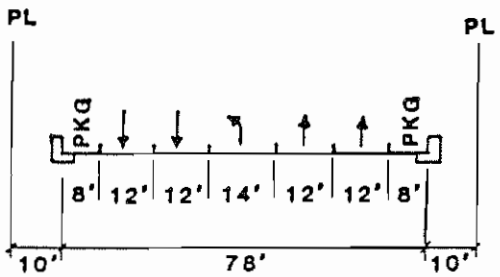


BASMACIYAN-DARNELL, INC.

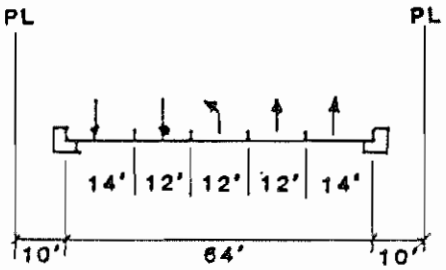
FIGURE G-1

RECOMMENDED CHANNELIZATION
CROSBY STREET AND LOGAN AVENUE

CROSBY STREET
FUTURE GEOMETRICS
(NO ONE-WAY COUPLET)



WITH PARKING
78'/98'



WITHOUT PARKING
64'/84'

BASMACIYAN-DARNELL, INC.

FIGURE G-2

RECOMMENDED CROSBY STREET GEOMETRICS
WITH AND WITHOUT ON-STREET PARKING

APPENDIX D

AIR QUALITY DATA

Project Name : Barrio Logan Existing

Analysis Year = 1990 Temperature = 70
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Apartment < 10 Du./Acre	6.1/Unit	317	1934	
Commercial Strip Business	359.1/Acre	5	1939	365
Manufacturing	38.3/Acre	41	1570	270

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	9.0	3.5	5.3	8.1	4.9
% Started Cold	87.7	38.4	57.0	76.6	26.6
Trip Speed	20	20	20	20	20
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	1.5	95.9	2.6
Light Duty Trucks	14.3	2.4	94.9	2.8
Medium Duty Trucks	4.3	5.9	94.2	0.0
Heavy Duty Trucks	3.9	33.3	66.7	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Ton/Year

Unit Type	TOG	CO	NOX
Apartment < 10 Du./Acre	9.1	93.7	7.7
Commercial Strip Business	8.0	78.7	7.9
Manufacturing	7.2	75.4	6.5

Project Name : Barrio Logan

Analysis Year = 2010 Temperature = 70
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Apartment > 20 Du./Acre	3.7/Unit	1495	5532	
Neighborhood Shopping Center	117.0/1000 Sqf	548	64116	365
Convience Market (16 Hr.)	322.0/1000 Sqf	363	116886	365
Commercial Strip Business	21.3/1000 Sqf	590	12567	365
General Light Industry	5.5/1000 Sqf	494	2717	270

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	9.0	3.5	5.3	8.1	4.9
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	25	25	25	25	25
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	1.5	95.9	2.6
Light Duty Trucks	14.3	2.4	94.9	2.8
Medium Duty Trucks	4.3	5.9	94.2	0.0
Heavy Duty Trucks	3.9	33.3	66.7	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Ton/Year

Unit Type	TOG	CO	NOX
Apartment > 20 Du./Acre	13.6	152.4	16.7
Neighborhood Shopping Center	133.2	1408.0	189.2
Convience Market (16 Hr.)	242.8	2566.8	344.9
Commercial Strip Business	27.4	292.8	38.6
General Light Industry	5.6	62.6	7.6

Project Name : Barrio Logan Alt A

Analysis Year = 2010 Temperature = 70
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Apartment > 20 Du./Acre	3.7/Unit	1944	7193	
Neighborhood Shopping Center	117.0/1000 Sqf	713	83421	365
Convience Market (16 Hr.)	322.0/1000 Sqf	473	152306	365
Commercial Strip Business	21.3/1000 Sqf	768	16358	365
General Light Industry	52.4/Acre	642	33641	270

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	9.0	3.5	5.3	8.1	4.9
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	25	25	25	25	25
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	1.5	95.9	2.6
Light Duty Trucks	14.3	2.4	94.9	2.8
Medium Duty Trucks	4.3	5.9	94.2	0.0
Heavy Duty Trucks	3.9	33.3	66.7	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Ton/Year

Unit Type	TOG	CO	NOX
Apartment > 20 Du./Acre	17.7	198.2	21.7
Neighborhood Shopping Center	173.3	1831.9	246.1
Convience Market (16 Hr.)	316.4	3344.7	449.4
Commercial Strip Business	35.7	381.1	50.2
General Light Industry	69.8	775.1	93.7

Project Name : Barrio Logan Alt B

Analysis Year = 2010 Temperature = 70
EMFAC7 VERSION : EMFAC7C ... 1/4/87

Unit Type	Trip Rate	Size	Tot Trips	Days Op.
Apartment > 20 Du./Acre	3.7/Unit	1047	3874	
Neighborhood Shopping Center	117.0/1000 Sqf	384	44928	365
Convience Market (16 Hr.)	322.0/1000 Sqf	255	82110	365
Commercial Strip Business	21.3/1000 Sqf	414	8818	365
General Light Industry	5.5/1000 Sqf	346	1903	270

	Residential			Commercial	
	Home-Work	Home-Shop	Home-Other	Work	Non-Work
Trip Length	9.0	3.5	5.3	8.1	4.9
% Started Cold	88.6	40.4	58.8	77.8	27.6
Trip Speed	25	25	25	25	25
Percent Trip	27.3	21.2	51.5		

Vehicle Fleetmix

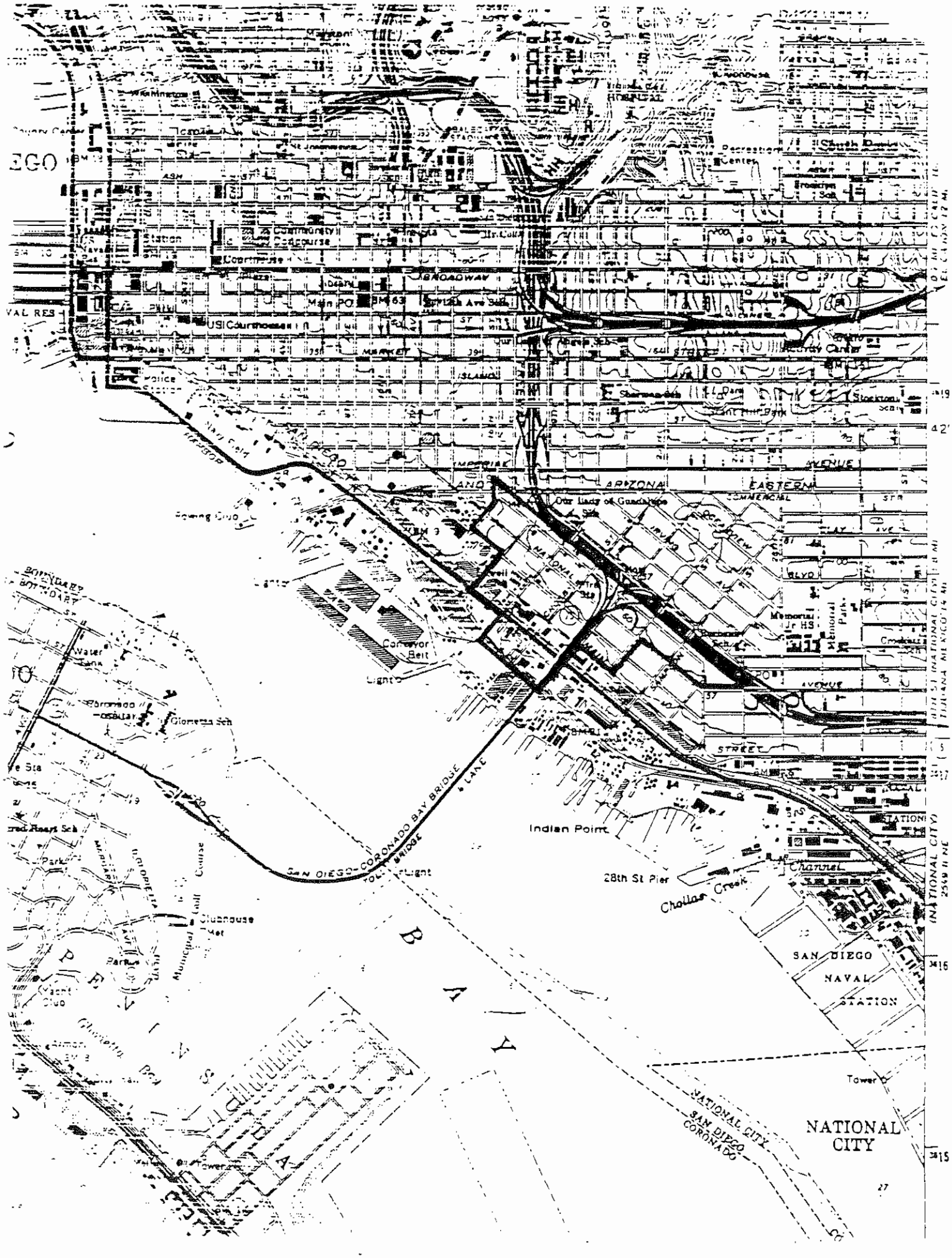
Vehicle Type	Percent Type	Leaded	Unleaded	Diesel
Light Duty Autos	72.8	1.5	95.9	2.6
Light Duty Trucks	14.3	2.4	94.9	2.8
Medium Duty Trucks	4.3	5.9	94.2	0.0
Heavy Duty Trucks	3.9	33.3	66.7	N/A
Heavy Duty Trucks	3.9	N/A	N/A	100.0
Motorcycles	0.9	100.0	N/A	N/A

Project Emissions Report in Ton/Year

Unit Type	TOG	CO	NOX
Apartment > 20 Du./Acre	9.6	106.7	11.7
Neighborhood Shopping Center	93.3	986.6	132.6
Convience Market (16 Hr.)	170.6	1803.1	242.3
Commercial Strip Business	19.3	205.5	27.1
General Light Industry	3.9	43.8	5.3

APPENDIX E

ARCHAEOLOGICAL RECORDS SEARCH



Recreation Center
Community Concourse
Courthouse
BROADWAY
Main PO
US Courthouse
MARKET
Police Station
Sherman Sch
Stockton
IMPERIAL
AVENUE
ARIZONA
EASTERN
COMMERCIAL
Our Lady of Guadalupe
Rowing Club
Conveyor Belt
Light
Memorial Jr HS
Memorial Park
Water Tank
Glorietta Sch
STREET
SAN DIEGO-CORONADO BAY BRIDGE
TOLL BRIDGE
Indian Point
28th St Pier
Chollas Creek
Channel
Clubhouse
Municipal Golf Course
Yacht Club
B A Y
SAN DIEGO
NAVAL
STATION
Tower
NATIONAL CITY
SAN DIEGO
CORONADO
NATIONAL CITY

THE KEITH COMPANIES

Planning • Civil Engineering • Environmental Services • Landscape Architecture • Land Surveying • Public Works

Cultural Resources Records Search for the Barrio Logan Project Area within the City of San Diego, California

for

The Keith Companies and the City of San Diego
2995 Red Hill Avenue
Costa Mesa, CA 92626
Contact: Paul Calderwood, 714/540-0800

by

The Keith Companies Archaeology Division
P.O. Box 25127
Santa Ana, CA 92799
714/241-4250

Authors: Vicki L. Solheid and Roger D. Mason

September 5, 1990

INTRODUCTION

The Keith Companies Archaeology Division was contracted to conduct a cultural resources records search for the project area (location given below) for the City of San Diego's Redevelopment Agency, for general planning purposes.

The project area, shown in Figure 1, is located within the City of San Diego in the Barrio Logan area. It extends south from the San Diego freeway at 16th street, turns southeast on Newton Avenue, turns southwest on Sigsbee Street, southeast on Harbor Drive, southwest on Beardsley Street, southeast along the railroad tracks, then heads north along the toll bridge, southeast along Harbor Drive, northeast along Evans Street, southeast and then east along National Avenue until it hits the freeway again. This area has not been sectioned, so range and township are not given.

METHODS

A records search was conducted by staff at the San Diego Museum of Man (see "W" numbers) and at the South Coastal Information Center, San Diego State University (see "SDI" numbers). They provided previously described site locations, site forms and bibliographies, and the SCIC also provided locations of previous cultural resources surveys. In addition, Keith Companies referred to other sources for historical information on the area.

RESULTS

Prehistoric Resources

Eleven cultural resources studies have been done in the area (see bibliography), but only one partially covered the subject property. This study (Carrico 1978) was a reconnaissance level survey along the San Diego & Arizona Eastern Railway right-of-way. The researchers discovered a site, referred to as SDi-5931/W-1627, that is located within the southwestern half of the project area. The site contained prehistoric tools such as a hammerstone-pounder, a blade fragment, utilized flakes (?) and waste flakes. While the site is obviously disturbed at the surface, the "site may still exist under buildings to [the] northeast" (Eckhardt 1978).

Unfortunately, this site (SDI-5931/W-1627) was disturbed by alleged unauthorized grading in 1990. A burial was discovered and the grading was brought to the attention of the proper authorities. At the time this document was being prepared, a draft report on the finds from the grading and of a test level investigation was being reviewed by the City (and was not yet available).

Other sites recorded within one mile of the project area are SDi-55, -66, -8723 (W-2957), W-193 and W-299B. SDI-55 was recorded early this century on a bluff to the south of the project area. This site was a prehistoric shell midden, but it was never test excavated, and its present condition is unknown. SDI-66 is across the Bay and was recorded in 1913, also described as a prehistoric shell midden, though smaller than SDi-55. Its present condition is unknown. SDI-8723 was recorded in 1981 and is a historic site north of the project area. This site holds SDG&E's oil gas manufacturing facility (Station A) from 1910 with aspects dating possibly earlier, and a blacksmith shop that may also be dated to an earlier time. W-193 was recorded during the construction of a portion of the San Diego Naval Station - it has not been test excavated and the amount of site remaining is unknown. This site is a large one and was occupied at the

time the Spanish passed through; it was referred to as "Las Chollas" because of the cholla cactus surrounding it (Shipek 1976, Anonymous n.d.). W-299B is actually an isolate, recorded as an arrow shaft straightener find along K Street; site W-299 was originally designated to include all discoveries of prehistoric remains in San Diego (Anonymous n.d.)

History

A separate historic structures report is being prepared for the City, so the reader may refer to that document for a more detailed history of the Barrio Logan area. The following summary of San Diego historic periods is taken primarily from Wirth Associates (1980:18-41).

1850-1866: Gray and Davis' "New Town" - Andrew Gray, chief surveyor of the US, founds "New Town" as a result of surveying the southern boundary of the US after the Treaty of Guadalupe Hidalgo. The project area is not within this townsite. During this period, San Diego was basically a Mexican settlement located at the base of Presidio Hill (Old Town) to the northwest of "New Town". New Town survived as long as it served as a shipping point to supply Fort Yuma, but when steamships began using the Colorado River, New Town quickly died. Most residents then moved to Old Town. Much of the remnants of New Town were destroyed for use as fire wood by volunteer soldiers during the Civil War.

1867-1885: Horton's Addition - Alonzo Horton founded what was to become modern San Diego, with his town center was in much the same area as it is today. Two wharf's were built but virtually no other public improvements were made. The California Southern Railroad began building a railroad that ran from National City north through San Diego.

1886-1906: "Boom and Bust" - The Atchison, Topeka and Santa Fe built a transcontinental railroad connection to San Diego in 1885, and so was the catalyst for the population boom of 1885 to 1887. City improvements (sewers and fresh water supply) the followed. The Coronado Hotel opened with ferry service from the downtown wharf area. Despite the increased population San Diego lacked economic development, and the depression of the 1890s only made matters worse. During this same time period, Mexicans lived in the downtown and waterfront areas, but many later moved to the subject property and surrounding areas.

1907-present: Modern San Diego - Because the opening of the Panama Canal would help San Diego due to its Bay (the Harbor at Los Angeles was not yet developed), San Diego held the Panama-California Exposition (1915-16). Much development was taking place during this early period, much of which was financed by John Spreckels. In 1912 the US Navy built its first air base on North Island and in 1919 San Diego Bay became the home of the Pacific Fleet. This greatly enhanced the development of San Diego. Fishing and canneries were important industries in the early century also.

SUMMARY AND RECOMMENDATIONS

The records search has revealed that San Diego and the Barrio Logan area are rich in prehistoric and historic cultural remains that are potentially important and significant to archaeological research. It is recommended that the project area be surveyed for prehistoric cultural remains and non-structural historic remains (a historic structures survey has already been conducted.

The prehistoric site SDi-5931/W-1627 is known to exist within the project area and seems to be quite large, but its actual boundaries are unknown. Because of this, any proposed projects involving ground disturbing

activities will need to be reviewed by a qualified archaeologist and specific recommendations given as to what testing and/or mitigation measures will need to be conducted at this potentially significant prehistoric resource (SDI-5931). Since the site size and boundaries are unknown, but it is so far known that the site runs the length of the southwestern portion of the project area, these recommendations will pertain to the whole project property.

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APPENDIX F

NOISE DEFINITIONS

Appendix F
DEFINITIONS

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
A-Weighted Sound Level, dB(A)	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter network. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. A11 sound levels in this report are A-weighted.
Community Noise Equivalent Level, CNEL	CNEL is the average sound level during a 24-hour day and it is calculated by adding 5 decibels (dB) to sound levels in the evening (7 p.m. to 10 p.m.) and adding 10 dB to sound levels in the night (10 p.m. to 7 a.m.).
Ldn	Similar to CNEL, however, there is no penalty for sound levels in the evening (7:00 p.m. to 10:00 p.m.). There is approximately a 1 decibel difference between Ldn and CNEL.
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Equivalent Noise Level, Leq	The energy mean "A" weighted sound level during the measured time interval
L_{10}	The L_{10} is the sound level exceeded 10 percent of the time and corresponds to the peaks of noise.
L_{50}	L_{50} is the sound level exceeded 50 percent of the time and corresponds to the average noise.

Appendix F (Continued)
DEFINITIONS

Term	Definition
L_{90}	L_{90} is the sound level exceeded 90 percent of the time and corresponds to the residual noise.
L_{min}	The lowest A-weighted sound level measured during a designated time.
L_{max}	The greatest A-weighted sound level measured during a designated time.

APPENDIX G

SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS

Appendix G

SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS
(A-Weighted Sound Levels)

Noise Source (at a Given Distance)	A-Weighted Sound Level in Decibels	Noise Environment	Human Judgement of Noise Loudness (Relative to a Reference Loudness of 70 Decibels*)
	140		
Military Jet Take-off with After-burner (50 ft) Civil Defense Siren (100 ft)	130	Carrier Flight Deck	
Commercial Jet Take-off (200 ft)	120		Threshold of Pain *32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Power Lawn Mower (3 ft)	100		Very Loud *8 times as loud
Motorcycle (25 ft) Propeller Plane Flyover (1000 ft) Diesel Truck, 40 mph (50 ft)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft) Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft)	80	High Urban Ambient Sound	*2 times as loud
Vacuum Cleaner (3 ft) Electronic Typewriter (10 ft)	70		Moderately Loud *70 dB (Reference Loudness)
Normal Conversation (5 ft) Air Conditioning Unit (100 ft)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	10		Threshold of Hearing
	0		

Parcel #	Address	City	Land/Lot SqFt	Structure/Bldg	Acres	Lot SqFt	Bldg SqFt
5953220200	2250 Otay Lakes	Chula Vista	$12.47	$69.26	5.97	260,053	56,160
5932800600	4404 Bonita RD	Chula Vista	$13.73	$95.46	4	174,240	51,222
6390806200	505 Telegraph Canyon Rd	Chula Vista	$7.33	$255.30	5.11	222,592	46,520
5845111600	933 Sweetwater Rd	Spring Valley	$20.87	N/A	2.09	91,040	N/A
5845203700	543 Sweetwater Rd	Spring Valley	$15.52	$489.63	2	87,120	62,394
6190507000	1058 3rd Ave	Chula Vista	$18.82	$13.59	4.5	196,020	65,926
5922000500	360 E H St	Chula Vista	$11.53	$50.60	3.66	159,430	40,317
Average			$14.32	$162.31	3.9	170,070.71	46,778.50
Combined Average				$176.63			

Land Cost	Improvement %
$3,242,616	55
$2,392,920	67
$1,630,549	54
$1,900,000	42
$1,352,520	76
$3,688,746	20
$1,837,482	53
$2,292,119	52