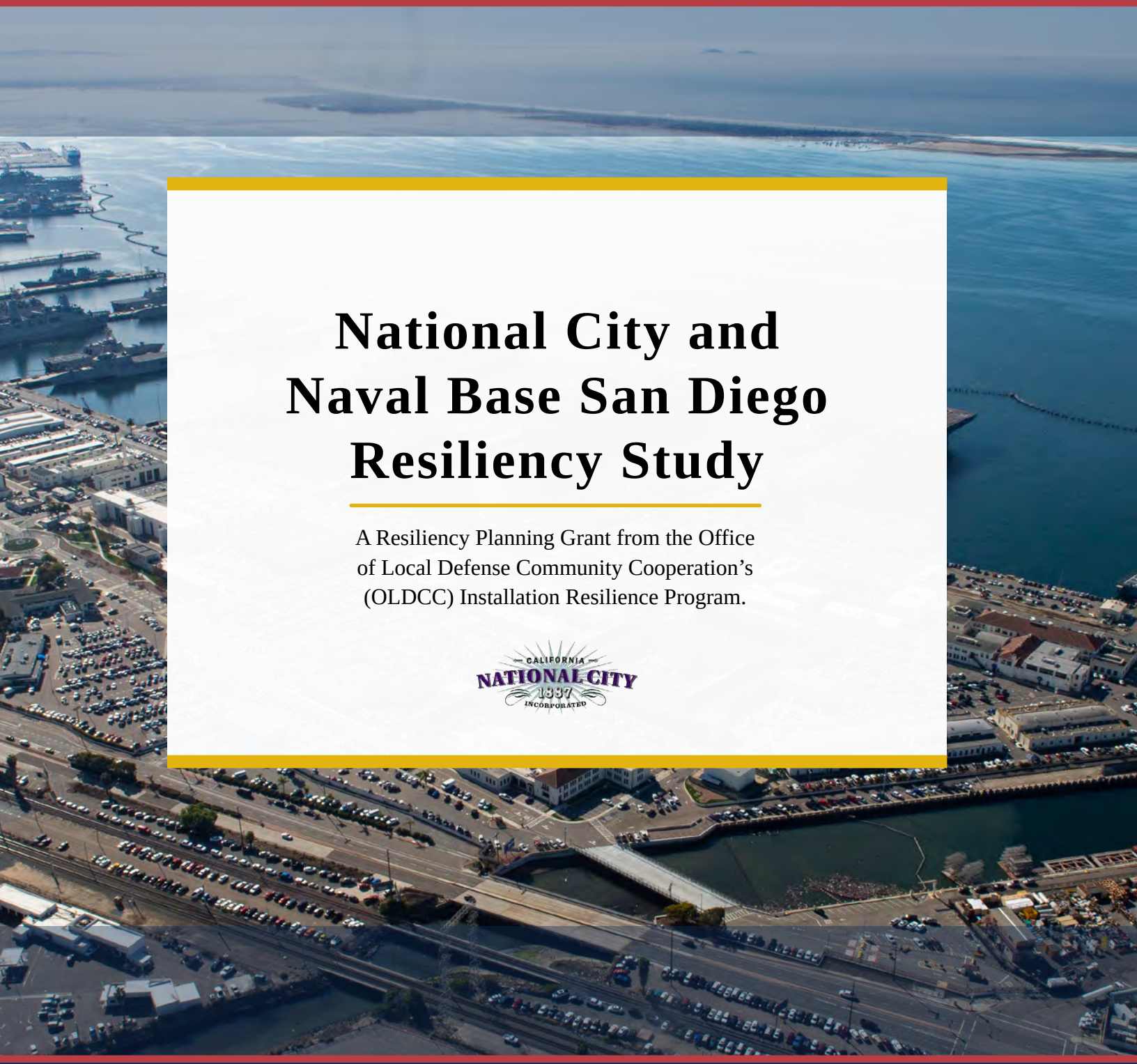

National City and Naval Base San Diego Resiliency Study

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EXECUTIVE SUMMARY

ES.1.1 PURPOSE

The purpose of the National City-Naval Base San Diego Resiliency Study is to review and coordinate existing projects to help reduce congestion, improve traffic safety, and enhance multimodal transportation to foster, protect, and enhance sustainability of military installations and adjacent communities. A primary goal is to foster consensus between the City of National City, Naval Base San Diego (NBSD), and other public transportation agencies on project priorities that address accessibility, congestion, parking, and multimodal mobility connections between Downtown and Westside National City, regional transit stations, and major points of access to the base.

ES.1.2 POLICY COMMITTEE AND COMMUNITY ENGAGEMENT

A Policy Committee consisting of National City and NBSD representatives was created to help identify projects and prioritize final recommendations to the (National City) City Council for approval. Members of the San Diego Association of Governments (SANDAG) Military Working Group (MWG) were also consulted on projects.

In addition to numerous progress meetings with NBSD and National City planning staff, a set of public agency and general public outreach meetings were held to encourage collaboration and project development. Meeting notes and summaries are provided later in this Study.

Public Information Meetings were held at the Public Library in May, and as part of the Community Breakfasts in June and September of 2023. Informational presentations were provided at the SANDAG MWG meetings held in May and September of 2023. Official Policy Committee Meetings (NBSD and National City representatives) were held in May, June, August and December of 2023 via Zoom. Meetings with City of San Diego representatives were held to help refine project definitions and determine project priorities in June, July and September of 2023. Coordination with Caltrans occurred to ensure the current goals and status of the Harbor Drive 2.0 project was incorporated in the process.

ES.1.3 PROJECT SELECTION METHODOLOGY

The Team began with a list of 139 projects proposed by previous studies and plans that address the primary concerns of safety, congestion, connections to highway and transit networks, and multimodal transportation opportunities. The Team focused on congestion, safety, and proximity to NBSD to develop priority projects. A final list of top 8 prioritized projects is shown in Table ES.1 to help create an efficient, safe and sustainable transportation network for all modes of transportation to NBSD and through related parts of National City and San Diego.

ES.1.4 TRAFFIC ANALYSIS OF TWO KEY PROJECTS

Traffic counts were collected in April 2023 for selected Study Area intersections along Main Street and 19th Street, as these two locations have projects that proposed modifications to lane geometry and traffic signal operations. These corridors were analyzed to evaluate the effects of the proposed projects utilizing Synchro traffic analysis software.

The following conclusions can be drawn from the traffic analysis:

- Current (2023) Conditions show delays over 5 minutes at the intersection of Main Street and Division Street in both the AM and PM peak hours. Signalizing the intersection as part of the 8th and Roosevelt project is expected to significantly improve operations at this intersection.
- Current (2023) and Future (2030) Baseline Conditions show unacceptable operations at the intersection of Division Street and Osborne Street in both the AM and PM peak hours. Operations are expected to deteriorate at this location with construction of the Vesta Street Bridge project. Signalizing the intersection is recommended to improve the delay to an acceptable level.
- With the assumed construction of the Vesta Street Bridge in Future (2030) conditions, the travel time for Main Street going eastbound could take an excessively long period of time. Implementing the recommended improvements along Main Street would decrease the travel time to approximately 7 minutes, which is still a long delay, but significantly less than without recommended improvements.
- Similarly, with the construction of the Vesta Street Bridge conditions at the intersections of Main Street with Vesta Street, Yama Street, and Division Street will operate unacceptably in the AM and PM peak hours. Recommended lane geometry and signal timing modifications will improve the intersection delays to operate at acceptable levels.
- Repurposing one eastbound through lane to install Class IV bikeway(s) on 19th Street does not significantly increase arterial travel time or delay. All intersections on 19th Street between Tidelands Avenue and Wilson Avenue operate acceptably in the Future (2030) Plus Vesta Bridge Plus Improvements Conditions, with the longest travel time is 1.4 minutes in the PM peak hour.

ES.1.5 FINAL EIGHT (8) PROJECTS

Team refined the list of projects from 139 to 26 priority projects based on specific criteria related to safety, mobility, congestion management, multimodal options, and connectivity. This priority list was further refined through a gradual process of meeting with the Policy Committee, and personnel from the City of National City staff, the City of San Diego, and NBSD to identify projects most supported for future implementation.

Half of the 26 priority projects were incorporated into the eight project recommendations. These projects are broken down into three different tiers based on the level of support and ability to move the project forward, as shown in Table ES.1.

Level 1 projects are identified as high priority by project stakeholders and include more refined conceptual design plans. Level 2 projects are identified as medium priority by project stakeholders and include an less refined conceptual design plans. Level 3 projects are identified as low priority by project stakeholders and include the least amount of information.

A cut-sheet for each project summarizes the purpose of the project, location, and project features for ease of future grant funding applications. Preliminary concepts for these projects are provided in Appendix E.

Table ES.1. Project List

Level*	City	Roadway	Extents	Recommendation
1	NC	**Bay Marina Drive/ Mile of Cars Way**	Cleveland Avenue to National City Boulevard	Safety and multimodal connectivity improvements
1	SD/NC	**Main Street**	Vesta Street to Division Street	Intersection and roadway capacity improvements
2	NC	**National City Boulevard**	18th Street to 26th Street	Pedestrian and driver safety improvements
2	NC	**8th Street Pedestrian Bridge (Dry Side)**	Paleta Creek to 8th Street Transit Center	Improve safety through pedestrian and bicycle bridge connections to Dry Side of NBSD
3	NC	**8th Street (Pre-Signal)**	8th Street Transit Center to Roosevelt Avenue	Transit Pre-Signals at areas with right-of-way constraints
3	NC	**8th Street Pedestrian Bridge (Wet Side)**	Harbor Drive to 8th Street Transit Center	Improve safety through pedestrian and bicycle bridge connections to Wet Side of NBSD
3	NC	**19th Street**	Tidelands Avenue to Cleveland Avenue	Safety and multimodal connectivity improvements
3	NC	**Civic Center Drive**	Tidelands Avenue to Cleveland Avenue	Closes connectivity gap within bicycle network and provides connectivity with Bayshore Bikeway

NC = National City | SD = San Diego

1

Introduction

1.1 INTRODUCTION

This "National City and NBSD Resiliency Study" (Study) is the result of a Resiliency Planning Grant from the Office of Local Defense Community Cooperation's (OLDCC's) Installation Resilience Program that was awarded in 2022. The grant was received by the City of National City in partnership with Naval Base San Diego (NBSD).

In general, "Installation Resilience activities" are designed to support the organizing, planning, and implementation actions necessary to foster, protect, and enhance the sustainability of military installations. These program activities establish or reinforce an ongoing collaboration between civilian (public and private) and military entities that thrives beyond the term of any project. In the case of this Study, it is intended to encourage coordination and collaboration between the City of National City, NBSD, and other public agencies (SANDAG, Metropolitan Transit System [MTS], Burlington Northern Santa Fe Railway [BNSF], Port of San Diego [Port] , and City of San Diego [SD]) in the identification of issues and prioritization of potential solutions related to transportation, traffic, and parking. This Study is coordinating and collaborating as needed with other public agencies to build consensus on project priorities that address accessibility, congestion, parking, and multimodal mobility needs around NBSD.

A key part of this process was to establish a Policy Committee that helped make final recommendations to the (National City) City Council for approval, as well as utilize members from SANDAG's Military Working Group (MWG) as an advisory group. The National City Policy Committee was made up of the Mayor of National City, the head of City Public Works, and a representative from NBSD. More details on input from stakeholders, various agencies, and the general public is described in Chapter 6, Stakeholder Engagement.

1.1.1 PURPOSE AND STUDY AREA

One major challenge for public agencies is getting funding for large-scale bike, pedestrian, and vehicle infrastructure projects affecting multiple agencies that could help alleviate congestion and improve freight movement. This Study explores projects to help reduce congestion, improve traffic safety, and enhance multimodal transportation. This Study is intended to help highlight the need for and prioritization of transportation projects that will benefit both National City and NBSD. A general map of the Study Area is shown in Figure 1-1.

1.1.2 PROJECT IDENTIFICATION

The process of identifying and developing key projects involved the consultant team (Team) and all advisory bodies assisting in narrowing down the list of projects identified and proposed by previous studies and plans that address the primary concerns of safety, congestion, connections to highway and transit networks, and multimodal transportation opportunities. As a starting point, the Team performed a literature review and identified 139 projects, listed in Appendix A, that had been proposed in earlier studies and plans from local and regional agencies, such as the SANDAG Regional Military Multimodal Access Strategy, Harbor Drive Multimodal Corridor Study by the Port of San Diego, and the National City Integrated Neighborhoods Study (INTRAConnect). The literature review and a project selection methodology is described in subsequent pages of this Study.

1.2 LITERATURE REVIEW

The following section provides an overview of other recently completed and ongoing projects, plans and studies that overlap within the Study Area. It's important to recognize that these projects play a significant role in continued coordination between agencies to align efforts and strengthen project outcomes. In many cases, the project descriptions below have been paraphrased from studies or website descriptions of these projects. This Study reviewed past and ongoing plans to build momentum upon existing efforts, in addition to assessing new potential projects that address local agencies' concerns of congestion, safety, and multimodal access.

Past and ongoing projects and plans reviewed include:

- National City Marina District Balanced Land Use Plan, 2016
- NBSD Entry Control Facilities Evaluation, 2016
- NBSD Installation Development Plan, 2017
- NBSD Parking and Traffic Congestion Relief Plan, 2018
- SANDAG Regional Military Multimodal Access Strategy, 2019
- 8th Street and Roosevelt Ave Caltrans ATP Grant, 2020
- Homefront to Waterfront Study, 2020
- National City Integrated Neighborhoods Study (INTRAConnect), 2020
- Port of San Diego: Harbor Drive Multimodal Corridor Study, 2020
- Roosevelt Ave Smart Growth, 2020
- NBSD Comprehensive Traffic Study, 2021
- Trade Corridors Improvement Fund, Ongoing
- Port District of San Diego Project List, Ongoing
- National City Project Summary Map, Ongoing

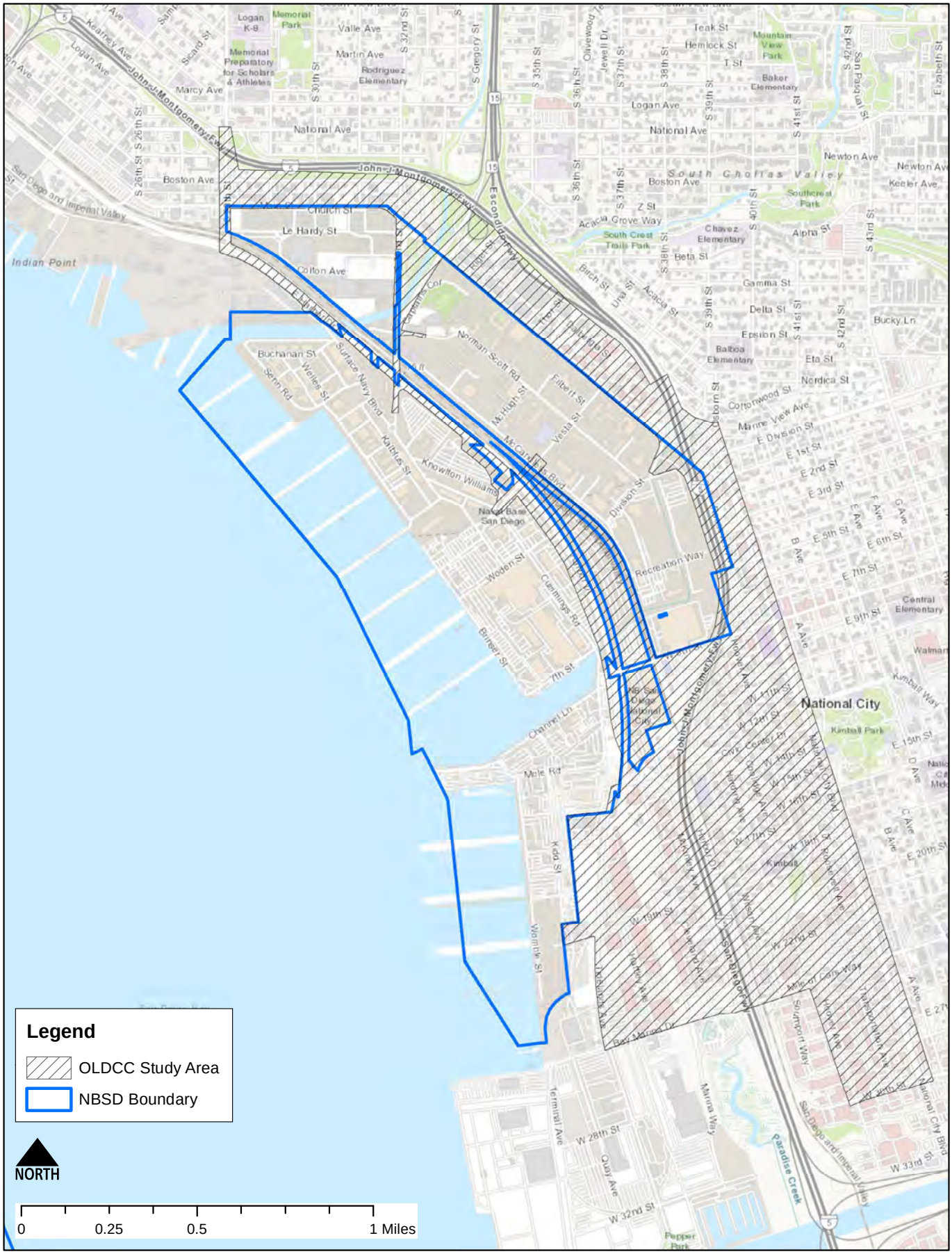

FIGURE 1–1: Resiliency Study area

1.2.1 NATIONAL CITY MARINA DISTRICT BALANCED LAND USE PLAN, 2016

The National City Marina District Balanced Land Use Plan was a joint effort between the Port of San Diego, National City, and community stakeholders to determine the right balance of maritime, commercial, recreation and public access land uses. The plan included many land use, railway infrastructure and transportation projects, but the realignment of Marina Way and Tidelands Avenue and adjustments to the Bayshore Bikeway play a key role in addressing mobility connections in this Study. Understanding how the street network and land uses will evolve over time is critical to proposing projects that effectively close mobility gaps and connect people west of Interstate 5 to the waterfront.

1.2.2 NBSD ENTRY CONTROL FACILITIES EVALUATION, 2016

The 2016 NBSD Entry Control Facilities Evaluation report makes project recommendations at the entry gates off of Harbor Drive and onto the installation. This has been superceded by the 2021 Comprehensive Plan.

1.2.3 NBSD INSTALLATION DEVELOPMENT PLAN, 2017

The 2017 NBSD Installation Development Plan (IDP) makes recommendations within the installation. All but two of the recommended projects stay within the fence line of the installation and do not affect roads in National City or City of San Diego. The two projects in the IDP that will primarily affect Harbor Drive are the bridges that will be built over Harbor Drive to reduce congestion. One bridge would be built at Vesta Street to connect the "Dry Side" to the "Wet Side" of the installation over Harbor Drive. The second bridge would connect Harbor Drive to the I-15 but a final site plan was not provided to determine changes.

1.2.4 NBSD PARKING AND TRAFFIC CONGESTION RELIEF PLAN, 2018

The 2018 NBSD Parking and Traffic Congestion Relief Plan focuses on understanding the existing and projected parking and traffic congestion issues in order to provide strategies that help alleviate these issues. Recommendations in this plan include both program and infrastructure projects that directly address vehicular, transit and active transportation opportunities. Several notable projects that complement this Study include internal shuttle stops and routes that connect to all piers and high population Wet Side facilities, the pedestrian turnstyle and bridge from the 8th Street Transit Center to Dry Side.

1.2.5 SANDAG REGIONAL MILITARY MULTIMODAL ACCESS STRATEGY, 2019

The Regional Military Multimodal Access Strategy (RMMAS) is a collaboration between SANDAG, representatives of the military installations within San Diego County, Caltrans, the County of San Diego, North County Transit District (NCTD) and MTS.

The RMMAS was released in 2019 with a prioritized list of projects to help meet various goals and objectives. The prioritized recommendations for NBSD included some projects that are currently underway, either in preliminary planning or engineering phases.

The prioritization methodology in the RMMAS began with projects that benefited multiple stakeholders, improved multimodal travel, and the project is adequately defined to proceed to detailed evaluation. Then the projects that best addressed congestion relief, safety, and transportation options were prioritized using a simplified points system. Out of the twenty-six top projects for the San Diego region, three projects most directly affect National City and NBSD as noted below:

8th Street Multi-use Path

This active transportation project will help close mobility gaps between NBSD gates along 8th Street, the 8th Street Trolley Station and Downtown National City. The proposed path will support pedestrians, bicyclists and an NEV shuttle system. This project has been designed and is waiting for construction.

Vesta Street Bridge

This project includes the design and installation of a bridge that would span over Harbor Drive. The bridge is aimed at improving traffic flow and congestion issues throughout NBSD, Main Street, and Harbor Drive. This is a current project that Caltrans is leading.

Harbor Drive Multimodal Corridor Projects

Project elements are derived from the Port's Harbor Drive Multimodal Corridor Study, including pedestrian crossings, truck traffic flow improvements, streetscape enhancements, parking adjustments and various other safety improvements. Caltrans is leading this project, known as the Harbor Drive 2.0 project.

1.2.6 8TH STREET AND ROOSEVELT AVE CALTRANS ATP GRANT, 2020

The 8th Street and Roosevelt Avenue multi-use path project is an important project that provides multimodal transportation benefits within the Study area. This project includes a physically separated multi-use path with NEV access, lighting, planting and other active transportation safety enhancements.

This project has required extensive coordination between NBSD, National City, and MTS to ensure that certain NBSD operations have not been negatively impacted by the improvements. Additionally, the NEV shuttle component of this project would support local and regional clean energy/low emissions goals. As of the completion of this Study, the 8th Street and Roosevelt Avenue Caltrans project is designed and awaiting funding for construction.

1.2.7 HOMEFRONT TO WATERFRONT STUDY, 2020

The goal of the Homefront to Waterfront Study was to develop a vision to improve connections between the "Homefront" area around downtown National City (just east of I-5) and the "Waterfront" area around NBSD and the harbor (west of I-5).

With likely increases in employment and housing needs, more sustainable modes of transportation will be needed to lessen the burden of congestion on transportation networks. The increase in use of sustainable modes will help meet goals related to Greenhouse Gas Emissions (GHG) and Climate Change. The study helps solve several complex and interrelated issues, including air quality, livability, walkability, bikeability, safety, public health, traffic congestion, climate change, and the integration of new technologies in transportation. The most relevant projects are:

- 19th Street NBSD to 24th Street Trolley Connection: The proposed project for 19th Street would provide a critical connection from Gate #13 at NBSD to the Bayshore Bikeway and the rest of National City's bike network. Project recommendations include reallocating road space based on low traffic volumes between Tidelands Avenue and McKinley Avenue to install a cycle track.
- Bay Marina Drive Upgrades & Optional Ped. Bridge at 24th Street: The project would include Pedestrian Hybrid Beacons (PHBs), Rapid Rectangular Flashing Beacons (RRFBs), and traffic calming, such as curb extensions, to reduce the speed of motor vehicles and the crossing distance, and signal coordination to reduce progression speed.
- Hoover Avenue Road Diet and Pedestrian Improvements: This project would include a road diet and a bike lane along Hoover Avenue between Mile of Cars Way to 30th Street on both sides of the street. It would also include installing traffic calming such as chicanes and curb extensions as well as adding high visibility crosswalks.
- National City Boulevard Pedestrian Improvements: Recommendations for this project include signal timing changes to slow progression speed along the corridor, as well as pedestrian friendly signal timing improvements at signalized intersections, including Leading Pedestrian Intervals and countdown pedestrian signals.
- E 30th Street Road Diet and Pedestrian Improvements: This project would include a road diet (reducing the roadway from four lanes to two lanes) and a bike lane along 30th Street from Hoover Avenue to National City Boulevard on both sides of the street. It would also include installing traffic calming, especially fire-truck friendly "Speed Cushions," as well as adding high visibility crosswalks with retro-reflectivity.
- NBSD 32nd Street Commuter Project: This project would include formal drop-off and pick-up locations for all directions of travel.
- 8th Street Trolley Station Mobility Hub and Parking Structure: This project would include an initial phase that upgrades the 8th Street Trolley station into a more robust mobility hub and transportation center. The first phase would include some amenities that support multimodal transportation choices. The second phase would be much more robust with major changes proposed for portions of the site, such as a six-story parking garage and a pedestrian bridge across the rail line and Harbor Drive to 8th Street gate.

1.2.8 NATIONAL CITY INTEGRATED NEIGHBORHOODS STUDY (INTRACONNECT), 2020

The 2020 National City Integrating Neighborhoods with Transportation Routes for All Connections (INTRAConnect) study is a guide for improving neighborhoods pedestrian, transit, bicycle and local transport with bike lanes, sidewalk and road projects. Of the total 38 recommended projects, only six are within the Study area, as listed below:

- Hoover Avenue Street: Lighting and crosswalks, if warranted
- 19th Street: Add stop sign, if warranted
- National City Boulevard: Redesign intersection crossing to accommodate pedestrians and add high visibility crosswalks and placemaking
- Wilson Avenue: Add crosswalk, if warranted
- Harding Avenue: Add traffic calming, stop sign, if warranted
- Civic Center Drive: Increase number of pedestrian crossings, add curb extensions and Lead Pedestrian Intervals (LPIs)

1.2.9 PORT OF SAN DIEGO: HARBOR DRIVE MULTIMODAL CORRIDOR STUDY, 2020

The Harbor Drive Multimodal Corridor Study is a planning study that examined traffic flow between the Tenth Avenue Marine Terminal in San Diego and the National City Marine Terminal. The study analyzed all modes of transportation with a special focus on improvements to truck traffic circulation and safety.

Prioritized projects that affect this Study were organized by corridors. Continued coordination between National City, NBSD, the City of San Diego, and the Port will help move potential projects forward in subsequent planning and engineering phases.

32nd Street

Multiple projects under the "Truck-related congestion, noise and pollution" category were highlighted in this Study, but Project 73 is directly related to optimizing operations for street crossings. It points to the removal of the pedestrian bridges at the intersection of 32nd Street and Harbor Drive due to the Bayshore bikeway improvements. This project is part of the Harbor Drive 2.0 project and therefore not considered as part of this Study.

8th Street/Civic Center Drive

Several active transportation projects are highlighted in this section of the Harbor Drive Study. Bikeway improvements along 8th Street, Cleveland Avenue, and Civic Center Drive are described as priorities. These bikeway improvements would help close active transportation gaps to and from Harbor Drive and other sections of this Study Area.

Bay Marina Drive

Four active transportation projects are highlighted throughout the Bay Marina corridor, primarily focused around improving connections to the Bayshore Bikeway, the waterfront (Pepper Park and National City Aquatic Center), and the 24th Street Trolley Station. Bay Marina Drive near I-5 has the highest number of crashes, especially those resulting in fatalities and those seriously injured, out of all the intersections within the Study area.

Naval Base Projects

Several of the projects included in this section are also found in SANDAG's RMMAS plan. The Vesta Street Bridge project is particularly important to the Harbor Drive Study because the bridge would address many issues that currently affect circulation outside and inside of NBSD. The study also suggests the possibility of allowing MTS transit bus access onto NBSD.

1.2.10 ROOSEVELT AVE. SMART GROWTH, 2020

The Roosevelt Avenue Smart Growth Revitalization Plan outlines goals and strategies for investing in higher density mixed use development along the Roosevelt Avenue corridor. The specific development zones are described in more detail in the National City Downtown Specific Plan. The plan highlights streetscape, lighting, signage, urban greening, stormwater runoff and parking improvements that would support a healthy neighborhood. This project directly complements the 8th Street and Roosevelt Avenue multi-use path project previously discussed.

1.2.11 NBSD COMPREHENSIVE TRAFFIC STUDY, 2021

The 2021 NBSD Comprehensive Traffic Study makes project recommendations on NBSD property and entry gates that can affect Harbor Drive or Main Street.

- Vesta Street entry gate on "Dry Side" realigned with Una Street
- Vesta Street bridge over Harbor Drive-Vesta Street entry gate on "Wet Side" modified for truck inspections

1.2.12 NATIONAL CITY PROJECT SUMMARY MAP, ONGOING

The 2023 SANDAG, Caltrans, National City, Port, NBSD, City of San Diego project summary maps for the Vesta Street bridge and Harbor Drive improvement projects are planned to include the following by 2026:

- Truck Only Lanes on Harbor Drive
- Improved bicycle and pedestrian facilities along Harbor Drive
- Vesta Street Bridge over Harbor Drive to connect Wet and Dry Sides of NBSD

1.2.13 PORT DISTRICT OF SAN DIEGO PROJECT LIST, ONGOING

The Port's Proposed Project List includes numerous road and sidewalk projects from Harbor Drive east towards I-5, including:

- Dedicated truck freight haul lanes: Harbor Drive, Bay Marina Drive, 8th Street, 32nd Street, and 28th Street
- Road improvements to increase traffic capacity along Main Street
- Bike lanes along Bay Marina Drive
- Bike lanes along Cleveland Avenue
- Add left turn lanes from I-5 southbound off-ramp on Civic Center Drive
- Bike lanes plus various road and intersection improvements on 8th Street
- Road and intersection improvements at 19th Street on Tidelands Avenue
- Create bike and pedestrian connections to Pepper Park

1.2.14 TRADE CORRIDORS IMPROVEMENT FUND, ONGOING

The SANDAG, Caltrans, Port, NBSD Trade Corridors Improvement Fund (TCIF) Port Access Improvements maps provide three alternative design solutions to traffic congestion at the NBSD 32nd Street entry gate and Harbor Drive.

- Southbound Harbor Drive to I-15 on-ramp new bridge overpass
- At-grade intersection, new bridge over 32nd Street for on/off-ramps from Harbor Drive to I-15 interchange
- Elevated new bridge over 32nd Street for on/off-ramps from Harbor Drive to I-15 interchange

1.3 SEA-LEVEL RISE

Sea-Level Rise (SLR) has been a growing concern over the last few decades, with scientific understanding and guidance documents continuing to evolve. The latest guidance from the State of California was published in 2018 jointly by the California Natural Resources Agency and the California Ocean Protection Council. The guidance provides four probabilistic models (Median (50%), Likely (66% chance), 1-in-20 Change (5%), and 1-in-200 Change (0.5%). These four models were applied to 12 Tide Gauges from Crescent City in the north to San Diego in the south. Values for 2050, 2100, and 2150 are shown in Table 1-1.

To help visualize the potential affects of these values, the Team used the National Oceanic and Atmospheric Administration Sea Level Rise Viewer. After reviewing the results of the tool, the primary area of concern for this Study is the area adjacent to Paleta Creek near Harbor Drive and 8th Street. Figures 1-2 to 1-5 show the extents of Mean Higher High Water (MHHW) today, with a one-foot increase (2050), with three feet of increase (2100), and with six feet of increase (2150) respectively. Increases up to about three feet can be contained within the existing creek channel and begins to flood the adjacent areas at four feet, with six feet flooding a significant area north and south of the creek channel.

Based on flat to gently sloping terrain in the area, SLR adaptation will need to be addressed more holistically and collaboratively between local, state, and federal agencies. The Harbor Drive 2.0 project should become the forum to discuss and determine appropriate elevations to reconstruct this major arterial. Other projects recommended in this Study will acknowledge the need for SLR adaptation, but will only recommend that SLR be incorporated into future planning and design phases of the project and utilize the best available knowledge and guidance at that time.

Table 1-1. Probabalistic Models for Sea Level Rise

	Median	Likely Range	1-in-20 Chance	1-in-200 Chance
	Not Assigned a Risk	*Low Risk Aversion*	*Not Assigned a Risk*	*Medium Risk Aversion*
High Emission 2050	0.9	1.2	1.4	2.0
Low Emission 2100	1.7	2.5	3.3	5.8
High Emission 2100	2.6	3.6	4.5	7.0
Low Emission 2150	2.5	3.9	5.7	11.1
High Emission 2150	4.3	6.1	7.9	13.3

FIGURE 1-2: Current Sea Level (2023)

FIGURE 1-3: Sea Level with a One-foot Increase

FIGURE 1-4: Sea Level with a Three-foot Increase

FIGURE 1-5: Sea Level with a Six-foot Increase

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2

Existing Conditions

2.1 EXISTING CONDITIONS

This chapter provides descriptions and analysis of NBSD and National City on topics of transportation mode utilization, pedestrian travelsheds to public transit and NBSD entry gates, and traffic collisions within the Study Area. The intent is to identify, prioritize and potentially improve some existing transportation related projects that lead to NBSD, and identify areas where new projects may need to be recommended.

Because this Study is funded by a grant that National City received from the OLDCC, the area considered is limited to proximity of NBSD property and facilities to enhance Department of Defense (DoD) readiness and resilience and provide safe places for service members and their families in alignment with the military mission. The goal is to provide value back to the DoD by ensuring manufacturing and supply chains are ready and agile, while encouraging local communities to focus on sustainable development that is compatible, supportive and adaptable to the DoD mission.

Naval Base San Diego

NBSD occupies the waterfront edge of the San Diego Bay directly west of National City and west of the City of San Diego at the north end. It is homeport to the Pacific Fleet Surface Navy with nearly 60 ships, more than 200 tenant commands, and ship maintenance personnel working there daily. As one of the largest employers in the region, NBSD brings over 30,000 vehicles to the installation daily which contributes to local traffic congestion which in turn impacts freight movement in and out of the port. One challenge with the urban fabric around the installation is the lack of walking and biking infrastructure that, if fully developed, could help reduce traffic congestion, improve freight movement, and reduce collision related injuries as a net benefit for both NBSD and National City.

National City

National City is a fully built-out urban environment with nearly 60,000 residents and is considered by the CalEnviroScreen web page as an economically disadvantaged community. The city is directly adjacent to the east edge of NBSD and provides local roads and other bike and pedestrian infrastructure to its citizens and personnel going to NBSD. Caltrans provides the freeway related infrastructure that feeds into NBSD in combination with local city roads.

2.2 TRANSPORTATION MODES AND LEVEL OF USE

Table 2-1 compares National City transportation modes amongst workers 16 and over using five-year estimates from the American Community Survey (ACS) to neighboring cities Chula Vista, San Diego, and La Mesa. This data is limited to the people that live in the noted cities based on 2021 ACS 1-Year Estimates.

Table 2-1. Transportation Modes with Nearby City Comparison

Travel Mode	National City	Chula Vista	San Diego	La Mesa
Drove Alone	68.40%	69.20%	59.10%	75.90%
Car-pooled	16.60%	9.00%	6.90%	8.10%
Public Transit	4.70%	2.30%	2.20%	2.70%
Walked	3.80%	1.50%	3.60%	1.30%
Biked	0.80%	0.00%	0.60%	0.30%
Other	5.70%	18.00%	27.60%	11.70%

2.1.1 CARPOOLED

More than double the amount of ACS survey responders carpool in National City when compared to neighboring cities. This is helpful for reducing congestion and greenhouse gas emissions.

2.1.2 PUBLIC TRANSPORTATION

There are also nearly twice as many workers from National City who commute using public transit than neighboring cities. San Diego County's Blue Line trolley line is the most heavily used route in the San Diego region. However, within the Study Area, 8th Street is the most traveled bus route with 1,000 to 5,000 transit trips per day, followed by the arterial transit networks with around 500 to 1,000 trips per day.

2.1.3 WALKING AND BICYCLING

More people from National City report walking and bicycling to work than neighboring cities as well. It should be noted that NBSD is one of the region's largest employers and fourth largest naval base in the US. Given this information, the area currently lacks the complimenting infrastructure to support walking and biking in an accessible and comfortable way.

2.1.4 OTHER

The 'other' category represents people who did not drive, bicycle, walk, or take transit to work. This could mean they used a motorcycle or skateboard, worked remotely, or called a taxi or ridesharing service. It is important to note that in 2021, when these estimates occurred, many people were working remotely due to the COVID-19 pandemic.

2.3 TRAVELSHED ANALYSIS

Travelshed analysis figures on the following pages were developed to help with project prioritization based on potential high use areas like bus stops, trolley stops, and entry gates to NBSD. The travelsheds are not "as the crow flies;" rather, they use streets and walkways to show the path that people walking are able to take or not take, based on the existing road network and barriers. The closer an origin and destination are, the more likely and willing people are to use sustainable modes of transportation, such as walking, bicycling, and using transit.

According to the book *Human Transit,* by Jarrett Walker[1], the most commonly cited distance to walk to transit stops in the United States is a quarter mile, or about a five-minute walk. In Europe, larger distances are more commonly used such as a half-mile, or about a 10-minute walk. This Study also includes an eighth of a mile travelshed, or about a three-minute walk, to demonstrate where improvements will have the greatest impact for those making first-last mile connections.

Both I-5 and the railroad tracks in National City cause similar limitations in permeability of the grid network in the Study Area, as can be shown by the travelsheds in Figures 2-1 through 2-3. Typical project recommendations such as intersection reconfigurations, curb extensions, and new bike lanes, all contribute to a safer environment for pedestrians and bicyclists, which is supportive of the goal to enhance multimodal conditions of within the Study Area.

Travelsheds from Bus Stops

Figure 2-1 shows an eighth of a mile or about a three-minute walk, quarter-mile or six-minute walk, and half-mile walk distances from all bus stops as shaded polygons. Bus stops provide strong access to Dry Side gates, all within a quarter-mile or closer. Of the Wet Side gates, only Gates #6 and #9 are within a quarter-mile. Gates #2, #7, and #13 are more than a half mile walk, signaling that people are probably not using the bus to access these gates. It is reasonable to assume that people are or would be willing to use transit to access gates within smaller travelsheds which emphasizes the importance for pedestrian and bicycle improvements. Other gates are beyond a half-mile and less likely to be accessed by bus.

Travelsheds from Trolley Stops

Figure 2-2 shows the eighth, quarter, and half-mile distances from trolley stops. Both the 8th Street and Pacific Fleet trolley stop provide strong access to military gates. From the 8th Street station, Gate #9 is about an eighth-mile distance and from the Pacific Fleet station, Gate #6 is within an eighth-mile and Gate #43 is within a quarter-mile. Improvements made within these travelsheds will both increase safety for existing trolley passengers while also attracting new ones. The 24th Street trolley stop does not reach any gates within a half-mile distance. Due to I-5 being a barrier, options are limited to get to that trolley station.

Travelsheds from Military Gates

Figure 2-3 shows eighth, quarter, and half-mile distances from NBSD gates #2, #6, #7, #9, and #13 on the Wet Side and gates #29, #32, and #43 on the Dry Side. This map is specific to showing which bus stops and trolley stops can be accessed within a half-mile from the gates. All gates are relatively well-served and can access bus and/or trolley stops with an exception of the 24th Street station. While Gate #13 almost reaches it, the I-5 and railway act as a barrier, preventing a more direct route. Gates #6, #9, and #43 are the most accessible by bus and trolley.

1 Walker, Jarrett. Human Transit, Island Press, 2011

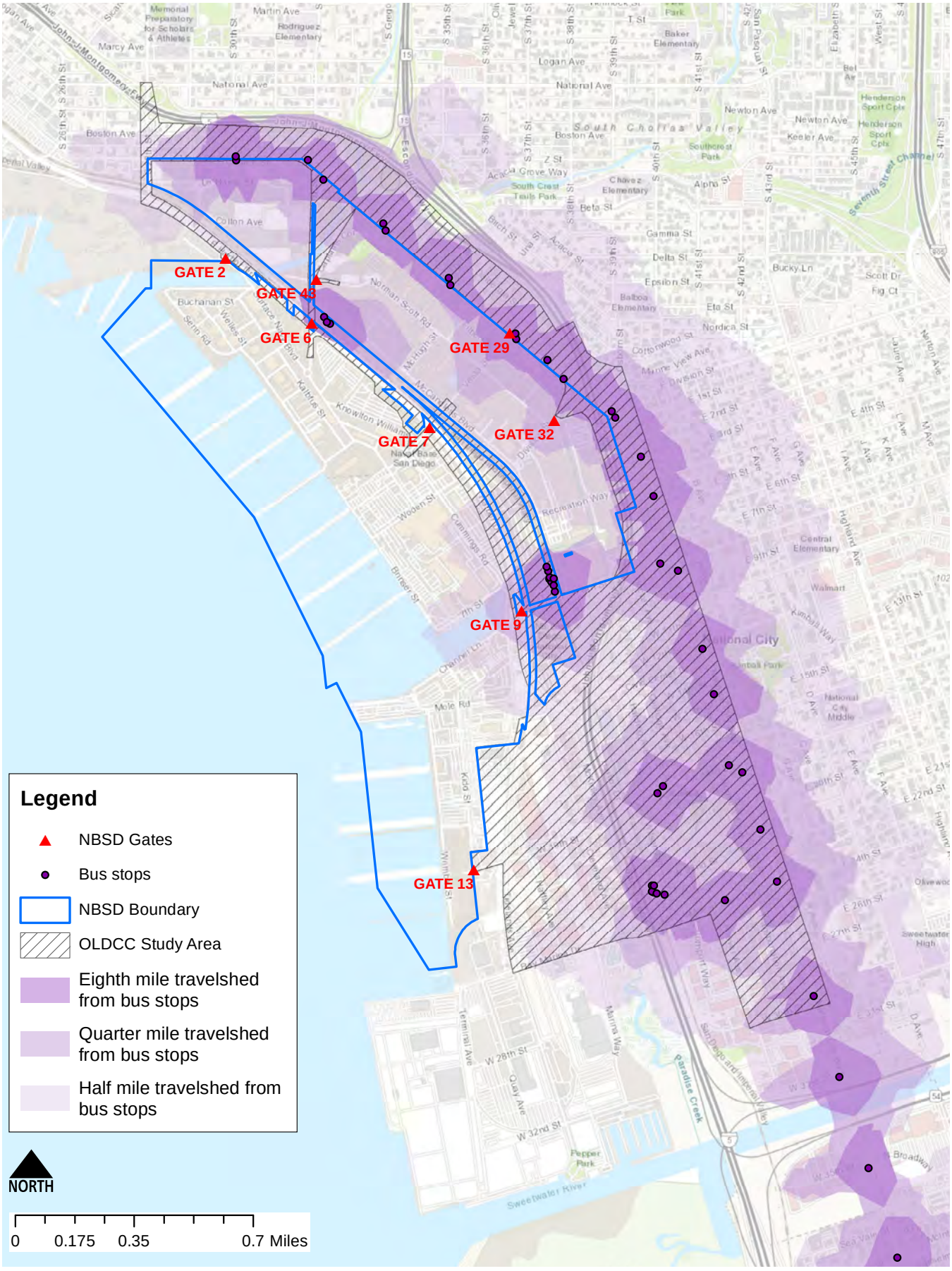


FIGURE 2-1: Travelsheds from Bus Stops

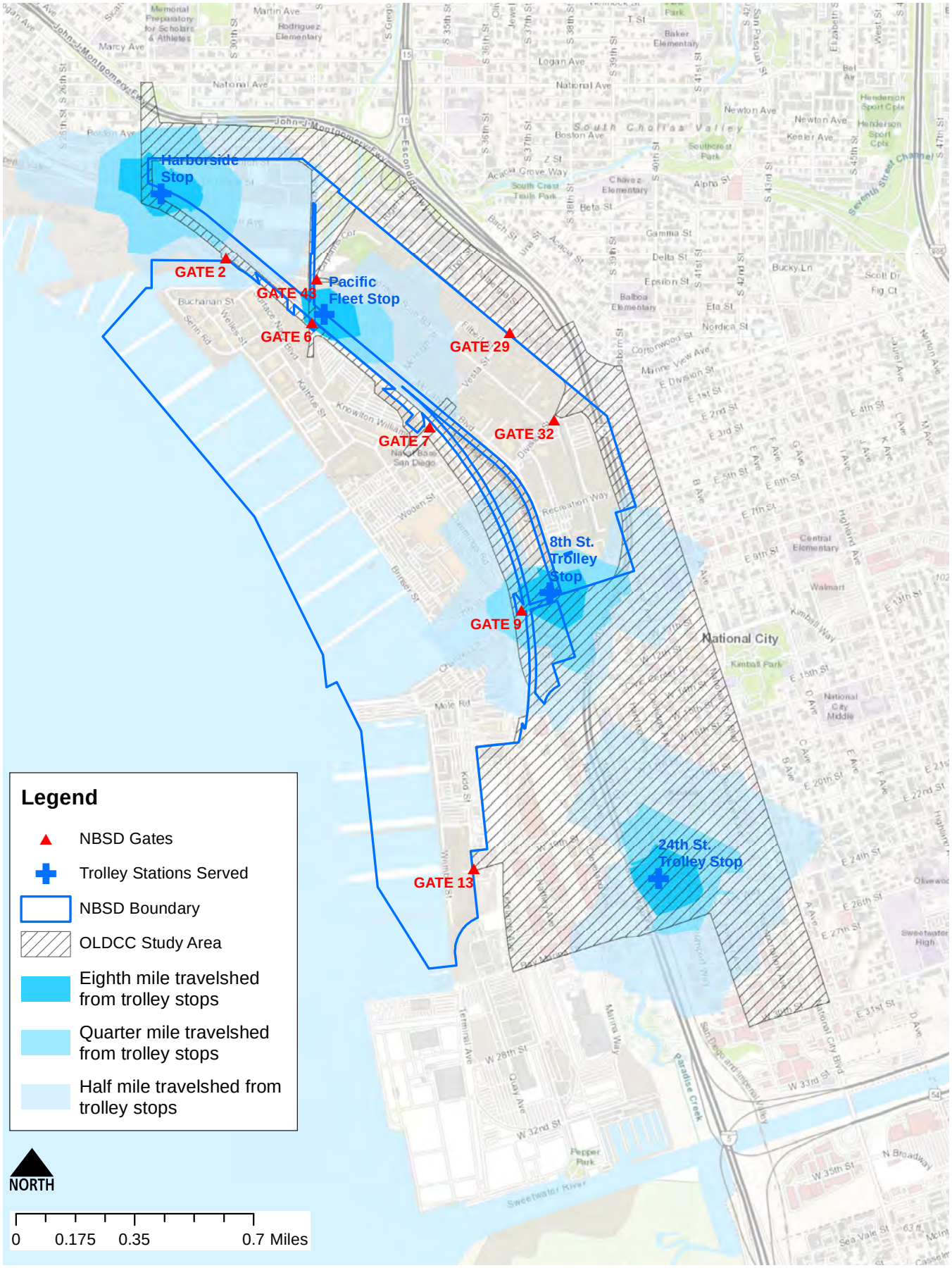


FIGURE 2-2: Travelsheds from Trolley Stops

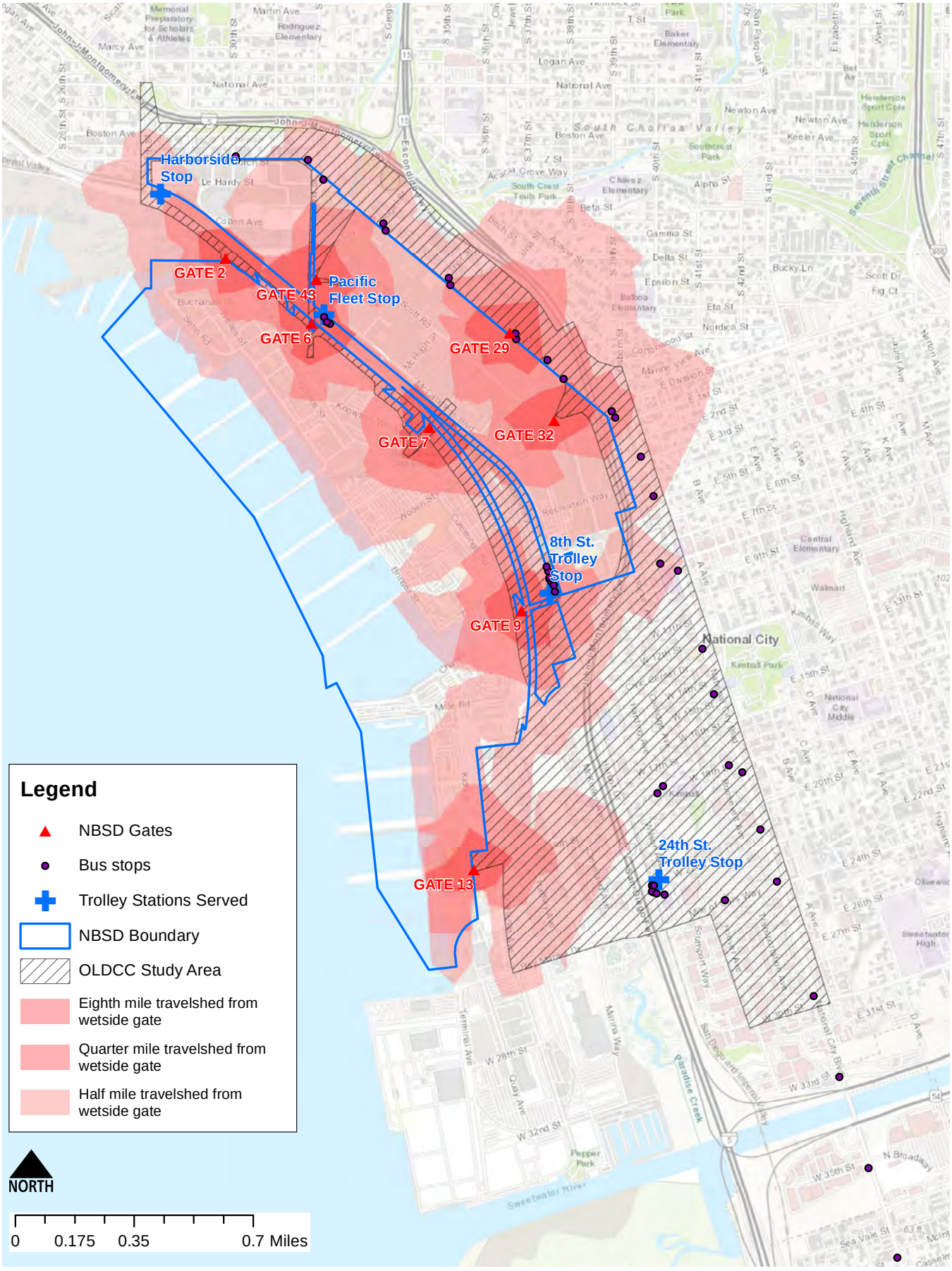


FIGURE 2-3: Travelsheds from Military Gates

2.4 COLLISION ANALYSIS

The following section provides an overview of bicycle, pedestrian, and automobile collisions between 2011-2021 using data downloaded from the University of Berkeley's Transportation Injury Mapping System (TIMS). TIMS data is based on the California Highway Patrol's (CHP) Statewide Integrated Traffic Records Systems (SWITRS). Collision quantities, severities, locations, and primary collision factor violations are summarized in Tables 2-2 through 2-4 for the Study Area.

Table 2-2. Injury Severity for All Collisions

Injury Severity for All Collisions	Quantity
Fatality	8
Severe Injury	31
Visible Injury	177
Other Injury	418
Totals	**634**

Table 2-3. Injury Severity and Location

Injury Severity and Location	Collision at Intersection		
	Yes	No	N/A
Pedestrian			
Fatality	1	2	-
Severe Injury	4	7	-
Visible Injury	13	11	-
Other Injury	15	16	1
Bicycle			
Fatality	-	-	-
Severe Injury	1	1	-
Visible Injury	9	15	-
Other Injury	8	11	-
Automobile			
Fatality	1	4	-
Severe Injury	6	11	1
Visible Injury	53	74	2
Other Injury	152	206	9
Total Collisions (770)			
All Modes	263	358	13

Table 2-4. Primary Collision Factor Violation

Primary Collision Factor Violation	Auto	Bike	Ped
Automobile Right of Way	91	8	1
Following Too Closely	27		
Hazardous Parking	1		
Improper Passing	6	4	
Improper Turning	102	7	5
Other Hazardous Violation	10	1	1
Other Improper Driving	5	1	1
Other Than Driver	7	2	
Pedestrian Right of Way Violated		1	27
Pedestrian Violation		1	24
Traffic Signals and Signs	82	2	3
Under the Influence	20		
Unknown	22	5	6
Unsafe Lane Change	15		1
Unsafe Speed	113	2	1
Unsafe Starting or Backing	10	1	
Wrong Side of Road	8	10	
Totals 770	**519**	**45**	**70**

Collision Summary

The Study Area had 770 total collisions between 2011-2021, as detailed in Tables 2-2 through 2-4. There were more automobile collisions (due to relative scales of mode utilization) than pedestrian collisions, and the fewest were bicycle collisions. There were no bicyclist fatalities but four pedestrians and six automobile occupants were killed. The primary causes, or collision factor violations, for automobiles was most frequently 'unsafe speed', then 'improper turning', 'automobile right of way', and 'traffic signals and signs'. Bicyclist injury causes were primarily from the bicycle riding on the wrong side of the road (likely due to lack of bike facilities), then 'improper turning' of vehicles into bicyclists, then bicyclists violating the automobiles right of way. Pedestrian collisions primarily resulted from automobiles violating the pedestrians right of way (likely in crosswalks due to unsafe driving or driving at an excessive speed), and next by pedestrians violating various traffic laws (possibly crossing outside a crosswalk midblock and other reasons).

Methodology

The GIS methodology for the following maps joined collision points to the nearest road centerline. Each collision point joined to a road centerline was then ranked based on collision type and severity of injury as noted below. The total rank, or score from the joined collisions for each road segment, was divided by the linear foot length of the segment to get a 'collision per foot' decimal number for that length of road segment. The decimal value was used to compare each road segment to other segments in the Study Area and determine a scale from highest to lowest quantity and severity of collisions. Red road segments have the highest quantity and severity of injuries - over the length of the road segment. The following scoring values were used for all injuries.

- Pedestrian and Bicycle collisions:
  - » Fatal or Severe Injury = 1.5
  - » Visible or Other Injury = 1.25
- Vehicle collisions without a Pedestrian or Bicycle
  - » Fatal or Severe Injury = 1.25
  - » Visible or Other Injury = 1.0

Each road segment on a corridor is ranked relative to all other road segments based on collision rank-scoring with injury severity. This is useful with finding areas with the highest level of collisions and injury severity that could become project priorities.

All Collisions

In Figure 2-4, Main Street starting at Division going north to 28th Street in San Diego has four traffic fatalities and six severe injuries, higher than most streets in the City. South 28th Street in San Diego also has a high collision rank with two severe injuries and numerous additional injury collisions. Additional streets with high numbers of severe traffic collisions include the 1-15 on/off-ramp connecting to the NBSD Wet Side main gate, National City Boulevard, and Bay Marina Dr-Mile of Cars going east National City Boulevard.

Bicycle Collisions

In Figure 2-5, the road segment ranking is limited to only bicyclists related collisions and injuries. This can help with identifying bicycle project priority locations.

The quantity and extent of bike related injuries are scattered throughout the Study Area with the highest ranks occurring on the side streets that feed into National City Boulevard and segments of Roosevelt Avenue at the north edge of National City. Main Street running along the east edge of NBSD Dry Side has seen a few bicyclists injuries that could benefit from a new bike project. Mile of Cars Way is another corridor with segments of high bike collision ranks. The intersection around Harbor Drive and Civic Center Drive just west of I-5 appears to need attention for bike safety. Segments of Cleveland Avenue with bike injuries suggest a project on this street may help reduce future injuries. At the north end of the Study Area, the areas around 28th Street, 32nd Street and National Avenue in the City of San Diego could benefit from bike safety projects.

Pedestrian Collisions

Figure 2-6 shows a similar pattern of priority road segments along the following corridors:

- National City Boulevard
- Main Street
- Mile of Cars Way
- Civic Center Drive at the I-5 underpass
- 28th Street, 29th Street, 30th Street, National Avenue, Boston Ave in City SD

Automobile Collisions

Figure 2-7 brings the same roads to the top with the highest ranking corridors including National City Boulevard running the length of National City, Cleveland Avenue, Civic Center Drive, Mile of Cars Way at the south edge of National City, and the full length of Main Street along the NBSD Dry Side boundary.

The Mile of Cars Way/Bay Marina Drive corridor should be considered the worst single stretch for collision injuries (and a key corridor for potential projects) due to the four severe injuries, one fatality, and numerous other injury collisions that have occurred during the study period. At the north end of the Study Area, the I-15 on-ramp and off-ramp that leads directly to NBSD Wet Side main gate, 28th Street, National Avenue, Boston Avenue and the full length of Harbor Drive all see high levels of collision injuries.

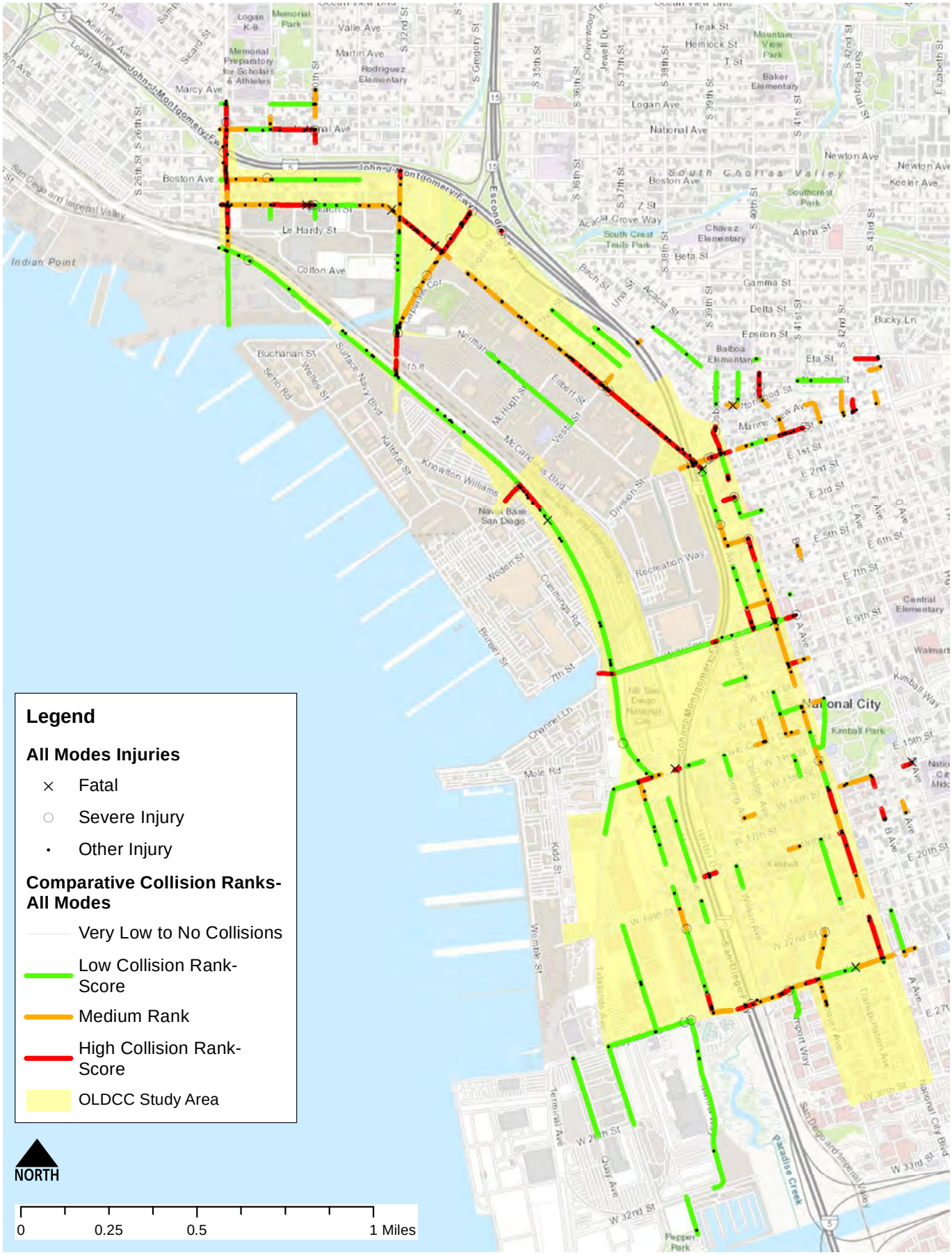


FIGURE 2-4: All Travel Mode Collisions

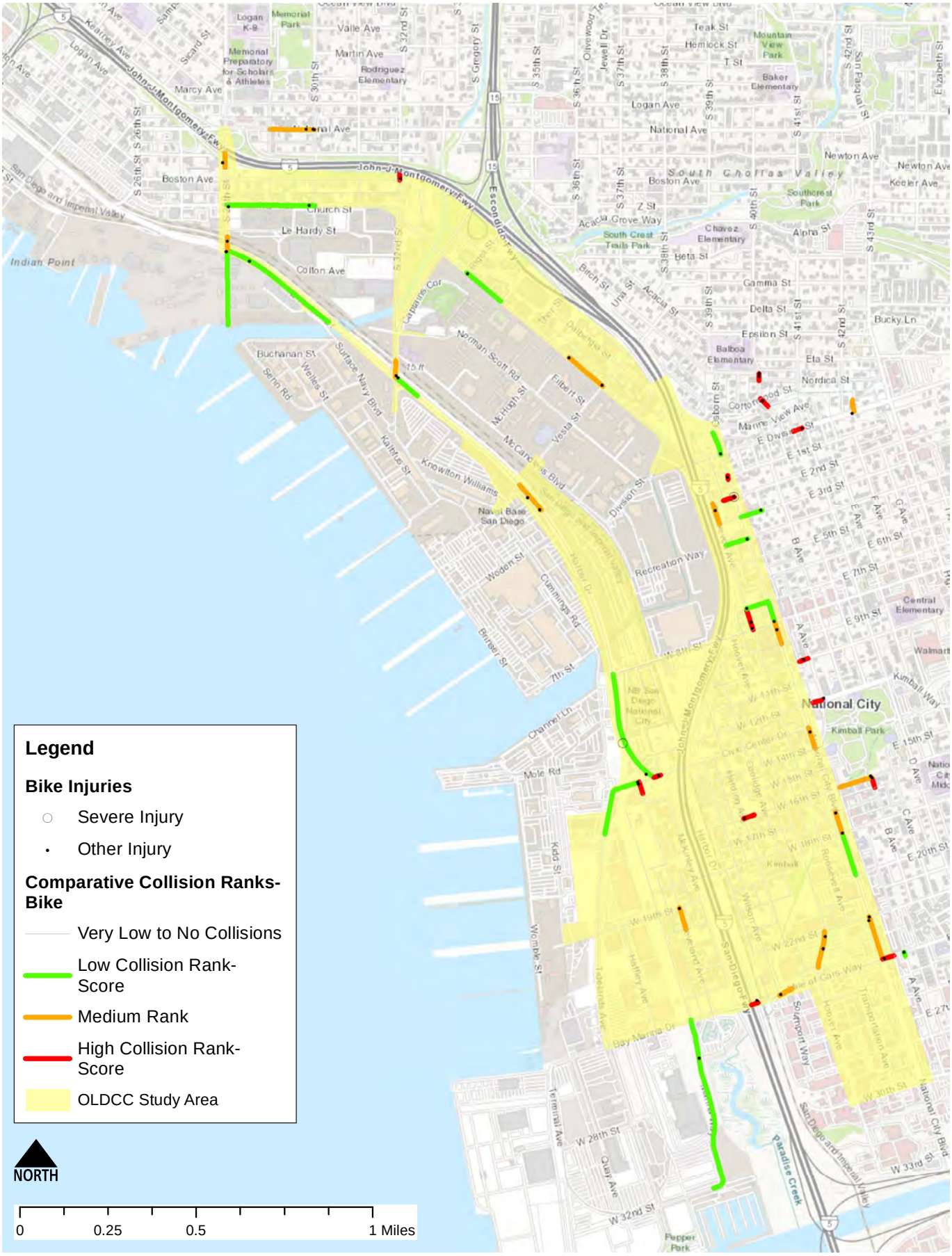


FIGURE 2–5: Bicycle Collisions

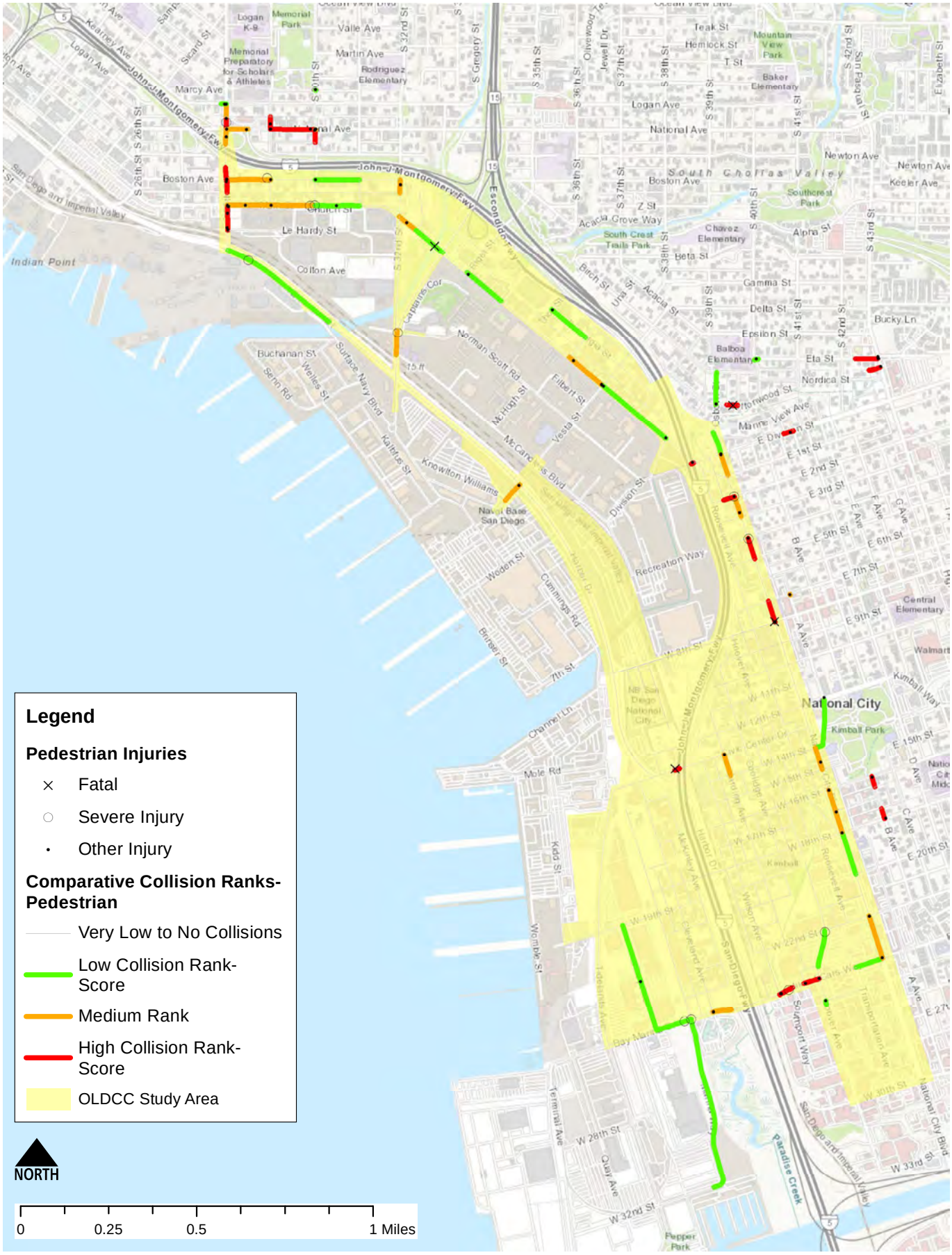


FIGURE 2-6: Pedestrian Collisions

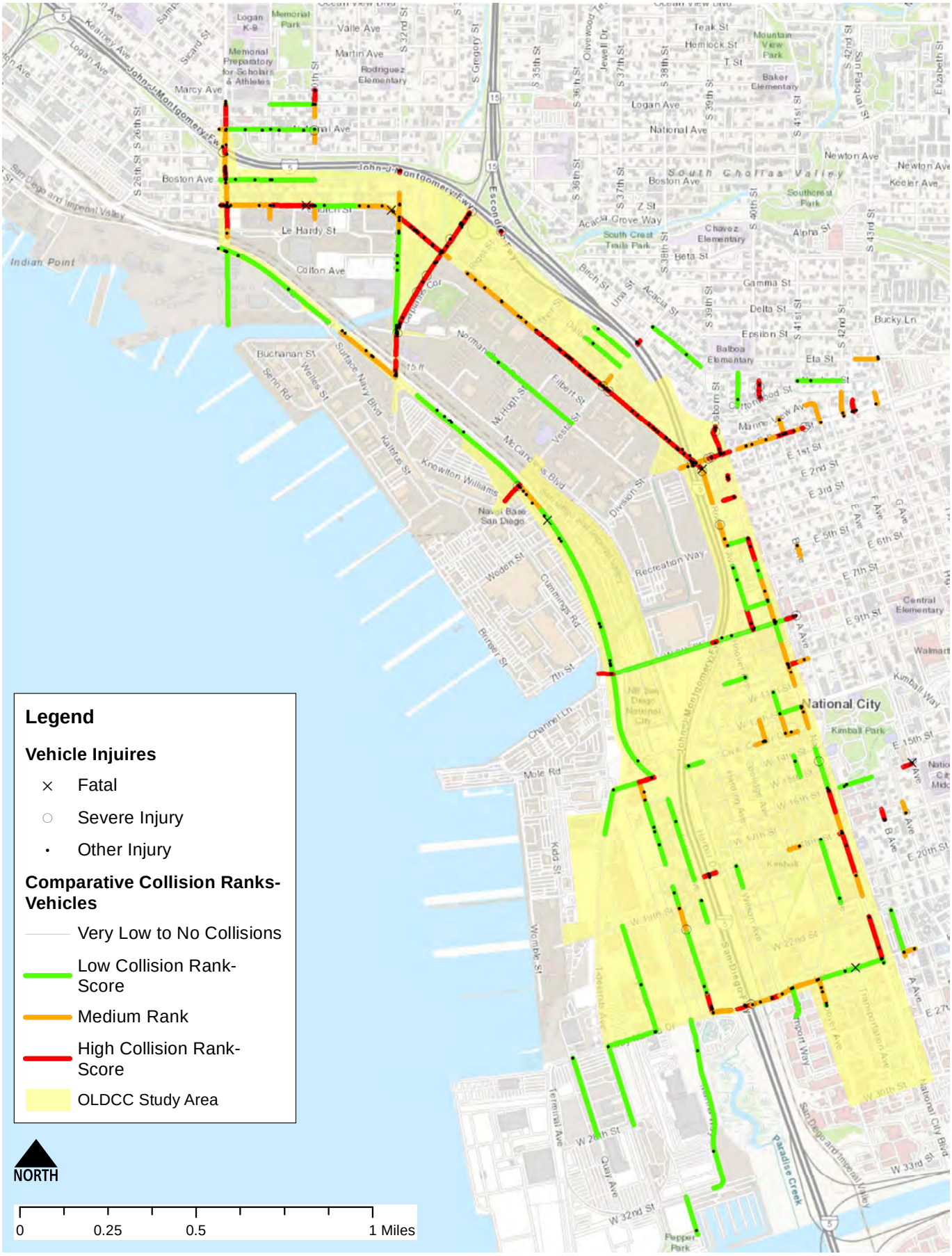


FIGURE 2–7: Vehicle Collisions

2.5 STREET CLASSIFICATION

Figure 2-8 shows Street Classification from *National City Homefront to Waterfront* in the western portion of National City and extending north into the City of San Diego along Harbor Drive. As shown on the map, primary arterial routes include National City Boulevard, Harbor Drive, 8th Street, and parts of 24th Street. Numerous collector routes run throughout the City with primary collectors including Tidelands Avenue, Civic Center Drive, 18th Street, Bay Marina Drive, 24th Street.

Arterials tend to have a higher crash frequency, higher vehicle volumes, and higher speeds, which can make a safe and inviting pedestrian environment more challenging. At the same time, improving the safety, efficiency, and multimodal options along arterial roadways is key to improving the overall function and operation within the Study Area.

2.6 TRUCK ROUTES AND STRAHNET CORRIDORS

Figure 2-9 shows Truck Routes and Strategic Highway Network (STRAHNET) connectors from *National City Homefront to Waterfront* in the western portion of National City and extending north into the City of San Diego along Harbor Drive. As shown on the map, the STRAHNET runs along Harbor Drive then turns east to connect to the primary STRAHNET route of Interstate 5. The STRAHNET is a 62,791-mile system of roads in the United States that is deemed necessary for emergency mobilization and peacetime movement of goods. A short segment of STRAHNET is on Bay Marina Drive to connect NBSD with Interstate 5. Primary and alternative truck routes connect industrial and commercial parts of the City with Interstate 5. One of the primary truck routes includes Harbor Drive to Civic Center Drive westbound to Tidelands Avenue southbound to Bay Marina Drive east to get to commercial parts of the City east of Interstate 5. The truck route then goes north and south on National City Boulevard. Additional truck routes include Civic Center Drive east of Interstate 5, Plaza Boulevard going east into the City, Roosevelt Avenue going north of Plaza Boulevard. The safety and efficiency of truck routes and the STRAHNET corridor will be an important part of this Study, as well as meeting the standards of the STRAHNET road design guidelines.

2.7 BICYCLE NETWORK

Figure 2-10 shows existing and proposed bikeways in the western portion of National City and extending north into the City of San Diego along Harbor Drive. As shown on the map, National City has numerous segments of existing bikeways but they have numerous gaps in connections that reduce the accessibility and sense of security when riding through the City. Proposed bikeway routes from *National City Homefront to Waterfront* will close these gaps by adjusting lane widths and configurations to support safe routes for alternative means of transportation throughout the City.

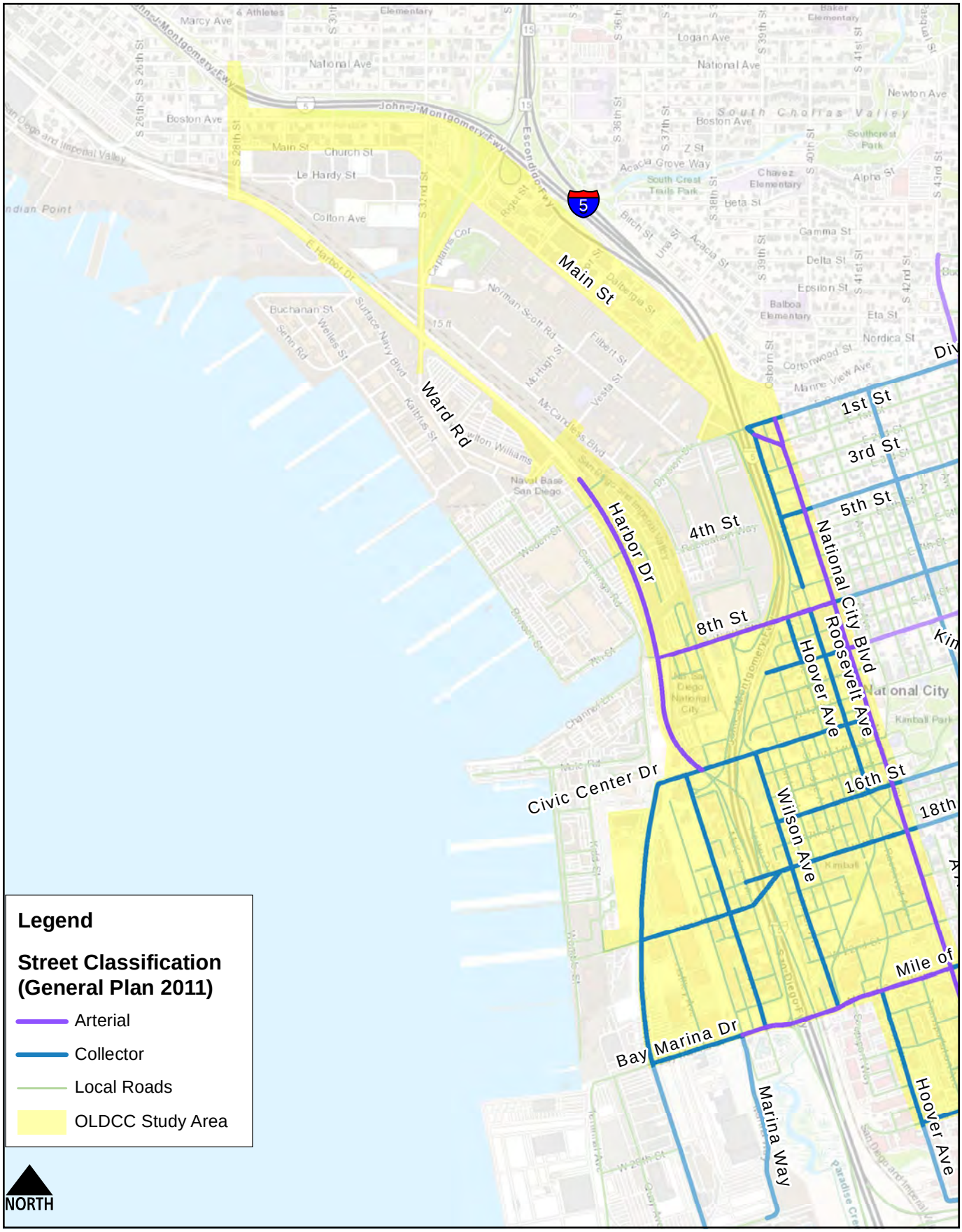


FIGURE 2-8: Street Classification (from Homefront to Waterfront Plan)

FIGURE 2-9: STRAHNET Network (from Homefront to Waterfront)

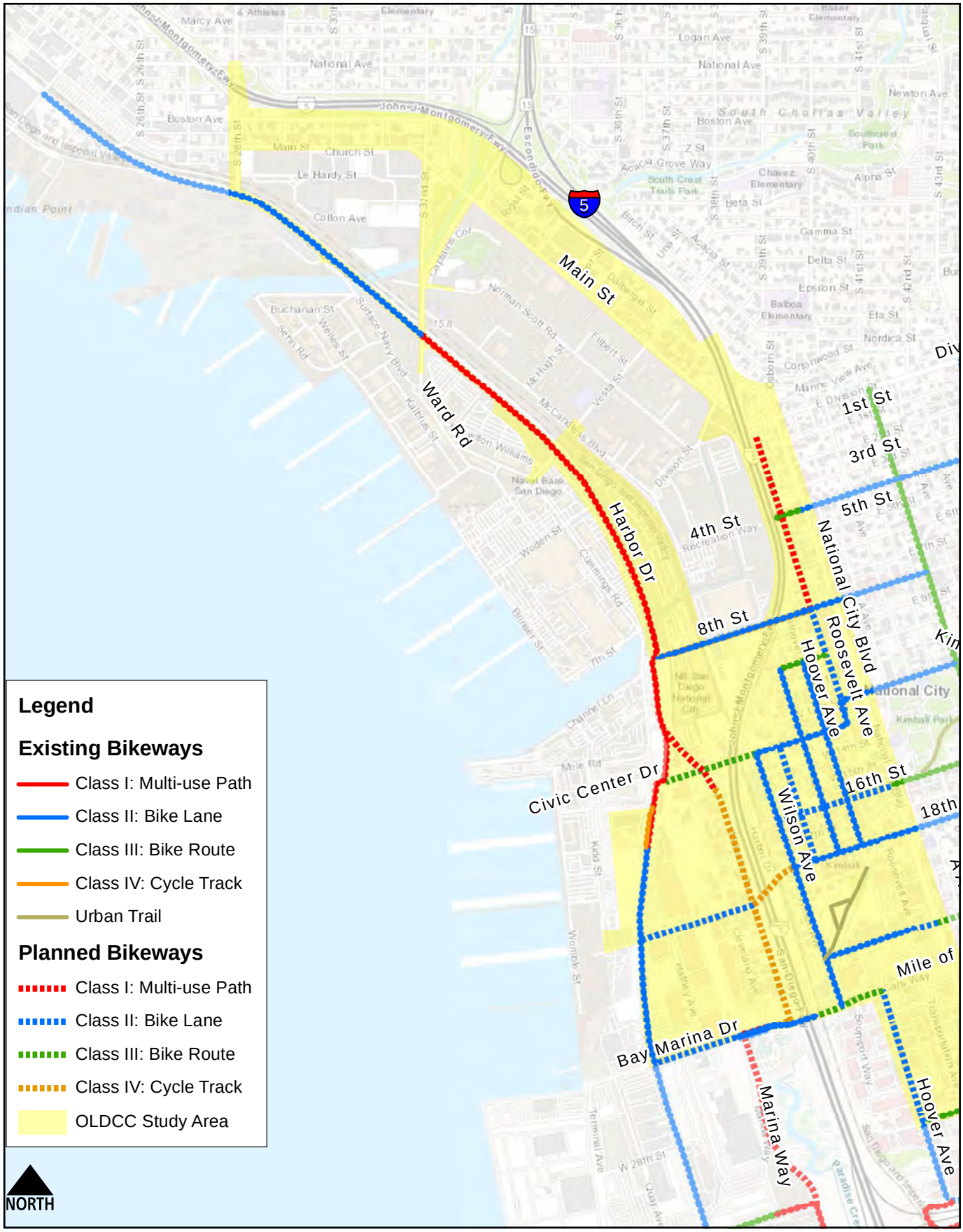


FIGURE 2-10: Existing and Planned Bikeways (from Homefront to Waterfront)

2.8 WALKABILITY

There are multiple trolley lines and bus routes in the Study Area. However, with mostly industrial and light industrial land uses and heavy use of trucks and large vehicles, the environment can be uncomfortable for people walking. The Study Area has railway lines and freeways as barriers, and generally long block lengths, commonly 1,000 feet long, which can increase walk trips significantly. Although there are a fair amount of sidewalks in the Study Area, there are generally long distances between signalized pedestrian crossings so the area is not considered pedestrian-friendly.

Although there's no one universally accepted metric for how walkable an area is, there are emerging tools to measure walkability, such as the Walk Opportunities Index, the Walkability Index, the Pedshed Connectivity measure, and Walk Score, according to research from the Project for Public Spaces. It is the latter metric, Walk Score, that will be explained in this section, as well as a pedestrian crash analysis in a subsequent section of this Study.

Walk Score is a generalized tool for comparing relative ease of access by walking, biking, and using transit to destinations of a city or neighborhood from adjacent areas, as provided by the *Walk Score* webpage. The webpage is a free service available to the general public to compare, mainly, the density of destinations in adjacent cities or individual homes or businesses. Table 2-5 and Figures 2-11 provide a summary of Walk Score webpage data as of May 2023. The table compares walk, bike, and transit access in adjacent cities, and the adjacent neighborhood of Southcrest. All scores are out of 100 possible points. As shown in the comparison table, the overall area of National City scores highest with walkability compared to adjacent areas. Although it should be noted that 'San Diego' includes a vastly larger area that is averaged for its entirety and reduces its overall score. National City is described as having "some public transportation," does not have many bike lanes, and "some" errands can be accomplished on foot.

Some of the criteria used in this Study's prioritization process are pedestrian quality and bicycle level of traffic stress. Factors such as low walkability or bikeability helped determine priority projects by focusing on closing gaps and increasing multimodal options.

Table 2-5. Walk Score Comparison with Adjacent Cities

Travel Mode	Walk Score	Bike Score	Transit Score
National City	69	49	47
Chula Vista	46	41	35
Southcrest	68	52	48
San Diego	53	43	37

FIGURE 2-11: WalkScore Map of Walkability (green is higher density of destinations)

2.9 NEIGHBORHOOD ELECTRIC VEHICLES (NEV)

The City of National City received a Clean Mobility Options (CMO) grant from the California Air and Resource Board to construct a mobility hub at the 8th Street Transit Center. As a dedicated location for switching modes of transport, mobility hubs are centers designed to provide a safe and comfortable transition for passengers between transportation modes by providing a focal point in the transportation network. The plan for this mobility hub is to both charge and store Neighborhood Electric Vehicles (NEVs). A NEV is defined as a four-wheeled electric vehicle that has a maximum speed greater than 20 miles per hour (mph) but not more than 25 mph. NEVs will be stored at the 8th Street station and serve National City within a 10-minute radius of the mobility hub, as shown in Figure 2-12. The purpose of this microtransit is to increase first-last mile connections for people using the 8th Street trolley, though it can be used by anyone with a smartphone.

The NEVs are funded for four years. The CMO grant funds the first three years of the program, and the Port is funding the fourth year.

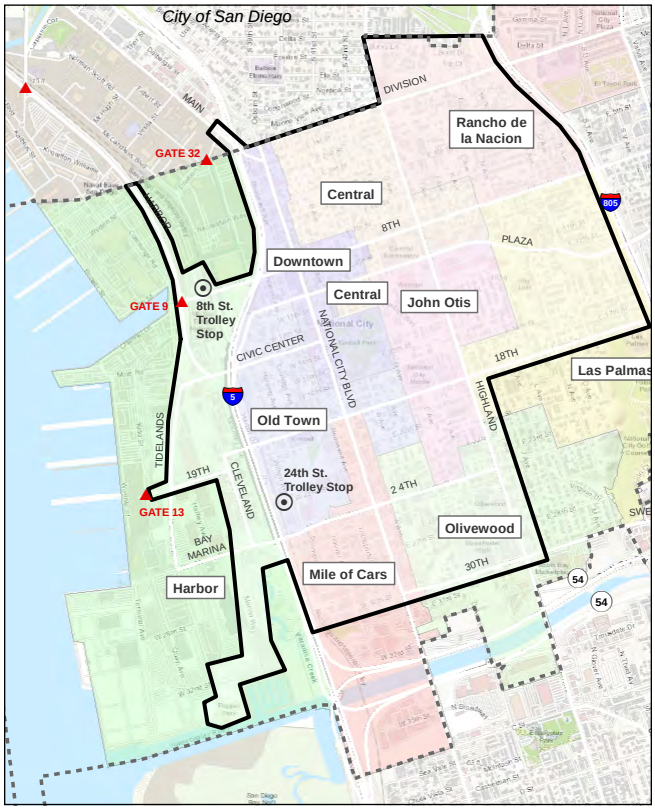


FIGURE 2-12: NEV Service Area

2.10 CITYWIDE TRAFFIC CONDITIONS

For this Study, the Team analyzed current traffic conditions throughout the day, using the standard traffic engineering measurement of a volume to capacity ratio. A volume to capacity (v/c) ratio measures the amount of traffic on a given roadway relative to the amount of traffic the roadway was designed to accommodate, or the capacity of the roadway.

After analyzing all the periods of the day, the peak morning period appeared to be 6am to 7am and the peak afternoon/evening period appeared to be 3pm to 4pm, as can be seen in Figures 2-13 and 2-14.

To gauge traffic conditions, traffic engineers use a term called "Level of Service," which is a qualitative measure used to relate the quality of motor vehicle traffic service. It is used to analyze roadways and intersections by categorizing traffic flow and assigning quality levels of traffic based on performance measures like vehicle speed, density, congestion. In general, the principle is to take the volume of traffic in one hour and divide it by the appropriate capacity of the road type to get a v/c rating.

In traffic engineering, it is acceptable for roads to operate at 85% capacity, which equates to what traffic engineers refer to as "Level of Service" (LOS) D and E. After analyzing the peak morning period and the peak afternoon/evening period in the project study area, it was determined that for those two periods, most of the streets in the Study Area operate above 85% capacity. As can be seen in Figures 2-13 and 2-14, where orange represents a v/c between 0.85 and 0.96 and red represents a v/c above 0.96, most of the streets are in orange or in red, indicating significant current congestion during peak periods in the Study Area. These traffic engineering terms are further explained in chapter 4.

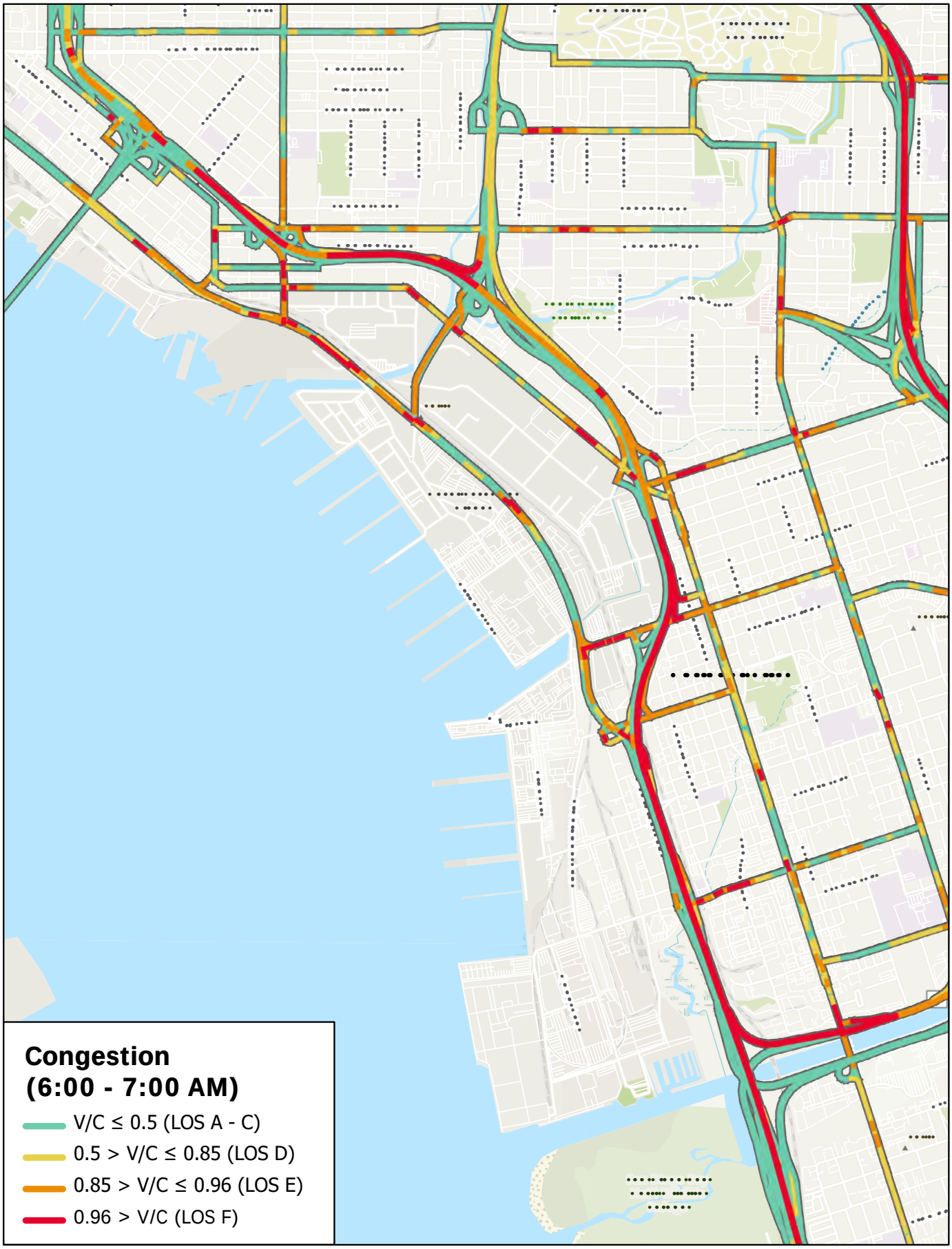


FIGURE 2-13: Congestion from 6:00-7:00AM (Peak Hour)

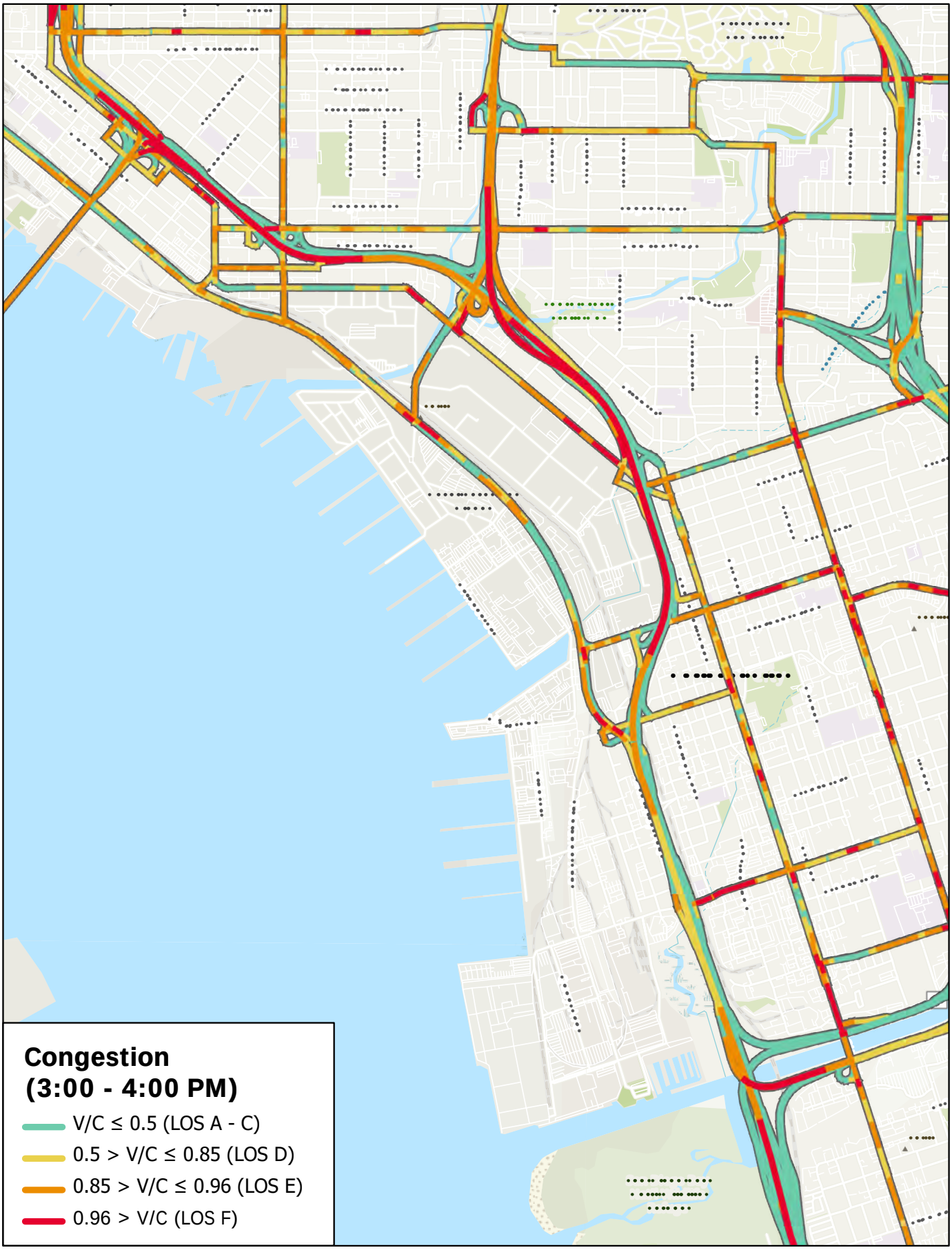


FIGURE 2-14: Congestion from 3:00-4:00PM (Peak Hour)

3

Project Recommendations

3.1 PROJECT PRIORITIZATION

The Team began with a list of 139 projects proposed by previous studies and plans that address the primary concerns of safety, congestion, connections to highway and transit networks, and multimodal transportation opportunities. The Team applied the following filters to develop priority projects. Over two dozen of the projects were removed because they were on NBSD right of way, which is outside of the scope of this Study. For example, some projects were inside the NBSD fence line, NBSD gates improvements, etc. More projects were removed from the list if they didn't meet the project goals of safety, transportation congestion, or multimodal benefits or weren't focused on the City of National City, the City of San Diego, or NBSD.

The Team also removed any projects that were in construction, funded, already designed, or the project included more recent projects identified in the same area by a different agency. With these criteria applied, the Team removed 113 projects from the original project list of 139 projects, bringing the list of potential projects down to 26 projects, pictured in Figure 3-1 and project descriptions can be found in Appendix B.

For those 26 projects, the Team applied a series of criteria to score and then rank them from 1 to 26. The criteria are determined as follows:

1. **Collision Scores for all collisions -** This column is a score for each of the project locations based on vehicle, pedestrian and bicyclist collisions that occurred along each corridor or intersection. For intersections, collisions that occurred within 300 feet of the intersection were included in the collision score. Scores for individual collisions are based on 1.25 'points' for fatal vehicle/vehicle collisions, 1.00 'points' for all other vehicle/vehicle injuries, 1.50 for fatal pedestrian or bicyclist versus automobile collisions, 1.25 for severe injury pedestrian or bicyclist versus automobile collisions, and 1.00 for all other pedestrian or bicyclist versus automobile injuries.

2. **Proximity to NBSD Gates** - For this score, the Team used GIS to measure the distance from the part of the project closest to one of the gates (#2, #6, #7, #9,#13, #29, #32, #43). If a project was within an eighth of a mile from the selected gates, it was given a score of 9. If a project was within a quarter mile from the selected gates, it was given a score of 6. If a project was within a half mile from the selected gates, it was given a score of 3. If a project was further than half mile away from the selected gates, it was given a score of 0.

3. **Average Congestion (Volume-to-Capacity Ratio [v/c])-** Google Maps "Typical Traffic" tool was used to determine the weekday morning (AM) and afternoon (PM) peak hour congestion for the Study Area. Google Maps classifies their typical traffic congestion into four categories: Green (free flow - no traffic delays), Orange (moderate amount of traffic), Red (traffic delays), Dark Red (significant traffic delays). These four categories were equated to a corresponding volume-to-capacity (v/c) ratio with similar traffic conditions: Green ($v/c < 0.5$), Orange ($v/c \leq 0.85$), Red ($v/c \leq 0.96$), Dark Red ($v/c > 1$). For congestion scoring, average v/c ratios were multiplied by 10 to correspond to the other scoring columns. For a roadway, the worst case v/c segment was used and for an intersection, the intersection approach v/c ratios were averaged.

4. **Pedestrian Quality -** This score factors in the following criteria.
   - **Ped Separation (bike, planter, parking) -** This column indicates the percentage of corridor that has horizontal separation between the vehicle travel lane and the sidewalk. This criteria is for determining pedestrian Level of Traffic Stress (LTS).
   - **Ped Existing Sidewalk (percent) -** This column indicates the percentage of the corridor that has existing sidewalks.
   - **Ped Ease of Crossing (Corridors) (percent) -** This column indicates the percentage of the corridor that has existing marked crosswalks every 600 feet down the road.
   - **Ped Ease of Crossing (Intersection) (type/percent marked) -** This column indicates the percentage of four crosswalk areas that have existing markings for crosswalks.
   - **Ped LTS -** Shows the final score applied to the corridor (or intersection depending on the project) for pedestrian LTS.

5. **Bicycle Level of Traffic Stress -** This score factors in the following criteria.
   - **LTS Speed -** LTS is a method of estimating the Level of Traffic Stress for bicyclists. LTS Speed is the vehicle road speed in miles per hour as posted on signs. The higher the speed for vehicles then the higher the stress for bicyclists. The LTS Speed score is used in conjunction with the LTS Bike Lane Exists (percent) and the LTS Vehicle Lanes values in the next columns to determine the overall LTS.
   - **LTS Bike Lane Exists (percent) -** This column shows the percentage of the corridor that has an existing bike lane.
   - **LTS Vehicle Lanes -** This column shows the number of vehicle lanes along the segment of the corridor.

FIGURE 3-1: Project Intersections and Corridors

- **Bike LTS score -** Shows the final score applied to the corridor for bike LTS.

6. **Connection to STRAHNET, freeways, trolleys lines, etc. -** This is a score that considers connectivity to key networks, namely the STRAHNET, freeways, trolleys lines, using professional judgment to determine a score based on that project's importance in boosting and connecting to the aforementioned networks.

The Team added the aforementioned criteria to a table and added the total score for each of the 26 projects, so they could be ranked 1 through 26 as shown in the Table 3-1.

Table 3-1. Projects for Prioritization

	Primary Corridors and Intersections	Location (Start)	Location (End)	Collision	Proximity* to NBSD Gates (2, 6, 7, 9,13, 29, 32, 43)	Average Congestion (V/C)	Pedestrian Quality	Bicycle Level of Traffic Stress	STRAHNET Connection to trolleys lines, free-ways, etc	Total Score
1	32nd St	Harbor Dr	Main St	6	9	9.6	4	4	10	42.6
2	8th Street Transit Station	-	-	0	9	0	4	4	25	42.0
3	32nd St @ Transit Station	-	-	1	9	8.5	4	4	15	41.5
4	28th St	Harbor Dr	Main St	10	3	9.6	4	4	10	40.6
5	28th St @ Boston Ave	-	-	8	3	8.5	3	3	10	35.5
6	Division St @ Main St	-	-	10	6	7.5	4	4	10	41.5
7	Main St	Vesta St	Yama St	8	9	8.5	3	4	5	37.5
8	Civic Center Dr (#1)	Tide-lands Ave	Wilson Ave	2	9	9.1	4	4	10	38.1
9	Bay Marina Dr - Mile of Cars	McKin-ley Ave	Hoover Ave	4	0	8.5	4	4	10	30.5
10	Main St @ Yama St	-	-	6	9	7.8	3	3	10	38.8
11	Civic Center Dr (#2)	Tide-lands Ave	Wilson Ave	2	9	9.1	4	4	10	38.1
12	8th St @ Hoover Ave	-	-	1	3	7.9	4	3	10	28.9
13	Bay Marina Dr	Cleve-land Ave	Railroad	3	0	8.5	3	3	5	22.5
14	Cleveland Ave	Civic Center Dr	Bay Marina Dr	2	3	8.5	3	4	5	25.5
15	Boston Ave	29th St	32nd St	1	3	8.5	2	2	10	26.5
16	19th St	Harbor Dr	McKin-ley Ave	2	3	0	2	4	15	26.0

	Primary Corridors and Intersections	Location (Start)	Location (End)	Collision	Proximity* to NBSD Gates (2, 6, 7, 9,13, 29, 32, 43)	Average Congestion (V/C)	Pedestrian Quality	Bicycle Level of Traffic Stress	STRAHNET Connection to trolleys lines, free-ways, etc	Total Score
17	Bay Marina Dr	Cleve-land Ave	Marina Way	3	0	6.8	3	3	10	25.8
18	19th St	Tide-lands Ave	McKin-ley Ave	0	9	8.5	2	2	1	22.5
19	19th St @ Tidelands Ave	-	-	0	9	8.1	2	1	1	21.1
20	Sampson St @ Harbor Blvd	-	-	4	0	8.7	3	3	1	19.7
21	National City Blvd	18th St	26th St	2	0	6.8	4	4	1	17.8
22	Sampson St @ Logan Ave	-	-	1	0	7.2	4	4	1	17.2
23	19th St @ Wilson St	-	-	0	0	6.8	3	2	5	16.8
24	Hoover Ave	Mile of Cars Way	30th St	1	9	8.5	3	3	1	25.5
25	Harbor Dr to McKinley Bike Path	Civic Center Dr	McKin-ley Ave	0	3	0	4	1	5	13.0
26	Mckinley Ave	14th St	Bay Marina Dr	1	3	0	1	1	5	11.0

3.2 COLLISIONS AT PRIORITIZED PROJECTS

The ranked projects from the prior section were further analyzed for types and quantities of collisions. The following two maps focus collision mapping analysis on the project intersections and corridors to help prioritize projects relative to each other in terms of public safety.

Figure 3-2 Project Intersection Collisions shows circles around intersection project locations to highlight relative ranking or scoring of all (bike/ped/vehicle) injury severities within a 300 foot buffer, or circle, from the intersection point. Each collision within 300 feet of the intersection was ranked / scored based on collision type and severity of injury as described previously. The total score for each intersection's collisions was then used to compare each intersection and determine a relative scale from highest to lowest quantity and severity of collisions.

The intersection of Division Street and National City Boulevard has the highest relative rank of collision injuries of all the intersection projects. A close second includes the I-5 off-ramp intersection onto Main Street which is directly adjacent to the worst intersection noted above. Additional relatively high ranking intersections for collision injuries include the main entry gates to NBSD Dry Side and Wet Side off of 32nd Street and the intersection of 28th Street and Boston Avenue at the north edge of the Study Area.

Figure 3-3 Project Corridor Collisions shows the project locations with relative ranking of the projects full length and collision injuries compared to the other project corridors.

The Mile of Cars Way/Bay Marina Drive corridor is considered the worst single stretch for collision injuries due to the four severe injuries that have occurred there plus all the other injury collisions. A tie for the second worst locations starting with Main Street leading to the NBSD Dry Side entry gate that has seen two severe injuries, then 32nd Street as it directs traffic to the NBSD Dry Side and Wet Side main entry gates. The fourth high ranking injury corridor project is at the north end of the Study Area on 28th Street that brings traffic to Harbor Drive from I-5.

FIGURE 3–2: Collisions at Project Intersections

FIGURE 3-3: Collisions on Project Corridors

4

Future Conditions

4.1 TRAFFIC ANALYSIS

Data was collected in April, 2023 for the Study Area intersections along Main Street and 19th Street, as these two locations have projects that proposed modifications to lane geometry and traffic signal operations. These corridors were analyzed to evaluate the effects of the proposed projects. The following Study Area intersections are shown in Figure 4-1 and Figure 4-2.

Main Street Study Intersections

1. Main Street and I-15 Freeway Ramps
2. Main Street and Vesta Street
3. Main Street and Yama Street
4. Main Street and Division Street / Roosevelt Street
5. National City Boulevard and 1st Street / Osborn Street
6. Division Street and Osborn Street

19th Street Study Intersections

7. 19th Street and Tidelands Avenue
8. 19th Street and Cleveland Avenue
9. 19th Street and McKinley Avenue
10. 19th Street and Wilson Avenue

4.1.1 ANALYSIS SCENARIOS

This traffic analysis evaluated the intersections listed above under the following five (5) scenarios:

- Current (2023) – Based on Current (2023) traffic counts collected in April 2023.
- Future (2030) Baseline – Based on current traffic volumes and ambient growth along major roadways. This scenario is based on the roadway geometry and traffic control assumed for year 2030.
- Future (2030) Plus Improvements – Future (2030) baseline volumes with roadway geometry and traffic control modifications assumed for the project.
- Future (2030) Plus Vesta Bridge – Future (2030) baseline traffic volumes redistributed as a result of the construction of the Vesta Street Bridge project. This scenario is based on the roadway geometry and traffic control assumed for year 2030.
- Future (2030) Plus Vesta Bridge Plus Improvements – Future (2030) plus Vesta Street Bridge project volumes with roadway geometry and traffic control assumed for the project.

FIGURE 4–1: Main Street Study Area

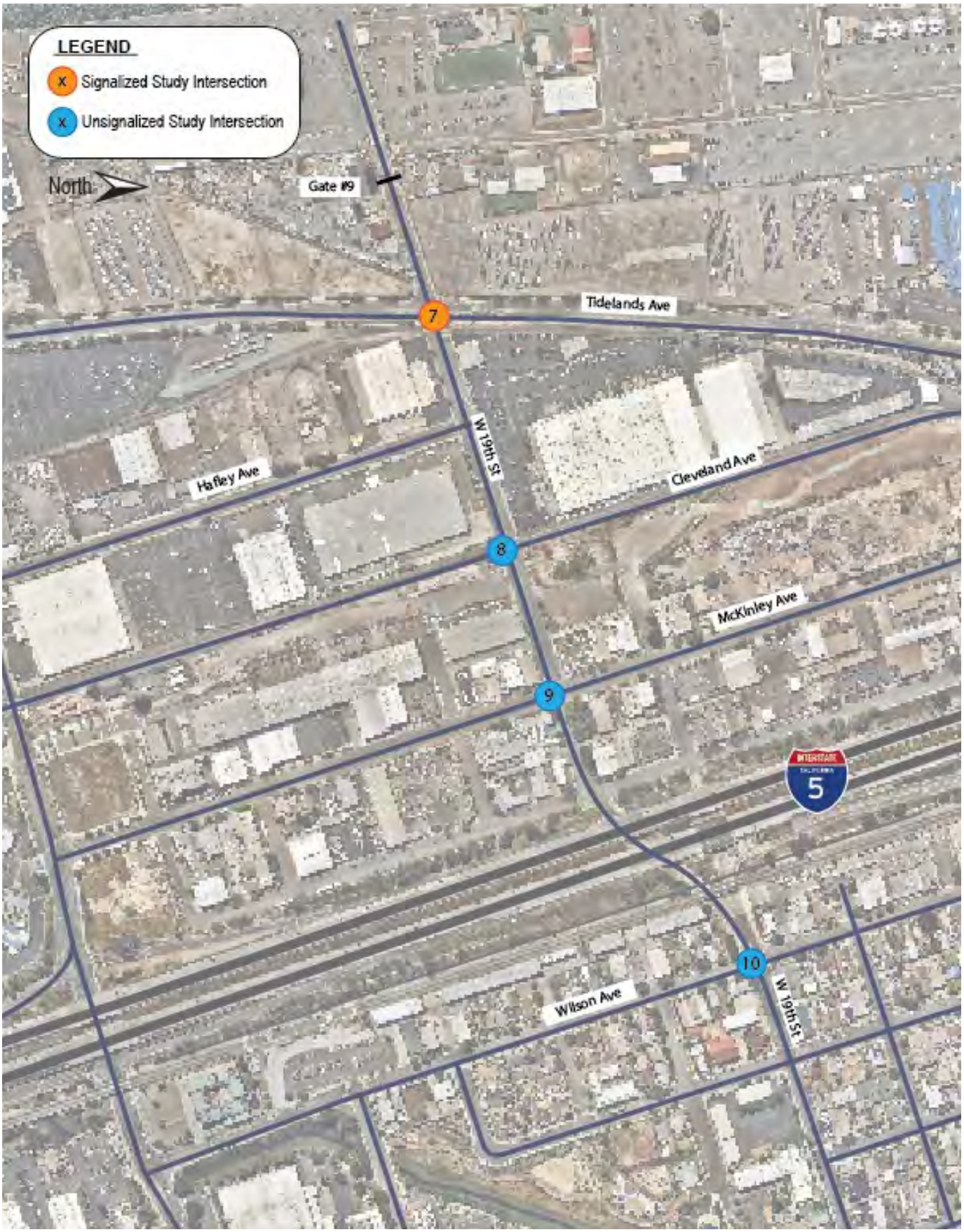


FIGURE 4–2: 19th Street Study Area

4.2 ANALYSIS METHODOLOGY

4.2.1 LEVEL OF SERVICE STANDARDS

Analysis of the study intersections were based on the concept of Level of Service (LOS) and is a qualitative measure used to describe operational conditions, as mentioned in section 2.10. LOS ranges from A (best), which represents minimal delay, to F (worst), which represents heavy delay and a facility that is operating at or near its functional capacity. Levels of service for this Study were determined using methods defined in the *Highway Capacity Manual, 6th Edition* (HCM 6) and *Highway Capacity Manual, 2000* (HCM 2000) within Synchro analysis software. Intersections with standard signal phasing were analyzed with HCM 6. Intersections with non-standard signal phasing or non-standard intersection control were analyzed using HCM 2000 methodologies due to HCM 6 methodology limitations within Synchro.

The HCM includes procedures for analyzing side street stop controlled (SSSC) and signalized intersections. The SSSC procedure defines LOS as a function of average control delay for the worst movement. Conversely, the signalized intersection procedures define LOS as a function of average control delay for the intersection as a whole. The LOS standard for the City of San Diego and the City of National City is LOS D.

Table 4-1 relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

4.2.2 TRAVEL TIME RUN METHODOLOGY

Arterial travel time was evaluated using Synchro's SimTraffic software. Synchro is a macroscopic analysis tool used to identify operational measures of effectiveness at the intersection level, but is limited to treating each intersection in isolation of

Table 4-1. Intersection Level of Service Definitions

Level of Service	Description	Signalized *(Avg. control delay per vehicle sec/veh.)*	Unsignalized *(Avg. control delay per vehicle sec/veh.)*
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream	[10	[10
B	Stable traffic. Traffic flows smoothly with few delays.	10 – 20	10 – 15
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	20 – 35	15 – 25
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	35 – 55	25 – 35
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	55 – 80	35 – 50
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	80	50

Sources: Transportation Research Board, Highway Capacity Manual 6th Edition, National Research Council, 2016.

the network. SimTraffic, the microscopic software built into Synchro, analyzes the Synchro model as a network and can identify deficiencies caused by queuing and blocking at upstream and downstream intersections. Therefore, SimTraffic was used to determine arterial travel times for each of the study corridors based on the average results from three microsimulation runs for the AM and PM peak models.

4.3 CURRENT (2023 CONDITIONS)

Current (2023) Roadway Network

From I-15 to Division Street, Main Street is an east-west, two-lane, local collector. The roadway serves commercial uses and provides access to Gates #29 and #32 of NBSD. Main Street provides connection to the I-15 and I-5 freeways from NBSD. On-street parking is allowed on both sides of the street and the street is divided by a two-way left-turn lane (TWLTL). There are sidewalks on both sides of the street with sidewalk gaps along the south side and no bicycle facilities along Main Street in the Study Area. The posted speed limit is 30 miles per hour.

From Tidelands Avenue to Wilson Avenue, 19th Street is an east-west, two-lane, local road. From Cleveland Avenue to Wilson Avenue, the roadway is eastbound only. The roadway serves commercial uses and provides access to NBSD Gate #13. There are sidewalks on both sides of the street and there are no bicycle facilities along 19th Street in the Study Area. The posted speed limit is 30 miles per hour.

4.3.1 CURRENT (2023) PEAK-HOUR TURNING MOVEMENT VOLUMES

Current (2023) volumes are based on counts collected on April 5, 2023, and are illustrated in Figure 4-3 and Figure 4-4. Counts can be found in Appendix C.

4.3.2 CURRENT (2023) LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under current traffic conditions. Results of the analysis are presented in Table 4-2 and Table 4-3.

All study intersections function within acceptable LOS standards under this analysis scenario except for the following intersections:

- #2 – Main Street and Vesta Street – PM peak only
- #4 – Main Street and Division Street – AM and PM peak
  - » This intersection will be signalized as part of National City's 8th and Roosevelt project.
- #6 – Division Street and Osborn Street – AM and PM peak

4.3.3 CURRENT (2023) ARTERIAL TRAVEL TIME

Traffic operations were evaluated for the two study corridors under current traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-4 and Table 4-5.

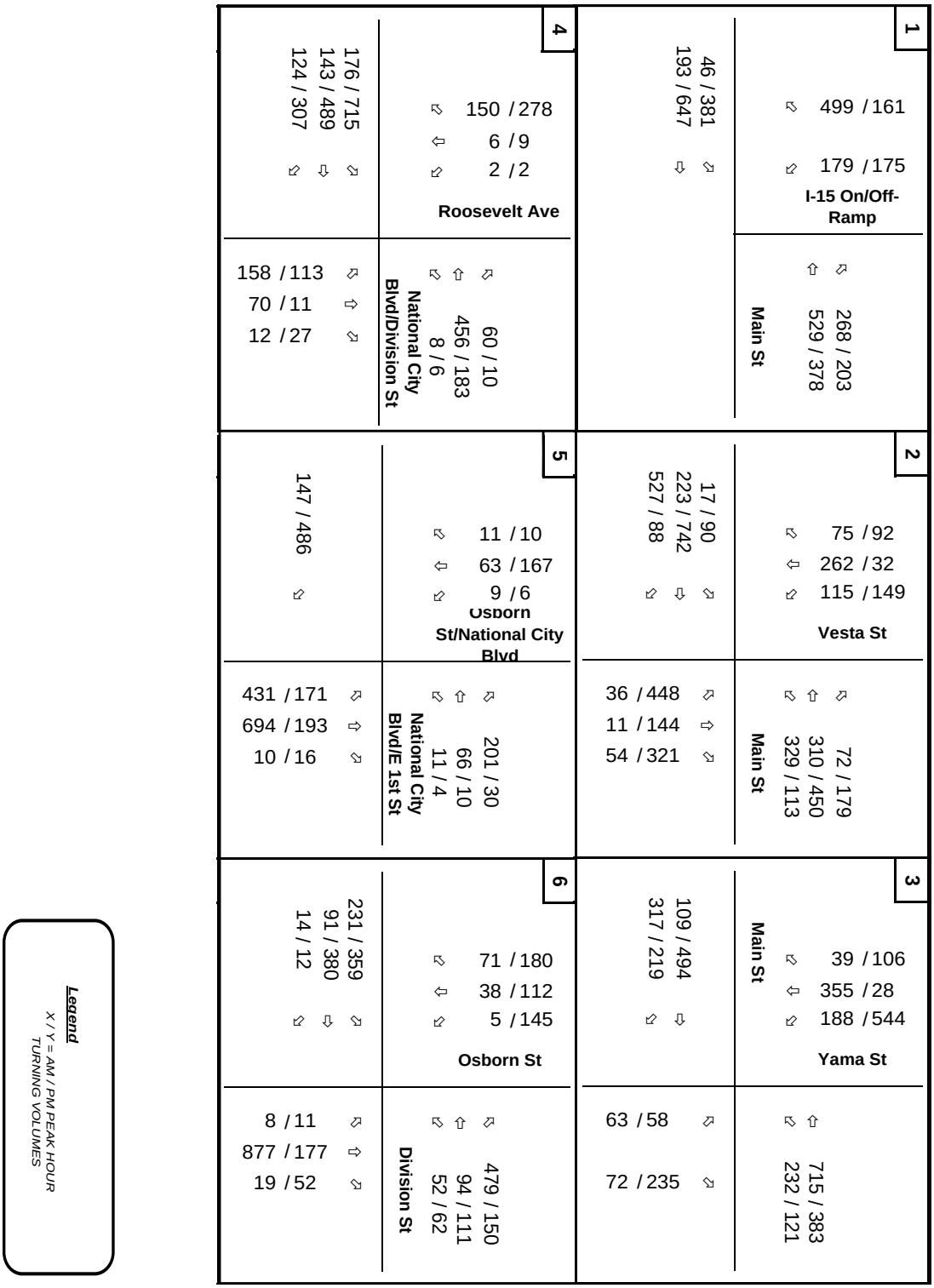


FIGURE 4-3: Current (2023) Volumes for Main Street

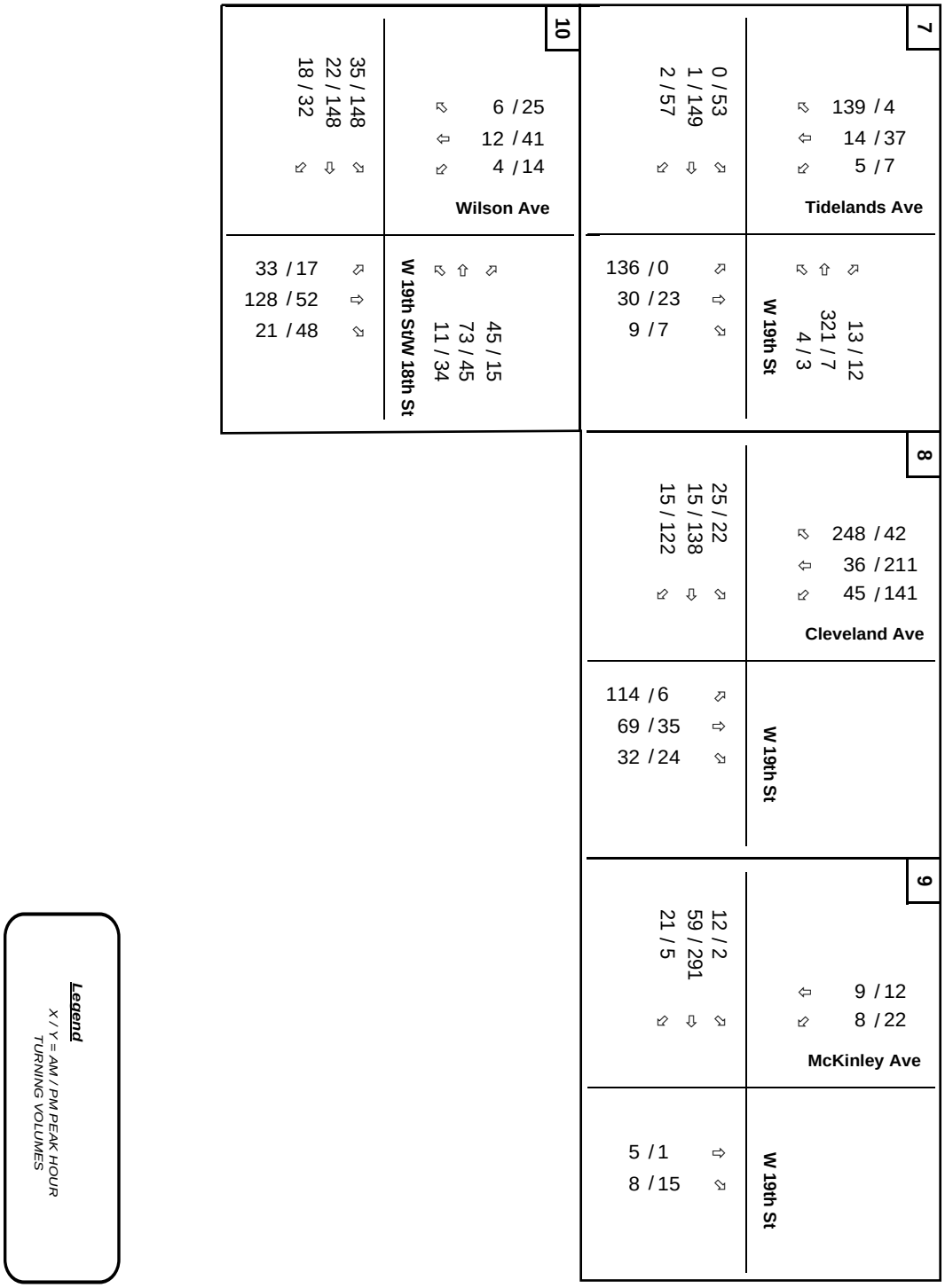


FIGURE 4-4: Current (2023) Volumes for 19th Street

Table 4-2. Current (2023) Level of Service for Main Street

#	Intersection	Control	Current (2023)			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
Main Street						
1*	Main St & I-15 Ramps	Signal	D	37.1	C	27.3
2	Main St & Vesta St	Signal	C	25.1	F	177.8
3	Main St & Yama St	Signal	C	28.0	D	43.8
4	Main St & Division St / Roosevelt St *(Worst Approach/ Movement)*	SSSC	F	>300 (NB)	F	>300 (NB)
5*	National City Boulevard and 1st Street / Osborn Street	Signal	C	29.8	C	23.5
6	Division Street and Osborn Street	AWSC	F	149.0	F	53.1

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-3. Current (2023) Level of Service for 19th Street

#	Intersection	Control	Current (2023)			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
19th Street						
7	Tidelands Avenue & 19th Street	Signal	B	10.2	A	7.2
8	Cleveland Avenue & 19th Street *Worst Approach*	SSSC	C	15.8	C	22.1
	Cleveland Avenue & 19th Street *Worst Movement*		C	18.3 (EBTL)	D	30.4 (EBTL)
9	McKinley Avenue & 19th Street *Worst Approach*	SSSC	A	9.6	B	11.0
	McKinley Avenue & 19th Street *Worst Movement*		A	9.6 (NB)	B	11.0 (NB)
10	Wilson Avenue & 19th Street	AWSC	A	9.2	B	11.8

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-4. Current (2023) Arterial Travel Time for Main Street

Direction	Segment	Current (2023)	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
Main Street			
EB	32nd to I-15 Ramps	3.1	4.0
WB	I-15 Ramps to 32nd	2.9	3.0

Table 4-5. Current (2023) Arterial Travel Time for 19th Street

Direction	Segment	Current (2023)	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
19th Street			
EB	Tidelands Avenue to McKinley Avenue	0.5	1.0

4.4 FUTURE (2030) BASELINE CONDITIONS

The Future (2030) baseline conditions are based on existing traffic volumes and ambient growth along major roadways, with roadway geometry and traffic control modifications assumed in year 2030. The following two projects that are nearing construction were assumed to be completed by 2030:

- 8th and Roosevelt Active Transportation Corridor Project
- West 19th Street Greenway Improvement Project

Overview of these plans for these projects can be found in Appendix D.

4.4.1 FUTURE (2030) BASELINE PEAK-HOUR TURNING MOVEMENT VOLUMES

Future (2030) Baseline volumes were determined by applying an annual growth rate to existing (2023) volumes. Annual growth rates for roadway segments within the Study Area were derived from the San Diego Association of Governments (SANDAG) Transportation Forecast Information Center (TFIC) data portal. An annual growth rate was calculated for each roadway segment based on Year 2025 and 2050 volumes from TFIC. The growth rates were averaged with the exception of any segments that were projecting negative growth, to be conservative. The resulting average growth rate for the Study Area was determined to be approximately 0.5 percent. Therefore, an annual growth rate of 0.5 percent was applied to intersections along the Main Street corridor. For the remaining intersections along 19th Street, an annual growth rate of 0.75 percent was applied instead based on discussion with NBSD about anticipated growth that may not be factored into the SANDAG model. The resulting future (2030) volumes are illustrated in Figure 4-5 and Figure 4-6.

4.4.2 FUTURE (2030) BASELINE LEVEL OF SERVICE

Traffic operations were evaluated for the two study corridors under future traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-6 and Table 4-7.

All study intersections function within acceptable LOS standards under this analysis scenario except for the following intersections:

- #2 – Main Street and Vesta Street – PM peak only
- #3 – Main Street and Yama Street – PM peak only
- #4 – Main Street and Division Street – PM peak only
- #6 – Division Street and Osborn Street – AM and PM peak
- #8 – Cleveland Avenue and 19th Street – PM peak only

4.4.3 FUTURE (2030) ARTERIAL TRAVEL TIME

Traffic operations were evaluated for the two study corridors under future traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-8 and Table 4-9.

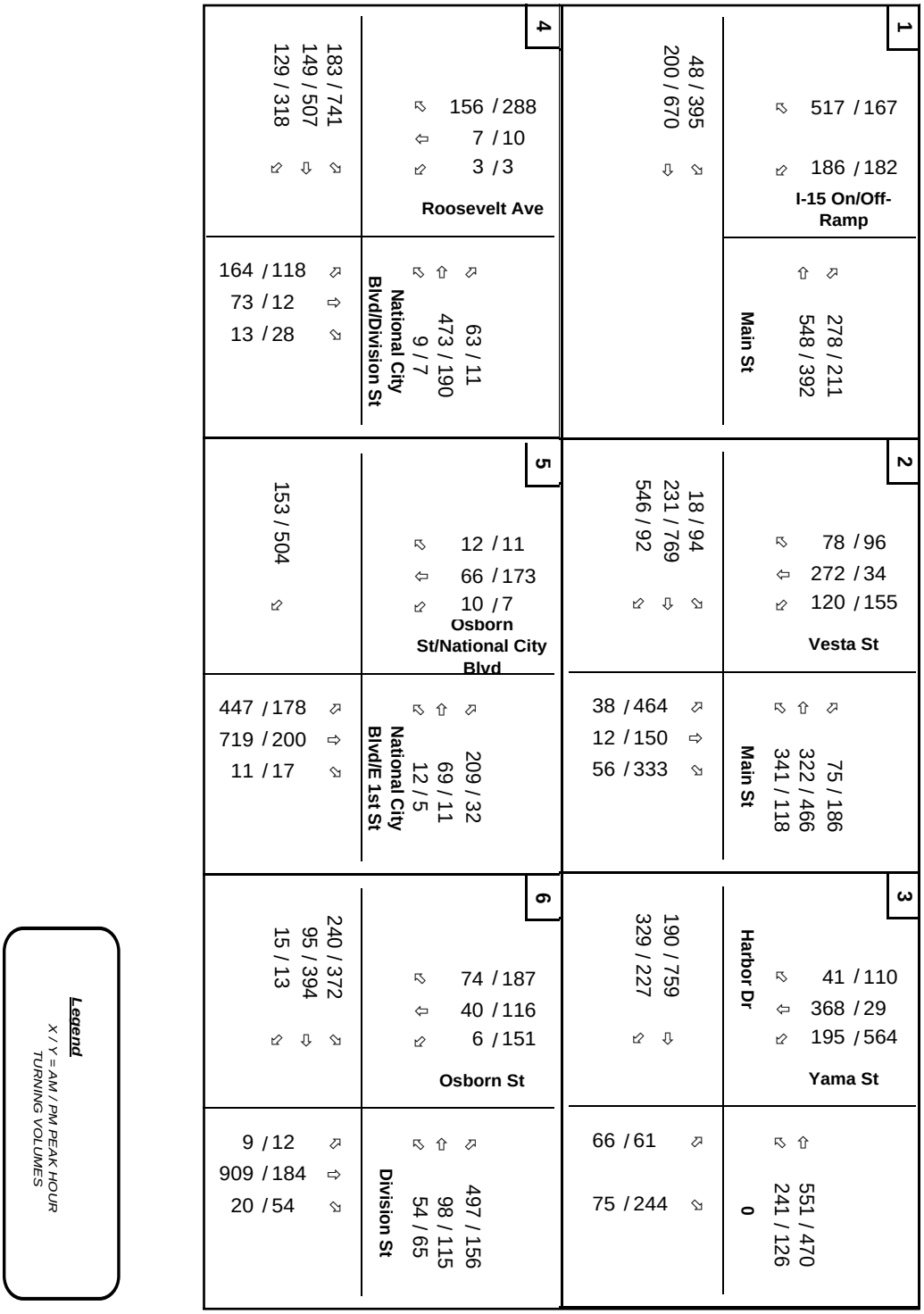


FIGURE 4-5: Future (2030) Volumes for Main Street

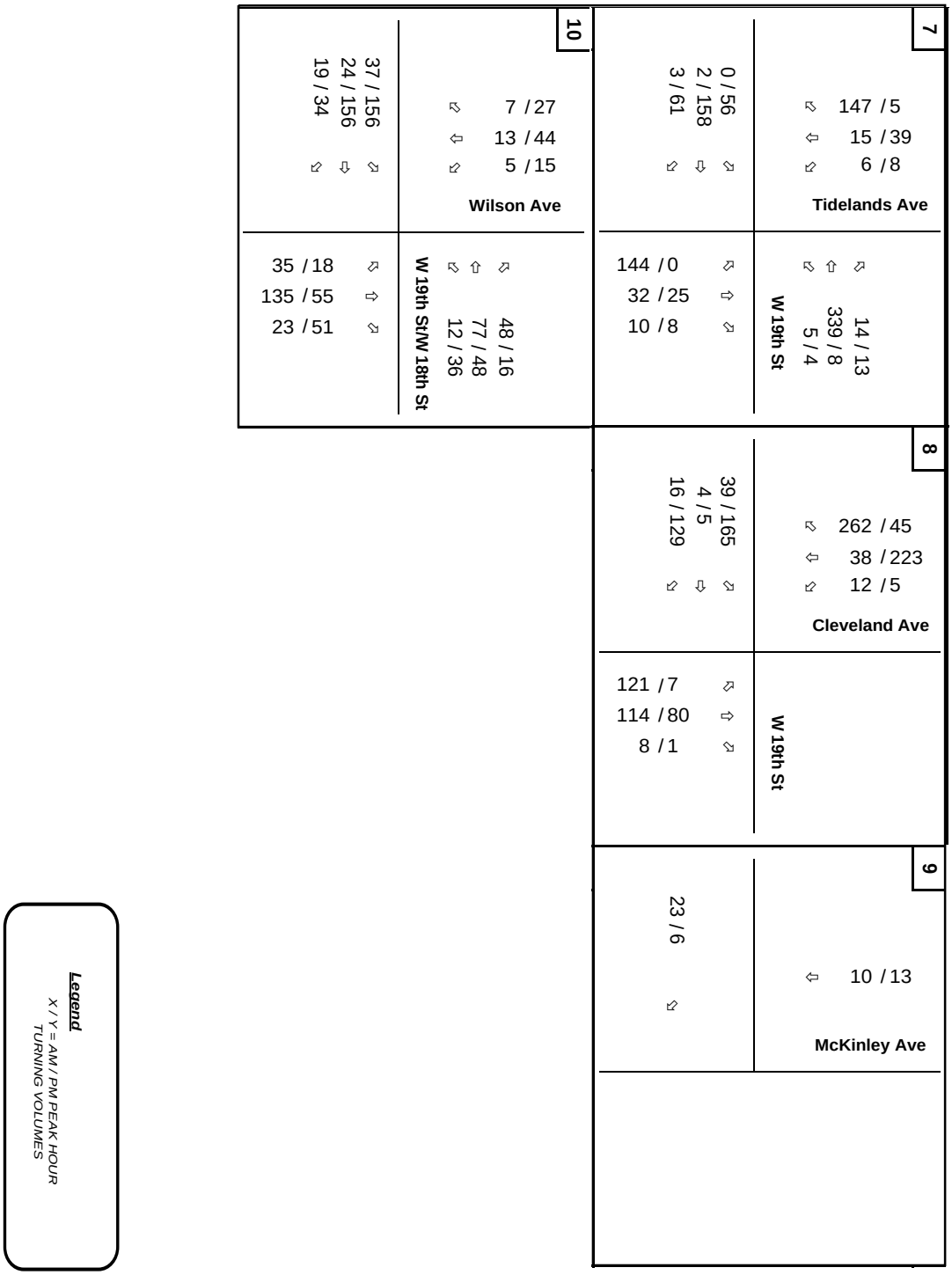


FIGURE 4-6: Future (2030) Volumes for 19th Street

Table 4-6. Future (2030) Baseline Level of Service for Main Street

#	Intersection	Control	Future (2030) Baseline			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
Main Street						
1*	Main St & I-15 Ramps	Signal	C	28.2	C	33.8
2	Main St & Vesta St	Signal	C	21.5	F	124.5
3	Main St & Yama St	Signal	D	50.0	F	117.7
4	Main St & Division St	Signal	C	28.9	F	88.2
5*	National City Boulevard & 1st Street / Osborn Street	Signal	C	32.2	C	23.8
6	Division Street & Osborn Street	AWSC	F	171.3	F	62.5

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-7. Future (2030) Baseline Level of Service for 19th Street

#	Intersection	Control	Future (2030) Baseline			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
19th Street						
7	Tidelands Avenue & 19th Street	Signal	B	10.5	A	7.3
8	Cleveland Avenue & 19th Street *Worst Approach*	SSSC	C	17.0 (EBTL)	D	26.7
	Cleveland Avenue & 19th Street *Worst Movement*		C	19.8 (EBTL)	E	38.3
9	McKinley Avenue & 19th Street	AWSC	A	7.0	A	6.9
10	Wilson Avenue & 19th Street	AWSC	A	9.4	B	12.7

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-8. Future (2030) Arterial Travel Time for Main Street

Direction	Segment	Future (2030)	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
Main Street			
EB	I-15 Ramps to 1st Street	3.2	19.3
WB	1st Street to I-15 Ramps	4.5	18.7

Table 4-9. Future (2030) Arterial Travel Time for 19th Street

Direction	Segment	Future (2030)	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
19th Street			
EB	Tidelands Avenue to Wilson Avenue	1.1	1.1

4.5 FUTURE (2030) PLUS IMPROVEMENTS CONDITIONS

The Future (2030) Plus Improvements conditions are based on the future baseline conditions, with the following project improvements to improve intersection and corridor operations:

- Main Street from I-15 Ramps to Division Street
  - » Widen Main Street between I-15 Ramps and Division Street from a 3-lane section to a 5-lane section
- Main Street and Yama Street
  - » Convert a westbound through lane on Main Street to a second westbound left-turn lane
  - » Add second southbound lane on Yama Street
- Main Street and Division Street
  - » Modify signal phasing so that eastbound and westbound Main Street and National City Boulevard are split phased
  - » Modify eastbound Main Street approach geometry to one eastbound left-turn lane, one eastbound shared through-left lane, and one eastbound shared through-right lane
  - » Modify southbound Division Street approach geometry to one right turn lane only
- 19th Street from Tidelands Avenue to Wilson Avenue
  - » Remove one eastbound through lane to repurpose roadway space for a Class IV bikeway (one-way or two-way)
- 19th Street and Tidelands Avenue
  - » Convert eastbound shared through-left lane to exclusive left-turn lane
  - » Extend northbound left-turn lane to 150'

4.5.1 FUTURE (2030) PLUS IMPROVEMENTS PEAK-HOUR TURNING MOVEMENT VOLUMES

The project improvements will not affect the number of trips or distribution patterns; therefore, the volumes remain unchanged from the Future (2030) Conditions. Future (2030) Plus Improvements volumes are illustrated in Figure 4-5 and Figure 4-6.

4.5.2 FUTURE (2030) PLUS IMPROVEMENTS LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under future traffic conditions. Results of the analysis are presented in Table 4-10 and Table 4-11.

All study intersections function within acceptable LOS standards under this analysis scenario except for the following intersections:

- #6 – Division Street and Osborn Street – AM and PM peak

4.5.3 FUTURE (2030) PLUS IMPROVEMENTS ARTERIAL TRAVEL TIME

Traffic operations were evaluated for the two study corridors under future plus improvements traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-12 and Table 4-13.

Table 4-10. Future (2030) Plus Improvements Level of Service for Main Street

#	Intersection	Control	Future (2030) Plus Improvements			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
Main Street						
1*	Main St & I-15 Ramps	Signal	C	28.2	C	33.8
2	Main St & Vesta St	Signal	C	30.0	C	21.0
3	Main St & Yama St	Signal	C	22.0	D	39.5
4*	Main St & Division St	Signal	C	28.9	C	33.1
5*	National City Boulevard & 1st Street / Osborn Street	Signal	C	32.1	C	23.9
6	Division Street & Osborn Street	AWSC	F	174.5	F	64.0

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-11. Future (2030) Plus Improvements Level of Service for 19th Street

#	Intersection	Control	Future (2030) Plus Improvements			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
19th Street						
7	Tidelands Avenue & 19th Street	Signal	B	10.5	A	7.7
8	Cleveland Avenue & 19th Street *Worst Approach*	SSSC	B	13.6	C	15.1
	Cleveland Avenue & 19th Street *Worst Movement*		C	18.6 (EBL)	C	17.1 (EBL)
9	McKinley Avenue & 19th Street	AWSC	A	7.0	A	6.9
10	Wilson Avenue & 19th Street	AWSC	A	9.4	B	12.7

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-12. Future (2030) Plus Improvements Arterial Travel Time for Main Street

Direction	Segment	Future (2030) Plus Improvements	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
Main Street			
EB	32nd to I-15 Ramps	3.5	4.1
WB	I-15 Ramps to 32nd	3.0	3.1

Table 4-13. Future (2030) Plus Improvements Arterial Travel Time for 19th Street

Direction	Segment	Future (2030) Plus Improvements	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
19th Street			
EB	Tidelands Avenue to McKinley Avenue	1.1	1.4

4.6 FUTURE (2030) PLUS VESTA BRIDGE CONDITIONS

The Vesta Bridge project will provide a direct bridge connection between the Wet Side of Vesta Street and the Dry Side of Vesta Street over the rail line. As a result of the bridge construction, the intersections along Vesta Street at McCandless Boulevard, Harbor Drive, and Knowlton Williams Road will be removed and Gate #7 will also be eliminated. Northbound and southbound through movements will still be allowed along McCandless Boulevard but turning movements to and from Vesta Street on McCandless Boulevard will no longer be feasible.

The Future (2030) Plus Vesta Bridge scenario incorporates the anticipated modifications to the roadway network and travel patterns as a result of the Vesta Street Bridge project.

4.6.1 FUTURE (2030) PLUS VESTA BRIDGE PEAK-HOUR TURNING MOVEMENT VOLUMES

Traffic volumes were assumed to be redistributed from Gate #7 to nearby gates along Harbor Drive such as Gates #6, #9, and #53 as a result of the Vesta Street bridge project. In addition, vehicles paths using existing roadways to access the gates along Harbor Drive were assumed to be redirected to use the new Vesta Street Bridge which will provide a more direct route to the Wet Side. These vehicles were rerouted to use Gates #29, #32, and #43. The number of vehicles that will be rerouted to use the Vesta Bridge were derived from the *Comprehensive Traffic Study Final Report*, December 2021[1]. The study utilized Streetlight Data to determine the vehicle demand traveling between the Wet Side and Dry Side.

Based on the Streetlight Data and the existing volumes at Gate #7, the Vesta Bridge volumes resulted in 356 vehicles anticipated to be traveling from the wet to Dry Side (northbound on Vesta Bridge) and 560 vehicles from the dry to Wet Side (southbound on Vesta Bridge) in the AM peak hour. In the PM peak hour, 935 vehicles are anticipated to travel from the wet to Dry Side (northbound on Vesta Bridge) and 162 vehicles from the dry to Wet Side (southbound on Vesta Bridge). Future (2030) volumes were then adjusted to reflect the removal of Gate #7 and redistribution of volumes to Vesta Bridge. Table 4-14 summarizes the volume adjustments made for each of the gates. Redistribution of volumes at the remaining gates were reviewed and approved by the NBSD.

The resulting Future (2030) Plus Vesta Bridge volumes are illustrated in Figure 4-7 and Figure 4-8.

4.6.2 FUTURE (2030) PLUS VESTA BRIDGE LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under future traffic conditions. Results of the analysis are presented in Table 4-15 and Table 4-16.

All study intersections function within acceptable LOS standards under this analysis scenario except for the following intersections:

- #2 – Main Street and Vesta Street – AM and PM peak
- #3 – Main Street and Yama Street – AM and PM peak
- #4 – Main Street and Division Street – AM and PM peak
- #6 – Division Street and Osborn Street – AM and PM peak

4.6.3 FUTURE (2030) PLUS VESTA BRIDGE ARTERIAL TRAVEL TIME

Traffic operations were evaluated for the two study corridors under future plus Vesta Bridge traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-17 and Table 4-18.

1 Comprehensive Traffic Study Final Report for the Naval Base San Diego, Transportation Engineering Agency and Gannett Fleming, December 2021.

Table 4-14. Vesta Bridge Redistribution Percentages to Nearby Gates

Gate	AM Peak Hour (Outbound)		PM Peak Hour (Inbound)	
	Net Total	Percent	Net Total	Percent
Gate #6 (32nd Street)	-19	-5%	-16	-10%
Gate #7 (Harbor Drive)	-387	-100%	-159	-100%
Gate #9 (8th Street)	116	30%	48	30%
Gate #13 (19th Street)	58	15%	32	20%
Gate #29 (Vesta Street)	135	35%	48	30%
Gate #32 (Yama Street)	77	20%	32	20%
Gate #43 (Norman Scott)	19	5%	16	10%

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

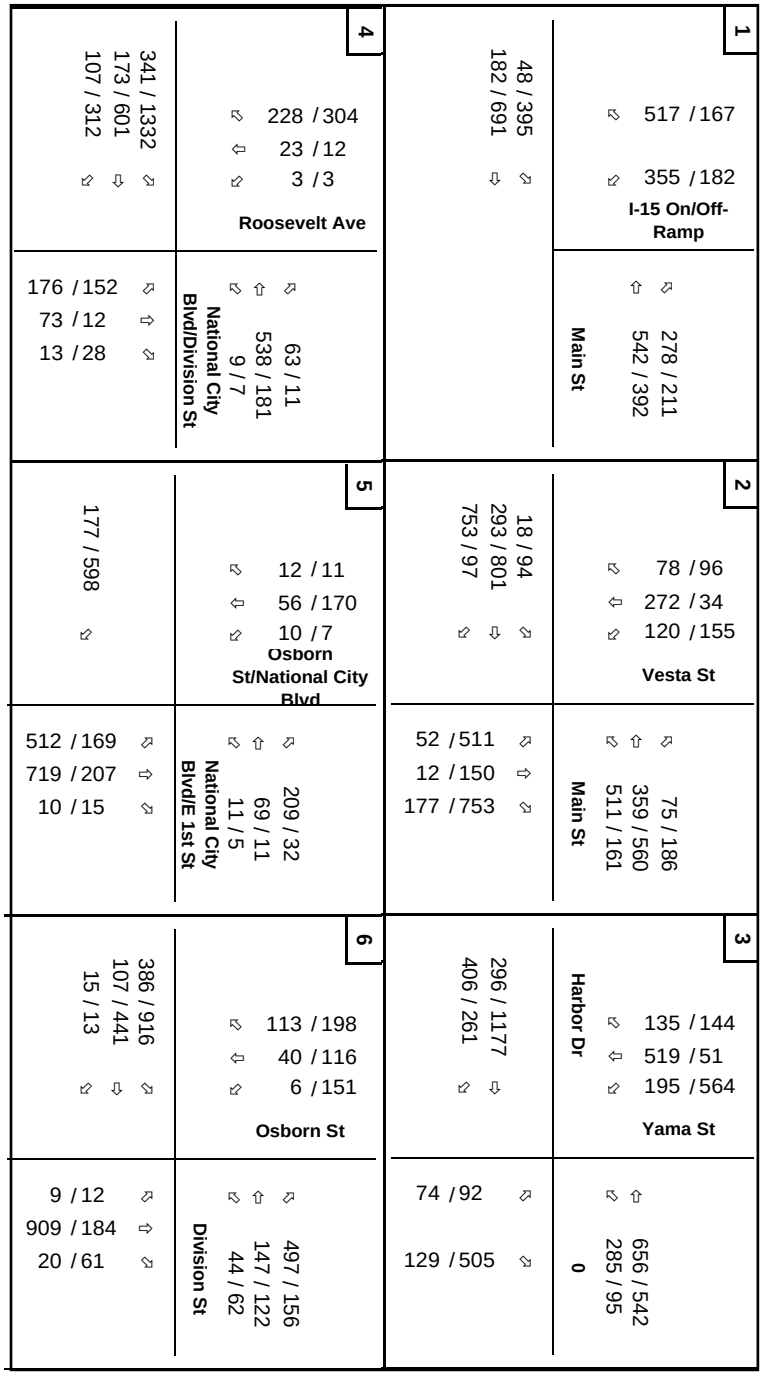


FIGURE 4–7: Future (2030) Volumes Plus Improvements Plus Vesta Street Bridge for Main Street

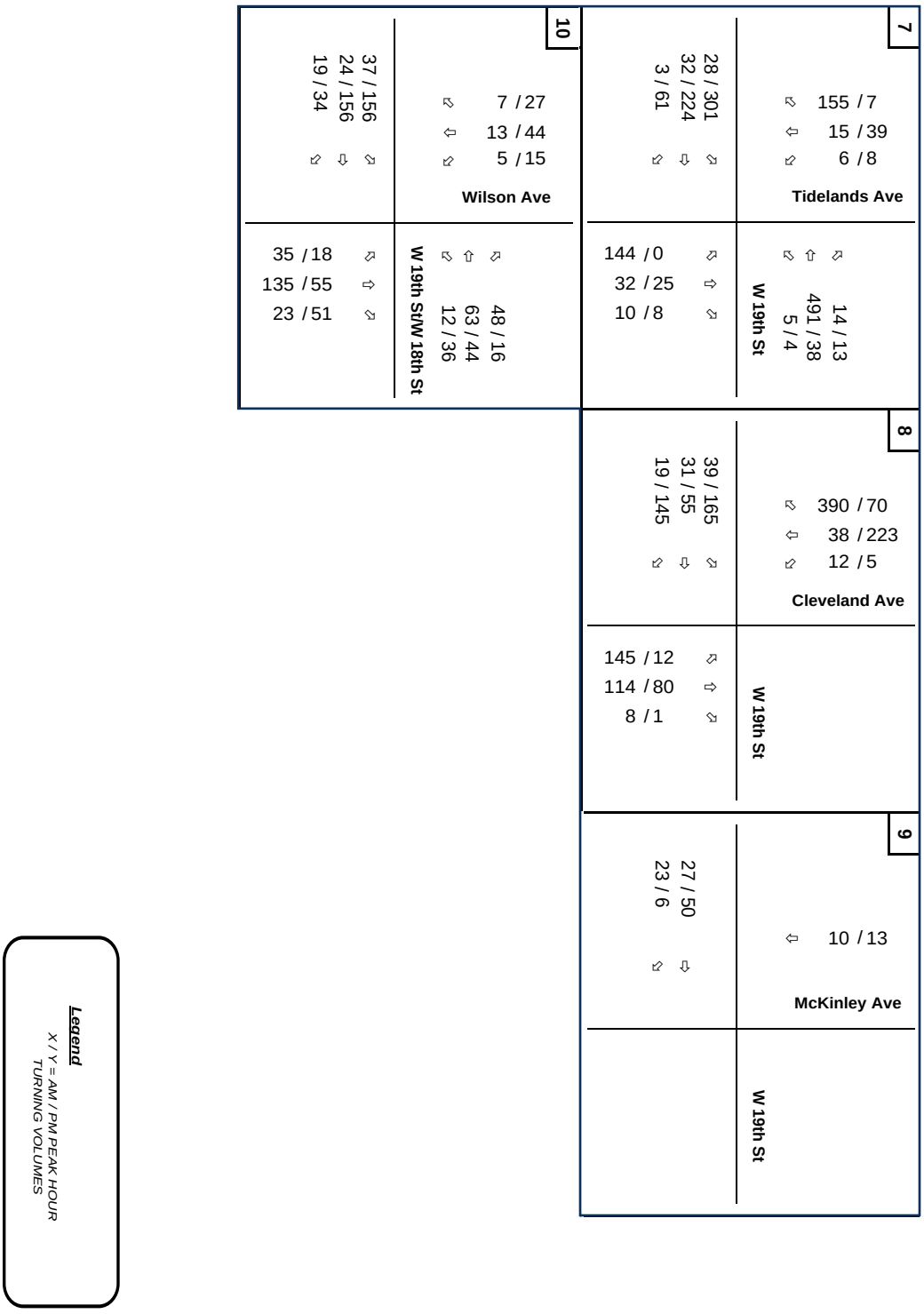


FIGURE 4-8: Future (2030) Volumes Plus Improvements Plus Vesta Street Bridge for 19th Street

Table 4-15. Future (2030) Plus Vesta Bridge Level of Service for Main Street

#	Intersection	Control	Future (2030) Plus Vesta Bridge			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
Main Street						
1*	Main St & I-15 Ramps	Signal	D	40.9	C	33.7
2	Main St & Vesta St	Signal	F	96.9	F	263.6
3	Main St & Yama St	Signal	F	107.3	F	>300
4	Main St & Division St	Signal	E	75.7	F	254.1
5*	National City Boulevard & 1st Street / Osborn Street	Signal	D	36.8	C	25.2
6	Division Street & Osborn Street	AWSC	F	234.1	F	>300

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-16. Future (2030) Plus Vesta Bridge Level of Service for 19th Street

#	Intersection	Control	Future (2030) Plus Vesta Bridge			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
19th Street						
7	Tidelands Avenue & 19th Street	Signal	B	11.3	A	8.2
8	Cleveland Avenue & 19th Street *Worst Approach*	SSSC	C	23.4	C	16.2
	Cleveland Avenue & 19th Street *Worst Movement*		D	27.1 (EBTL)	C	19.1 (EBTL)
9	McKinley Avenue & 19th Street	AWSC	A	6.7	A	6.8
10	Wilson Avenue & 19th Street	AWSC	A	9.3	B	12.7

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-17. Future (2030) Plus Vesta Bridge Arterial Travel Time for Main Street

Direction	Segment	Future (2030) Plus Vesta Bridge	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
Main Street			
EB	32nd to I-15 Ramps	5.7	69.9*
WB	I-15 Ramps to 32nd	12.7	16.1

Note:

*This level of delay is not realistic as it is anticipated that travelers would choose a different route rather than travel in this level of congestion.

Table 4-18. Future (2030) Plus Vesta Bridge Arterial Travel Time for 19th Street

Direction	Segment	Future (2030) Plus Vesta Bridge	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
19th Street			
EB	Tidelands Avenue to McKinley Avenue	0.9	1.1

4.7 FUTURE (2030) PLUS VESTA BRIDGE PLUS IMPROVEMENTS CONDITIONS

The Future (2030) Plus Vesta Bridge Plus Improvements conditions are based on the future plus Vesta Bridge conditions, with the following project improvements:

- Main Street from I-15 Ramps to Division Street
  - » Widen Main Street between I-15 Ramps and Division Street from a 3-lane section to a 5-lane section
- Main Street and Yama Street
  - » Implement the following lane geometry
    - · 1 northbound left-turn lane, 1 northbound right-turn lane
    - · 1 southbound left-turn lane, 1 southbound shared through-right lane, 1 southbound right-turn lane
    - · 1 eastbound through lane, 1 eastbound shared through-right lane
    - · 2 westbound left-turn lanes, 2 westbound through lanes
  - » Add second southbound lane on Yama Street
- Main Street and Vesta Street
  - » Implement the following lane geometry
    - · 2 northbound left-turn lanes, 1 northbound shared through-right lane, 1 northbound right-turn lane
    - · 1 southbound left-turn lane, 1 southbound shared through-right lane
    - · 1 eastbound left-turn lane, 1 eastbound through lane, 1 eastbound shared through-right lane, 1 eastbound right-turn lane
    - · 1 westbound left-turn lane, 1 westbound through lane, 1 eastbound shared through -right lane
- Main Street and Division Street
  - » Modify signal phasing so that eastbound and westbound Main Street and National City Boulevard are split phased
  - » Modify eastbound Main Street approach geometry to one eastbound left-turn lane, one eastbound shared through-left lane, and one eastbound shared through-right lane
  - » Modify southbound Division Street approach geometry to one right turn lane only
- 19th Street from Tidelands Avenue to Wilson Avenue
  - » Remove one eastbound through lane to repurpose roadway space for a Class IV bikeway (one-way or two-way)
- 19th Street and Tidelands Avenue
  - » Convert eastbound shared through-left lane to exclusive left-turn lane
  - » Extend northbound left-turn lane to 150'

4.7.1 FUTURE (2030) PLUS VESTA BRIDGE PLUS IMPROVEMENTS PEAK-HOUR TURNING MOVEMENT VOLUMES

The project will not affect the number or distribution of trips; therefore, the volumes remain unchanged from the Future (2030) Plus Vesta Street Bridge Conditions. Future (2030) Plus Vesta Bridge Plus Improvements volumes are illustrated in Figure 4-7 and Figure 4-8.

4.7.2 FUTURE (2030) PLUS VESTA BRIDGE PLUS IMPROVEMENTS LEVEL OF SERVICE

Traffic operations were evaluated at the study intersections under future traffic conditions. Results of the analysis are presented in Table 4-19 and Table 4-20.

All study intersections function within acceptable LOS standards under this analysis scenario.

4.7.3 FUTURE (2030) PLUS VESTA BRIDGE PLUS IMPROVEMENTS ARTERIAL TRAVEL TIME

Traffic operations were evaluated for the two study corridors under future plus Vesta Bridge plus improvements traffic conditions using SimTraffic to calculate the travel time from one end of each corridor to the other during each peak hour. Results of the analysis are presented in Table 4-21 and Table 4-22.

Table 4-19. Future (2030) Plus Vesta Bridge Plus Improvements Level of Service for Main Street

#	Intersection	Control	Future (2030) Plus Vesta Bridge Plus Improvements			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
Main Street						
1*	Main St & I-15 Ramps	Signal	D	40.9	C	33.7
2	Main St & Vesta St	Signal	D	38.7	C	24.8
3	Main St & Yama St	Signal	C	29.7	C	32.9
4	Main St & Division St	Signal	D	37.9	D	40.2
5*	National City Boulevard & 1st Street / Osborn Street	Signal	D	36.6	C	25.3
6	Division Street & Osborn Street	Signal	D	51.9	D	52.4

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-20. Future (2030) Plus Vesta Bridge Plus Improvements Level of Service for 19th Street

#	Intersection	Control	Future (2030) Plus Vesta Bridge Plus Improvements			
			AM Peak Hour		PM Peak Hour	
			LOS	Delay (sec.)	LOS	Delay (sec.)
19th Street						
7	Tidelands Avenue & 19th Street	Signal	B	11.3	A	8.2
8	Cleveland Avenue & 19th Street *Worst Approach*	SSSC	C	20.6	C	15.9
	Cleveland Avenue & 19th Street *Worst Movement*		D	25.6 (EBL)	C	18.7 (EBL)
9	McKinley Avenue & 19th Street	AWSC	A	6.7	A	6.8
10	Wilson Avenue & 19th Street	AWSC	A	9.3	B	12.7

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-21. Future (2030) Plus Vesta Bridge Plus Improvements Arterial Travel Time for Main Street

Direction	Segment	Future (2030) Plus Vesta Bridge Plus Improvements	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
Main Street			
EB	32nd to I-15 Ramps	3.8	6.7
WB	I-15 Ramps to 32nd	3.6	4.1

Table 4-22. Future (2030) Plus Vesta Bridge Plus Improvements Arterial Travel Time for 19th Street

Direction	Segment	Future (2030) Plus Vesta Bridge Plus Improvements	
		AM Peak Hour	PM Peak Hour
		Travel Time (min.)	Travel Time (min.)
19th Street			
EB	Tidelands Avenue to McKinley Avenue	1.3	1.3

Table 4-23. LOS Results Summary for Main Street

#	Intersection	Existing (2023)			Future (2030) Baseline			Future (2030) + Improvements			Future (2030) + Vesta Bridge			Future (2030) + Vesta Bridge + Improvements		
		Control	AM	PM	Control	AM	PM	Control	AM	PM	Control	AM	PM	Control	AM	PM
Main Street																
1*	Main St & I-15 Ramps	Signal	D	C	Signal	C	C	Signal	C	C	Signal	D	C	Signal	D	C
2	*Main St & Vesta St*	Signal	C	F	Signal	C	F	Signal	C	C	Signal	F	F	Signal	D	C
3	*Main St & Yama St*	Signal	C	D	Signal	D	F	Signal	C	D	Signal	F	F	Signal	C	C
4*	Main St & Division St	SSSC	F	F	Signal	C	F	Signal	C	C	Signal	E	F	Signal	D	D
	Worst Movement		F	F		-	-		-	-		-	-		-	-
5*	National City Boulevard & 1st Street / Osborn Street	Signal	C	C	Signal	C	C	C	C	Signal	D	C	Signal	D	C	
6	Division Street & Osborn Street	AWSC	F	F	AWSC	F	F	F	F	AWSC	F	F	Signal	D	D	

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

4.8 TRAFFIC ANALYSIS SUMMARY

Table 4-23, Table 4-24, Table 4-25, and Table 4-26 present a summary of the results of the LOS and travel time analysis, respectively, for each scenario.

The following conclusions can be drawn from the summary tables on the previous pages:

- Current (2023) Conditions show delays exceeding 300 seconds at the worst approach for the intersection of Main Street and Division Street in both the AM and PM peak hours. Signalizing the intersection as part of the 8th and Roosevelt project is expected to significantly improve operations at this intersection.
- Current (2023) and Future (2030) Baseline Conditions show unacceptable LOS F operations at the intersection of Division Street and Osbourne Street in both the AM and PM peak hours. Operations are expected to deteriorate at this location with construction of the Vesta Street Bridge project. Signalizing the intersection is recommended to improve the delay to acceptable LOS D.
- With the construction of the Vesta Street Bridge in Future (2030) conditions, the arterial travel time for Main Street going eastbound could take over and hour during the PM peak (note this level of delay is not realistic as it is anticipated that travelers would choose a different route rather than travel in this level of congestion). Implementing the recommended improvements along Main Street would decrease the travel time to approximately 7 minutes.
- With the construction of the Vesta Street Bridge in Future (2030) conditions as shown in Figure 4-17, the intersections of Main Street and Vesta Street, Main Street and Yama Street, Main Street and Division Street will operate unacceptably at LOS E or F in the AM and PM peak hours. Lane geometry and signal timing modifications will improve the intersection delays to operate at acceptable LOS D or better.
- Repurposing one eastbound through lane to a Class IV bikeway on 19th Street does not significantly increase arterial travel time or delay. All intersections on 19th Street between Tidelands Avenue and Wilson Avenue operate acceptably in the Future (2030) Plus Vesta Bridge Plus Improvements Conditions. The longest travel time is 1.4 minutes in the PM peak hour, in the Future (2030) Plus Improvements Conditions.

Table 4-24. LOS Results Summary for 19th Street

#	Intersection	Existing (2023)			Future (2030) Baseline			Future (2030) + Improvements			Future (2030) + Vesta Bridge			uture (2030) + Vesta Bridge + Improve-ments		
		Control	AM	PM	Control	AM	PM	Control	AM	PM	Control	AM	PM	Control	AM	PM
19th Street																
7	Tidelands Avenue & 19th Street	Signal	B	A	Signal	B	A	Signal	B	A	Signal	B	A	Signal	B	A
8	Cleveland Avenue & 19th Street	SSSC	C	C	SSSC	C	D	SSSC	B	C	SSSC	C	C	SSSC	C	C
	Worst Movement		C	D		C	E		C	C		D	C		D	C
9	McKinley Avenue & 19th Street	SSSC	A	B	SSSC	A	A	SSSC	A	A	SSSC	A	A	SSSC	A	A
	Worst Movement		A	B		-	-		-	-		-	-		-	-
10	Wilson Avenue & 19th Street	AWSC	A	B	AWSC	A	B	AWSC	A	B	AWSC	A	B	AWSC	A	B

Note:

*HCM 2000 Methodology reported. All remaining locations represent HCM 6th methodology.

Average intersection delay reported for Signal and AWSC intersections; Worst case approach and movement delay reported for SSSC intersections.

Table 4-25. Travel Time Results Summary for Main Street

#	Intersection	Existing (2023)		Future (2030) Baseline		Future (2030) + Improvements		Future (2030) + Vesta Bridge		Future (2030) + Vesta Bridge + Improvements	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Main Street											
EB	I-15 Ramps to 1st Street	3.1	4.0	3.2	19.3	3.5	4.1	5.7	69.9	3.8	6.7
WB	1st Street to I-15 Ramps	2.9	3.0	4.5	18.7	3.0	3.1	12.7	16.1	3.6	4.1

Table 4-26. Travel Time Results Summary for 19th Street

#	Intersection	Existing (2023)		Future (2030) Baseline		Future (2030) + Improvements		Future (2030) + Vesta Bridge		Future (2030) + Vesta Bridge + Improvements	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
19th Street											
EB	Tidelands Avenue to Wilson Street	0.5	1.0	1.1	1.1	1.1	1.4	0.9	1.1	1.3	1.3

5

Project Recommendations

5.1 RECOMMENDED PROJECT LEVELS 1-3

As previously discussed in Chapter 3, the Team refined the list of projects from 139 to 26 priority projects based on specific criteria related to safety, mobility, congestion management, multimodal options, and connectivity, which are shown in Figure 3-1. This priority list was further refined down to 8 projects through a gradual process of meeting with the Policy Committee and representatives from the City of National City, the City of San Diego, and NBSD over several meetings to identify projects most supported for future implementation. Projects were removed after considering feedback such as maintaining the NBSD fence line, maintaining roadway capacity throughput, and combining existing projects. The combining of existing projects include the Main Street project which merged recommendations from the NBSD Comprehensive Traffic Study, the National City Downtown Specific Plan, and the 8th & Roosevelt project.

From the list of top 8 projects, the following project numbers were consolidated: 2, 6, 7, 8, 9, 10, 11, 17, 18, 19, 21. The NC 19th Street conversion to Bike/Ped project addresses projects 16 and 23. Moreover, there is already a planned traffic signal project at 8th Street at Hoover Avenue, so project 12 was removed. It was decided by the stakeholders that project 24, located along Hoover Avenue from 30th Street to Mile of Cars Way, was too far from NBSD, so it was removed from this list. Since the Study will be approved by the National City Council and not the City of San Diego, the projects wholly within the City of San Diego projects (#1, 3, 4, 5, 15, 20, 22) were not carried forward. And finally, the Bayshore Bikeway Phase IV project reduces or eliminates the need for projects 13, 14, 25, 26, so those were also removed from the list.

This chapter summarizes the top priority projects broken down into three different tiers based on the level of support and ability to move forward. The project tiers are summarized in Table 5-1, and the projects are detailed on the following pages. Each project contains a cut-sheet summarizing the purpose of the project, location, and project features for ease of future grant funding applications. The concepts developed for these projects to help streamline the process for the City to implement the project or pursue grant funding are provided in Appendix E. Each concept incorporates any existing project concepts for the area that are anticipated to be constructed in the near future.

Table 5-1. Project List

Level*	City	Roadway	Extents	Recommendation
1	NC	**Bay Marina Drive/ Mile of Cars Way**	Cleveland Avenue to National City Boulevard	Safety and multimodal connectivity improvements
1	SD/NC	**Main Street**	Vesta Street to Division Street	Intersection and roadway capacity improvements
2	NC	**National City Boulevard**	18th Street to 26th Street	Pedestrian and driver safety improvements
2	NC	**8th Street Pedestrian Bridge (Dry Side)**	Paleta Creek to 8th Street Transit Center	Improve safety through pedestrian and bicycle bridge connections to Dry Side of NBSD
3	NC	**8th Street (Pre-Signal)**	8th Street Transit Center to Roosevelt Avenue	Transit Pre-Signals at areas with right-of-way constraints
3	NC	**8th Street Pedestrian Bridge (Wet Side)**	Harbor Drive to 8th Street Transit Center	Improve safety through pedestrian and bicycle bridge connections to Wet Side of NBSD
3	NC	**19th Street**	Tidelands Avenue to Cleveland Avenue	Safety and multimodal connectivity improvements
3	NC	**Civic Center Drive**	Tidelands Avenue to Cleveland Avenue	Closes connectivity gap within bicycle network and provides connectivity with Bayshore Bikeway

NC = National City | SD = San Diego

Level 1 Projects

Identified as high priority by project stakeholders. Level 1 includes an approximate 30% conceptual design plan.

Bay Marina Drive/Mile of Cars Way.....88

See Appendix E

Main Street.....90

See Appendix E

Level 2 Projects

Identified as medium priority by project stakeholders. Level 2 includes an approximate 10% conceptual design plan.

National City Boulevard.....92

8th Street Pedestrian Bridge (Dry Side).....94

Level 3 Projects

Identified as low priority by project stakeholders. Level 3 includes a list of improvements only. The 8th Street (Pre-Signal) project also includes an approximate 5% conceptual design plan as well.

8th Street (Pre-Signal).....96

8th Street Pedestrian Bridge (Wet Side).....99

19th Street.....100

Civic Center Drive.....102

LEVEL 1

Bay Marina Drive/Mile of Cars Way

Cleveland Avenue to National City Boulevard

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Major Arterial
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	23,650 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Improves overall corridor safety by consolidating driveways for access management.
- Improves overall corridor safety by reducing curb radii and adding truck aprons.

PROJECT DESCRIPTION

The proposed project at Mile of Cars Way/Bay Marina Drive consists of various multimodal safety enhancements. The project improvements include:

- Adding medians to restrict turning movements and consolidate access points where historical collision data shows trends of angle collisions.
- Reducing curb radii and adding truck aprons, where feasible, to reduce speeds and reduce both number of crashes and severity of crashes. Trucks aprons are to be designed using the typical design vehicle for freeways, typically the WB-67.
- Add hardened centerlines to channelize traffic as a safety measure.
- Providing high visibility crosswalks, where feasible.

Stakeholder outreach and Policy Committee coordination resulted in lack of consensus on appropriate improvements and the request for this corridor to receive further study in the future. Given the high volumes of motor vehicles, and the need for capacity to not cause excessive delay along the corridor, it was decided to not remove travel lanes for biking facilities. Rather, the consideration was instead to repurpose the sidewalk as a Class I multi-use path with various possible alignments.

The proposed project has two alternative alignments between the I-5 southbound and northbound ramps intersections: build the path within the north abutment wall of both bridge structures (requires investigation into structural feasibility) or extend the existing sidewalk on the north side of Bay Marina Drive (requires narrowing of travel lanes). The latter alternative would not be preferred as it would require a travel lane reduction, and due to proximity to freeway on-ramps, Caltrans DIB-94 would not apply. Therefore, this alternative would require a design exception.

LEVEL 1

Main Street

Vesta Street to Division Street

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Collector
Lanes (bi-directional)	5
Average Daily Traffic (ADT)[1]	14,350 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Provides additional capacity to roadway for drivers in conjunction with the Vesta Street Bridge project.
- Improves vehicular operations for access between the freeway and NBSD.

PROJECT DESCRIPTION

The proposed project for Main Street includes operational and capacity improvements to accommodate additional traffic entering NBSD Gates #29 (Vesta Street) and #32 (Yama Street) in conjunction with the Vesta Street Bridge project. The Vesta Street Bridge project will provide access between the NBSD Wet and Dry Sides. These project improvements could be implemented prior to construction of the Vesta Street bridge to improve existing congestion issues related to NBSD. The proposed project improvements include:

- Increasing roadway capacity on Main Street from 3 lanes to 5 lanes by removing on-street parking on both sides of the roadway.
- Increasing roadway capacity on Division Street between National City Blvd and Osborn Street from 1 eastbound lane to 2 lanes.
- Increasing intersection turning movement capacity at the following intersections:
  - » Yama Street and Main Street – convert one northbound through lane to 2nd left turn lane.
  - » Roosevelt Street and Main Street – convert one southbound through lane to a shared through/left turn lane.
- Increasing roadway capacity on Yama Street south of Main Street from one southbound lane to two lanes. This requires roadway widening on the east side by approximately four'-six'.
- Signalizing the intersection of Division Street and Osborn Street

This project would connect with the National City project improvements for the 8th and Roosevelt project which includes signalization of the National City Blvd and Division Street intersection. This project also incorporates intersection capacity improvements for the Main Street and Vesta Street intersection to accommodate future traffic volumes from the Vesta Street Bridge project. An alternative is presented in the concept sheets which includes an exclusive eastbound right turn lane from Main Street to southbound Vesta Street that would require a Real Estate action by the Navy to modify the perimeter fenceline.

Supporting Documentation: NBSD Comprehensive Traffic Study and National City Downtown Specific Plan

LEVEL 2

National City Boulevard

18th Street to 26th Street

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Major Arterial
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	14,650 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Reduces potential for broadside collisions between minor street and major street vehicles
- Enhances pedestrian connectivity and pedestrian safety along National City Boulevard

PROJECT DESCRIPTION

The proposed project for National City Boulevard consists of redesigning intersections from 18th Street to 26th Street for pedestrian improvements. The project improvements include:

- Closing the median on National City Boulevard at 26th Street to restrict eastbound and westbound left-turn movements.
- Implementing Leading Pedestrian Intervals (LPIs) at signalized intersections.
- Implementing truck aprons, where feasible.
- Striping parking lane to reduce travel lane widths and slow speeds.

The proposed project would integrate with the existing (in progress) 22nd Street Improvements project which will remove the median, add pedestrian curb extensions at the intersection of National City Boulevard and 22nd Street, and implement a two-way protected bikeway on the south side of 22nd Street.

The Policy Committee was concerned additional pedestrian improvements could negatively affect vehicular throughput and cause congestion. Additional analysis will need to be incorporated as this project moves forward.

Supporting Documentation: National City INTRAConnect Study

LEVEL 2

8th Street Transit Center Pedestrian Bridge (Dry Side)

8th Street Transit Center to NBSD over Paleta Creek

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Major Arterial
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	23,950 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Promotes transit use.
- Provides direct pedestrian access from the transit center to the Dry Side of NBSD.

PROJECT DESCRIPTION

The proposed project for 8th Street consists of providing a pedestrian connection from the 8th Street Transit Center to the Dry Side over Paleta Creek. There is currently no pedestrian access from the 8th Street Transit Center to the Dry Side of NBSD. As a result, NBSD visitors and employees are not encouraged to use transit to access the southern portion of Dry Side. This proposed project would tie into the mobility hub at the 8th Street Transit Station from the National City Homefront to Waterfront plan, including the National City Clean Mobility Options (CMO) project.

This project will create a multi-use path and pedestrian/bicycle bridge over Paleta Creek and connecting into NBSD at Recreation Way with a new turnstile access gate. The multi-use path would be constructed between the MTS rail line and the NBSD perimeter fenceline. The turnstile into NBSD may require a Real Estate action by the Navy to modify the perimeter fenceline.

The project will require cooperation between NBSD, MTS, and the California Public Utility Commission (CPUC) along the rail line, as well as the City of National City.

Supporting Documentation: NBSD Parking & Traffic Congestion Relief Plan and National City Homefront to Waterfront Plan

LEVEL 3

8th Street (Pre-Signal)

I-5 South Ramps to Roosevelt Avenue

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Major Arterial
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	23,950 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Provides multimodal connectivity to NBSD.
- Closes critical multimodal network gaps.

PROJECT DESCRIPTION

The proposed project for 8th Street consists of transit pre-signal lanes to allow for buses to bypass vehicular queues giving the buses priority. Pre-signals allow for provision of priority to buses traveling on dedicated bus lanes by taking advantage of existing infrastructure and utilizing intersection capacity more efficiently. Pre-signals are additional signals placed upstream of signalized intersections to facilitate provision of some level of priority to buses by allowing them to bypass standing queues of cars. The project improvements would include:

- Adding an eastbound transit pre-signal lane and traffic signal in the existing median approximately 400 feet east of the I-5 south ramps intersection
- Adding a westbound transit pre-signal lane and traffic signal in the existing median at the I-5 north ramp intersection

The project would also integrate improvements along 8th Street from the 8th and Roosevelt Active Transportation Corridor project. There are potential projects to install traffic signals along 8th Street at both the I-5 off-ramp and the I-5 on-ramp, both of which would affect (and perhaps supersede) any pre-signal project along 8th Street and therefore this project requires improvement coordination.

Supporting Documentation: 8th and Roosevelt Active Transportation Project and National City Homefront to Waterfront

LEVEL 3

8th Street Transit Center Pedestrian Bridge (Wet Side)

Harbor Drive to 8th Street Transit Center

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	35 MPH
Functional Class	Major Arterial
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	23,950 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Promotes transit use.
- Provides direct pedestrian access from the transit center to the Wet Side of NBSD.

PROJECT DESCRIPTION

The proposed project for 8th Street consists of providing a grade-separated pedestrian and bicycle connection from the 8th Street Transit Center to the Wet Side. This proposed project would tie into the mobility hub and parking structure at the 8th Street Transit Station from the National City Homefront to Waterfront plan. The project would also integrate improvements along 8th Street from the 8th and Roosevelt Active Transportation Corridor project.

This proposed pedestrian and bicycle bridge over Harbor Drive would connect from one of the middle levels of the proposed parking structure with the NBSD 8th Street Wet Side Gate #9. The bridge would be a prefabricated pedestrian/bicycle bridge. A "switchback" wheelchair accessible ramp would connect the bridge with ground level to access NBSD Wet Side Gate #9. The goal is to not increase security personnel requirements at the gate to monitor bike and pedestrian traffic and security checks by using a turnstile access point and possible "caging-in" the access point.

A six-story parking structure that would have a portion of the first floor as retail services, food services and a car rental facility is proposed to be constructed on top of the surface parking lots being utilized by the Navy. A portion of the structure would extend over the existing bus exit street and trolley parking. Levels 1-3 would be for the public and contractor parking (those employees that work on NBSD but do not need to bring in a vehicle). NBSD military and civilian staff would be able to park for free on levels 4 and 5. Level 6 would be reserved for long term NBSD deployment privately owned vehicle parking using tandem vehicle parking and deployment storage lockers for deployed sailors.

During coordination meetings with NBSD, two concerns were raised. First, the conceptual ramp from the bridge down to the ground on the west-side of Harbor Drive would require some reconfiguration of the perimeter fence requiring a Real Estate action by the Navy. At this time there is not the perceived user demand to support the loss of land area inside the perimeter fence. Second, displacement of existing surface parking for Navy purposed has not been vetted and any temporary or long-term reduction in parking would not be currently supported and would require a Real Estate action by the Navy to modify the existing leases.

Initial concept development information for the project can be found in the National City Homefront to Waterfront Plan.

LEVEL 3

19th Street

Tidelands Avenue to Cleveland Avenue

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	30 MPH
Functional Class	Collector
Lanes (bi-directional)	4
Average Daily Traffic (ADT)[1]	10,400 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Provides multimodal connectivity to NBSD.
- Closes critical multimodal network gaps.

PROJECT DESCRIPTION

The proposed project for 19th Street will provide multimodal connectivity between the proposed Bayshore Bikeway project along McKinley Avenue, the W 19th Street Greenway project that will prohibit vehicles on 19th Street between McKinley Avenue and 18th Street, and Gate 13 of NBSD. The project improvements include:

- Constructing one-way protected bikeways in each direction on 19th Street which requires repurposing of the outermost eastbound vehicular lane and narrowing lane widths for the two westbound lanes.
- Increasing capacity for the northbound left turn movement from Tidelands Avenue to 19th Street.
- Implementing bikeway design enhancements at Tidelands Avenue and 19th Street.

This project would complement and connect to an existing project along 19th Street at the east end of the corridor. At that point, under I-5, the street would be closed to motor vehicle traffic and motor vehicles would be channelized to instead use 18th Street to travel under I-5. Due to the limited capacity on the feeder street to 19th Street, there would be minimal capacity issues with this current 19th Street project.

It is anticipated that driveway consolidation will occur in the future along the south side of 19th Street, which will help minimize conflict points with eastbound bicyclists. A pinch point will occur at the rail crossing where the bike lane will be reduced to five feet. Modular low-profile speed humps are recommended to be installed at the driveways to slow turning vehicles.

While the traffic analysis conducted as part of this Study did not identify existing or future congestion issues, NBSD is concerned that future ship maintenance within the south portion of the base could place higher vehicular demand on this roadway and want to make sure bicycle and pedestrian improvements would be compatible.

Supporting Documentation: Port of San Diego Harbor Drive Multimodal Corridor Study and National City Homefront to Waterfront Plan

LEVEL 3

Civic Center Drive

Tidelands Avenue to Cleveland Avenue

PROJECT VICINITY

ROADWAY CHARACTERISTICS

Posted Speed	30 MPH
Functional Class	Collector
Lanes (bi-directional)	2
Average Daily Traffic (ADT)[1]	5,250 vehicles

[1]Based on segment with highest ADT within the roadway limits

PROJECT BENEFITS

- Closes connectivity gap within bicycle network
- Provides connectivity with Bayshore Bikeway

PROJECT DESCRIPTION

The proposed project for Civic Center Drive consists of bicycle connectivity improvements. The project improvements include:

- Adding Class IV bike lanes between Tidelands Avenue and Harbor Drive to close the gap between the existing Bayshore Bikeway (Tidelands alignment) and the proposed bike lanes on Civic Center Drive, east of Harbor Drive

The proposed project would be consistent with the Bayshore Bikeway project and the Civic Center Drive Protected Bikeway project at the intersection of Civic Center Drive and McKinley Avenue. This project is low priority however if it moves forward, modular low-profile speed humps are recommended to be installed at the driveways to slow turning vehicles.

Supporting Documentation: National City INTRAConnect Study, the Bayshore Bikeway project, and Harbor Drive 2.0

6

Stakeholder Engagement

6.1 STAKEHOLDER ENGAGEMENT

The purpose of the Resiliency Study was in part to encourage coordination and collaboration between the City of National City, Naval Base San Diego, and other public agencies (SANDAG, San Diego Metropolitan Transit System [MTS], Burlington Northern Santa Fe Railway [BNSF], Port of San Diego [Port], and City of San Diego) in the identification of issues and prioritization of potential solutions related to transportation, traffic, and parking. To fulfill this effort, the Team established a Policy Committee that will make final recommendations to the (National City) City Council for approval, utilized members from SANDAG's Military Working Group (MWG) as an advisory group, and coordinated and collaborated as needed with other public agencies to build consensus on project priorities that address transportation, traffic, and parking needs around NBSD. The following summarizes how these efforts propelled the Resiliency Study.

6.2 PUBLIC INFORMATION MEETINGS

Presentation at the Public Library May 22, 2023

The Team presented an overview of the project and initial existing conditions analysis to five attendees. The small size provided an intimate venue where residents dove into their individual challenges where they live, work, and frequent. One of the participants currently works at NBSD and expressed frustration with congestion in the morning. Another person works near Hoover Avenue and Mile of Cars Way, serving persons with disabilities, many of whom walk from the 24th Street Transit Station.

Community Breakfast Meeting #1, June 10, 2023

The Team presented at the quarterly community breakfast to 28 attendees. The project covered an overview, existing conditions, and highlighted next steps. The Team also discussed one of the future conditions of the 8th Street Mobility Hub. Attendees were eagerly anticipating the launch of the NEV shuttle program which has since been partially implemented and considered an 'Existing Condition' in this Study.

Community Breakfast Meeting #2, September 9, 2023

On September 9, 2023, the Team presented preliminary project recommendations to 101 community members, volunteers, and City staff as one of seven project presentations at the Martin Luther King (MLK) Community Center. The project team responded to community member questions prior to and during the presentation. Questions focused around project schedule and process for next steps and project implementation.

6.3 SANDAG MILITARY WORKING GROUP (MWG) MEETINGS

MWG Meeting #1, May 8, 2023

The project team presented an overview of the Resiliency Study to the MWG, focusing on the existing conditions analysis and next steps. This forum resulted in formulating connections with City of San Diego staff to collaborate outside of the group to discuss alignment with current planning efforts.

MWG Meeting #2, September 11,2023

The project team presented a follow-up of the May 8th meeting to the MWG, focusing on the project development, concepts, and engineering drawings. There was no formal vote taken but there was positive feedback and general support of the study from meeting attendees, with one question about an upcoming launch of shuttle buses in National City.

6.4 POLICY COMMITTEE MEETINGS

The Policy Committee was made up of Ya-Chi Huang of NBSD CPLO, Mayor Ron Morrision of National City, and Steve Manganiello, Director of Public Works at National City. The Policy Committee met four times on the dates listed below. The Policy Committee helped make final recommendations to the (National City) City Council for approval and provide a venue for project partners at both the City and NBSD to collaborate.

Meeting #1: May 30, 2023

The first Policy Committee meeting included the City of National City Mayor and Public Works staff and one project manager community planner from NBSD. The meeting served as initial coordination for all team members and to identify initial concerns with the methodology KTUA is applying for the study. Various topics used for the study included review of prior studies, definition of the study area extents, collisions mapping analysis and project prioritization scoring methodology. All projects being considered are off of NBSD property but will benefit NBSD personnel getting to and from the base as they travel through National City. Various corridors were identified as top priorities for National City and NBSD including 19th Street, 8th Street, Civic Center Drive, National City Boulevard, Cleveland Boulevard, Bay Marina Drive, and Hoover Street.

Meeting #2: June 22, 2023

The second Policy Committee meeting included the City of National City Mayor, Vice-Mayor, and Public Works staff as well as a representative from NBSD and all other team members. This Policy Committee meeting focused on an update on public engagement and a review of the progress on the design drawings. The following corridors were reviewed: National City Blvd, 8th Street, Cleveland Avenue, 19th Street, Bay Marina Drive, Main Street and Civic Center Drive. The Team received

feedback from the City of National City and NBSD on edits and changes to make to the concept plans, in anticipation of the next meeting. A follow-on meeting was scheduled for additional review of the concepts.

Meeting #3: August 23, 2023

The third Policy Committee meeting focused on concept level site plans at the prioritized project locations that were identified in prior Policy Committee meetings and coordination of the overall project next steps including public meetings. Comments on concept plans, used for updating the plans, were provided for the following corridors: 8th Street, 19th Street, Bay Marina Drive, Main Street and Civic Center Drive. A follow-on meeting was scheduled for additional review and update of the concept plans.

Meeting #4: December 4, 2023

The fourth Policy Committee meeting focused on the final report, including all concept level site plans at the prioritized project locations that were identified in the prior Policy Committee meetings. Comments on concept plans were provided and next steps to finishing the project were discussed.

6.5 CITY OF SAN DIEGO MEETINGS

Meeting #1: June 7, 2023

This meeting guided San Diego projects that benefit the military installation to float to the top of the priority list. The City of San Diego team provided insight for priority projects in alignment with their draft Mobility Master Plan. It was decided a follow-up meeting would be beneficial so San Diego can cross-reference their project list to see if other projects should be added.

Meeting #2: July 6, 2023

This meeting included a discussion on issues related to motorists, pedestrians, cyclists, and parking issues as part of the Navy's Resiliency Grant for NBSD. The meeting focused on the Main Street project, from Yama Street to Vesta Street. The City of San Diego mentioned that the Main Street project would make a useful connection to the Chollas Creek Bikeway project that they are working on, closing a missing gap. No decisions or official feedback was given at this meeting. A follow-up meeting was scheduled for additional review of the concepts.

Meeting #3: September 18, 2023

This third meeting with San Diego allowed the project team to discuss progress on the Main Street and 19th Street concepts, traffic analysis, and the Vesta Street bridge redistribution. The City of San Diego staff was satisfied with the direction of the projects.

6.6 CITY OF NATIONAL CITY MEETINGS

During the course of the project, there were nine (9) check-in meetings with the head of the Department of Public Works from the City of National City to give updates as to the progress of the plan. Team members received input and advice from City of National City staff and incorporated that feedback into the Study. Meetings occurred on the following dates: April 19, April 27, May 2, May 9, May 16, May 22, July 25, October 5, and October 19.

6.7 MEETINGS WITH NAVAL BASE SAN DIEGO (NBSD)

During the course of the project, there were nine (9) check-in meetings with a representative from Naval Base San Diego (NBSD) to give updates as to the progress of the plan. Team members received input and advice and incorporated that feedback into the plan. Meetings occurred on the following dates: April 13, April 18, May 2, May 9, May 16, July 11, August 11, October 3, and October 23.

6.8 SITE VISIT WITH CITY OF NATIONAL CITY AND NBSD

In addition to the aforementioned meetings, the Team met with the City of National City, OLDCC, and NBSD for a Site Visit on February 22, 2023, at the 8th Street Trolley Station. The site visit was to have an introduction to the project and to walk along the project site and discuss the plan as well as potential projects, starting with projects located at or near the 8th Street trolley station.

6.9 MEETING WITH CALTRANS AND SANDAG

For this meeting the Team met with the Harbor Drive 2.0 design team, representing Caltrans and their partners, including the Port, SANDAG, the San Diego MTS, and the Burlington Northern Santa Fe (BNSF) Railway. This meeting was mostly informational, starting with the consulting team explaining their progress on the National City Resiliency plan and related concept plans. That was followed with the Harbor Drive 2.0 design team explaining the design details behind the Harbor Drive 2.0 project and the Vesta Street Bridge Project and discussing the potential funding and construction schedules for both projects. They provided valuable information so the National City Resiliency Team could ensure any of their potential projects align with and complement the Harbor Drive 2.0 project and the Vesta Street bridge project.

APP.

Appendix

Appendix A. Compiled Project List from Previously Proposed Plans and Studys

	Study	Year	Type	Extents	Description
1	National City Balanced Plan EIR	2021	Roadway	Between existing alignment of Marina Way and intersection of 32nd Street and Tidelands Avenue	"Realign Marina Way from its existing alignment to form a curve that rounds out to the west when traveling toward the Balanced Plan area and connect to the proposed new park entrance"
2	National City Balanced Plan EIR	2021	Roadway	32nd Street, east of Tidelands Avenue	Road Closure
3	National City Balanced Plan EIR	2021	Roadway	Goesno Place, south of 32nd Street	Road closure to vehicular traffic
4	National City Balanced Plan EIR	2021	Roadway	East of Tidelands Avenue, south of 32nd Street	Shift terminus of Tidelands Avenue to the east
5	National City Balanced Plan EIR	2021	Roadway	Tidelands Avenue, south of 32nd Street	Close current terminus of Tidelands Avenue
6	National City Balanced Plan EIR	2021		Within the existing alignment of Marina way	Create north-south public access corridor, primarily for pedestrians and bicyclists
7	National City Balanced Plan EIR	2021	Pedestrian	Within the existing alignment of 32nd Street	Create east-west public access corridor, primarily for pedestrians but may also include an ancillary bicycle path
8	National City Balanced Plan EIR	2021	Roadway	Tidelands Avenue, between Bay Marina Drive and 32nd Street	Road Closure
9	National City Balanced Plan EIR	2021	Roadway	West 28th Street between Tidelands Avenue and Quay Avenue	Road Closure
10	National City Balanced Plan EIR	2021	Roadway	East of Goesno Place	Relocate road
11	NBSD Installation Development Plan	2017	Roadway	Vesta Street over Harbor Dr	Construct Vesta Street raised pedestrian and vehicular bridge
12	Homefront to Waterfront Plan	2020		19th Ave from Tidelands Ave to McKinley Ave	"Road diet between Tidelands Ave and McKinley Ave • Install two-way cycle track between McKinley Ave and Wilson Ave • Pedestrian recommendations include high visibility crosswalks, traffic calming and curb extensions"

	Study	Year	Type	Extents	Description
13	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	E Harbor Dr north of 32nd St	Construct a class I multi-use bike path
14	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Main St and Division St	Construct a class III bike route
15	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Roosevelt Ave from Division St to 8th St	Construct a class I multi-use bike path
16	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Harbor Dr south of Woden Rd	Construct a class II bike lane
17	Homefront to Waterfront Plan	2020	Transit	32nd St transit station	"Formal drop-off locations for: • Trolley Kiss and Ride Uber/Lyft and carpool pick-ups at: • Southbound 32nd St with turn-around circle added at the Exchange Gas Station access road • Northbound 32nd St with drop-off striped at the currently closed gate #6/5B; Westbound Harbor Drive - refurbished drop-off waiting plaza • Gate 5B ADA improvements to allow the gate to be reopened to process bike and pedestrian access • Accessible ramps for wheelchairs and bikes added to the existing pedestrian bridge; SANDAG intends to remove the pedestrian bridge with the Bayshore Bikeway; they will be replaced with intersection bulb-outs, median refuges, LPI's and high visibility crosswalks"
18	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Tideland Ave south of 8th Ave	Construct a class I multi-use bike path

	Study	Year	Type	Extents	Description
19	Homefront to Waterfront Plan	2020	Transit	8th Street transit station	"Six-story Transportation Center • Paid contractor/public parking on levels 1-3 • Navy parking on levels 4-5 • Deployed sailor parking with PV shade shelters and deployment lockers on level 6 • Bottom-floor services, hospitality and retail • Primary structure entrance/ticketing plaza • Central Courtyard for ventilation, natural lighting and day uses • Gates to control courtyard (locked at night) • 3rd to 6th floor parking over existing busway and MTS parking • 3rd to 6th floor parking over existing busway and MTS parking • Parking structure elevators • Drop-off for the transportation center • Pedestrian bridge across rail line and Harbor Dr. to 8th Street gate"
20	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Civic Center Dr from Tideland Ave to Wilson Ave	Construct a class III bike route
21	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Coolidge Ave to W 8th St and east	Construct a class III bike route
22	INTRAConnect	2020		W 19th St and Wilson Ave	Add stop sign if warranted
23	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Sampson St and Harbor Dr	Reconfiguration of intersection to improve operations and bike/ped access to shipyards
24	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Bay Marina Dr between Cleveland Ave and the railroad	Construct a class II bike lane
25	2010 SANDAG San Diego Regional Bike Plan	2010	Bike	Mile of Cars Way eastbound from railroad and Wilson Ave between W 22nd St and Mile of Cars Way	Construct a class III bike route
26	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Sampson St and Logan Ave	Add a new traffic signal and restriping to accommodate exclusive left turn lanes in SB and NB directions

	Study	Year	Type	Extents	Description
27	City of San Diego's 2019 Bike Network Map, INTRAConnect Plan	2019	Bike	Marina Way from E 24th St to W 32nd St	Construct a class I multi-use path
28	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Schley St and Harbor Dr	Reconfiguration of intersection to improve operations and bike/ped access to shipyards
29	City of San Diego's 2019 Bike Network Map, INTRAConnect Plan	2019	Bike	W 33rd St from Hoover Ave to National City Blvd	Construct a class II bike lane
30	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		28th St and Harbor Dr	"• Reconfiguration of intersection to accommodate 3 SB left turn lanes • Reconfiguration of intersection to provide dual EB left turn lanes"
31	City of San Diego's 2019 Bike Network Map, INTRAConnect Plan	2019	Bike	Hoover Ave from Mile of Cars Way to W 30th St	Construct a class II bike lane
32	City of San Diego's 2019 Bike Network Map, INTRAConnect Plan	2019	Bike	Harbor Dr curve near Civic Center Dr ending at McKinley Ave	Construct a class I multi-use path
33	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Roadway	28th St and Boston Ave	Relocate on-ramp from Boston Ave to 28th St to reduce community impacts and improve freight mobility
34	City of San Diego's 2019 Bike Network Map, INTRAConnect Plan	2019	Bike	McKinley Ave from W 14th St to Bay Marina Dr	Construct a class IV bikeway
35	Homefront to Waterfront Plan	2020		Bay Marina Dr/Mile of Cars Way from McKinley Ave to Hoover Ave/24th St	"Bike safety enhancements such as: • Bike priority lanes, modified bike priority lanes or shared lane markings • Pedestrian recommendations include high visibility crosswalks, curb extensions, RRFBs or PHBs • Optional: Ramped 10’ wide prefabricated bridge for bicycles and pedestrians; support system will need to work in Caltrans approved locations and be able to be a minimum of 10’ under power cables on the east side and 20’ over the freeway. It will need to meet a <8% grade"

	Study	Year	Type	Extents	Description
36	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		32nd St and Harbor Dr	"• Add additional and/or extended left-turn pocket from EB Harbor Dr to 32nd St to improve operations for all movements by shortening phase time for left turns • Add additional and/or extended left-turn pocket from WB Harbor Dr to Naval Base Gate 6 on 32nd St • Perform an intersection study to optimize operations for all users, including pedestrians with removal of bridges • Add additional right-turn pocket from SB 32nd St to Harbor Dr • Add additional right-turn pocket from EB Harbor Dr to Naval Base Gate 6 (32nd St)"
37	Homefront to Waterfront Plan	2020		Hoover Ave from Mile of Cars Way to W 30th St	"• Road diet and traffic calming between Mile of Cars Way and 30th Street to install bike lanes • Pedestrian recommendations include high visibility crosswalks • Install truck aprons to slow turning speeds"
38	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		8th St and Harbor Dr	"• Add additional and/or extended left-turn pocket to improve access from WB Harbor Dr to Naval Base Gate 9 on 8th St • Reconfigure WB 8th St to allow 3 thru lanes to Naval Base Gate 9"
39	Homefront to Waterfront Plan	2020	Pedestrian	National City Blvd from E 24th St to W 33rd St	"• Signal timing changes throughout • Leading pedestrian intervals and countdown pedestrian signals throughout"
40	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Civic Center Dr and Harbor Dr	Add dual EB left turn lanes to increase capacity for traffic from nearby I-5 SB off-ramp
41	Homefront to Waterfront Plan	2020		30th St from Hoover St to National City Blvd	"• Road diet between Hoover Ave and National City Blvd to install bike lanes • Pedestrian recommendations include high visibility crosswalks, curb extensions and pedestrian-friendly signal improvements at signalized intersections"
42	INTRAConnect	2020	Pedestrian	National City Blvd from 18th St to 26th St	Redesign intersection crossing to accommodate peds and add high visibility crosswalks and placemaking
43	INTRAConnect	2020		Harding Ave	Add traffic calming, stop sign, if warranted
44	MMAS: National City Downtown Specific Plan (2017)	2017		Harbor Dr at 8th Street	Pedestrian and bicycle connections to NBSD gate

	Study	Year	Type	Extents	Description
45	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Roadway	28th St	Reconfigure to increase capacity and improve access between Harbor Dr and Main St; also reconfigure to increase capacity and improve access between Main St and National Ave; initial study assumed 2 NB and 3 SB lanes with raised median
46	MMAS: National City Downtown Specific Plan (2017)	2017		8th St at I-5 SB off-ramp	Signalize intersection and eliminate free right-turn
47	MMAS: National City Downtown Specific Plan (2017)	2017		8th St and Hoover Avenue	Signalize intersection
48	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Bike	Boston Ave from 29th St to 32nd St	Construct a class I multi-use path from 29th St to 32nd St
49	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Bike	8th St from Harbor Dr to National City	"• Construct class II bike lanes connecting Harbor Dr, 8th St Trolley/bus station, and National City communities • Pedestrian upgrades including rail crossing gates, curb ramps, and wayfinding facilities."
50	MMAS: Port CIP Caltrans Trade Corridors Improvement Fund	N/A	Roadway	32nd St from Harbor Drive to I-5	Grade Separated Improvements: a partially raised tee intersection for turning movement from Harbor Drive to I-5
51	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Roadway	8th Ave	Add facilities to access the Naval Base Dry-Side form 8th St for bike/ped users and automobiles, if feasible
52	MMAS: Port CIP Caltrans Trade Corridors Improvement Fund	N/A	Roadway	Civic Center Drive and I-5	"• Create a direct connection with Harbor Drive and Tidelands Avenue • Signalize Wilson Avenue at Civic Center Drive • Add northbound lane on Wilson Avenue • Widen Northbound 1-5 ramp"
53	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Bike	Cleveland Ave form Civic Center Dr to Bay Marina Dr	Construct class II bike lanes connecting Civic Center Dr to Bay Marina Dr
54	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Pepper Park	Bike/ped connection to Pepper Park extension proposed in National City Marina District Balanced Land Use Study
55	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Pedestrian	24th St/Bay Marina Dr	Pedestrian upgrades including rail crossing gates, curb ramps, and wayfinding facilities

	Study	Year	Type	Extents	Description
56	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Main St and Yama St	In conjunction with Vesta St Bridge, operational and capacity improvements where feasible and real-time wait signs
57	National City Downtown Specific Plan	2017		Division St and Main St and Roosevelt Ave	"• Reconfigure Roosevelt Ave where National City Blvd meets Main St and where Division St comes in from the north • Realign so there is a favorable design for signalization and safe traffic lane alignments"
58	NBSD Comprehensive Traffic Study	2021		Norman Scott Rd and Division St	"Install a single lane roundabout with the following configuration: • Eastbound Approach: Thru/Right • Westbound Approach: Thru (Free Bypass Lane) – Left • Northbound Approach: Left – Right (Yield Bypass Lane and 100 feet of storage "
59	National City Downtown Specific Plan (2017)	2017	Bike	City Center Drive to Northern City Limits	"• Class I multi-use path on west side of Harbor Drive from Civic Center Drive to Northern City Limits • Class II bicycle lane on east side of Harbor Drive from Civic Center Drive to Northern City Limits"
60	National City Downtown Specific Plan (2017)	2017	Pedestrian	Harbor Drive to D Avenue	Urban trail
61	National City Downtown Specific Plan (2017)	2017	Bike	Harbor Drive to Roosevelt Avenue	Construct a two-way cycle track on 8th Street between Harbor Drive and Roosevelt Avenue, connection with Bayshore Bikeway and NBSD
62	MMAS: City of San Diego Capital Improvement Program (CIP GIS Shapefile) (2017)	2017	Bike	Dorothy Petway Park to Harbor Dr	The project will construct a multi-use path, traversing portions of two City of San Diego communities, Southeastern San Diego and Barrio Logan; the project runs from the Dorothy Petway Neighborhood Park at its eastern terminus to Harbor Drive
63	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Bike	Marina Way and McKinley Ave	Relocation of the Bayshore Bikeway from Tidelands Ave to Marina Way and McKinley Ave
64	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Roadway	Cleveland Ave and Marina Way	Cleveland Ave-Marina Way Connection across Bay Marino Dr
65	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Roadway	Main St from Vesta St to Yama St	In conjunction with Vesta St bridge, operational and capacity improvements to accommodate additional traffic entering Naval Base at Gates 29 and 32

	Study	Year	Type	Extents	Description
66	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Freight	Harbor Dr between Cesar Chavez Pkwy and connections to I-5.	Dedicated lanes and signal priority for truck freight. Includes freight signal priority, queue jumps, delineators and signage; generally aligned in the #1 lanes and median. And resurfacing.
67	National City Downtown Specific Plan; Homefront to Waterfront Plan	2017	Transit	Area between Gate 32, W 32nd St, Kidd St, and Highland Ave	Incorporate an NEV shuttle system around the central National City area
68	NBSD Comprehensive Traffic Study	2021		Cummings Rd and Vesta St	"• Remove pedestrian warning signs on every approach • Install R1-3P ALL WAY plaque below each STOP sign • Restripe faded centerline and STOP legend pavement markings • Install compliant curb ramps and DWS at every crosswalk end • Install a stop line at least 4 feet in advance of the crosswalk on the northbound approach • Install right lane use markings for right turn lane on the southbound approach • Install R3-7 RIGHT LANE MUST TURN RIGHT sign in advance of the intersection"
69	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 2 ECF just south of Harbor Dr and Surface Navy Blvd intersection	"• Remove all non-roadway signs on the perimeter fence and sliding gates • Install SDDCTEA 55-15 compliant gate closure signing on the sliding gates • Replace non-compliant NO PEDESTRIAN TRAFFIC signs with R5-10c • Remove the non-compliant pedestrian crossing sign and install W11-2 sign and W16-7p plaque at the mid-block crosswalk at the bridge • Relocate the EFO button to where it is more easily accessible • Remove the planters in the median or provide curbing within the painted median to provide a minimum 2 feet spacing from the face of the planter to the face of curb □ Properly eradicate the STOP legend and STOP line pavement markings at the ID check lane"
70	MMAS: SANDAG Regional Plan (2015)	2015	Transit	North Park to 32nd St Trolley Station	Connection from North Park to 32nd St Trolley Station via Golden Hill

	Study	Year	Type	Extents	Description
71	NBSD Comprehensive Traffic Study	2021	Gate - Signing and Striping	Gate 6A adjacent to Harbor Dr	"• Replace the flexible delineator posts with ones that are all white with retroreflective sheeting. Restripe the lane line dividing the two inbound lanes with a white line. Ensure the yellow line is completely eradicated and not painted over. • Replace all non-compliant signs posted throughout the gate area with ones that use Type III sheeting or better. Replace the ACTIVE BARRIERS AHEAD sign with a W3-3a-TEA sign and install that sign in the approach zone. • Remove the 5-mph pavement marking. If desired, install a W3-10a-TEA CHECKPOINT sign with an advisory speed plaque mounted below. Install the sign in the approach zone prior to the bypass lane and ID check lanes. • If a STOP sign is used at the ID check area, install a STOP sign with supplemental placard below which reads PROCEED ONLY WHEN DIRECTED BY GUARD. The sign assembly should be located on the on the right-hand side. • Delineate the AVBs using retroreflective, alternating, vertical red/white stripes on the barriers and install envelope markings in accordance with TEA Pamphlet 55-15 • Install a R1-1 STOP sign on the right hand of the truck bypass lane with a 24-inch stop line adjacent to the STOP sign. If desired, a STOP legend can then be installed prior to the stop line. • Replace or remove the STOP sign at the Harbor Drive exit. Install a STOP sign on the right-hand side. • Replace the two indication signal heads found throughout the ECF area with ones that have three indications (red-yellow-green) and provide sufficient yellow time to

	Study	Year	Type	Extents	Description
72	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 6 ECF just south of Harbor Dr and 32nd St	"• Military police need to enforce illegal parking within the visitor center lot, specifically illegal commercial vehicle parking • Consider striping 2-3 commercial vehicle parking stalls within the visitor center lot • Remove non-compliant AVB sign in the approach zone and install AVB warning signs per SDDCTEA Pamphlet 55-15 between the AVBs and ID check • Install gate closure signing per SDDCTEA Pamphlet 55-15 on the swing gates Relocate the reversible lane bollards at least 2 feet from the travel way or remove bollards altogether and replace with traffic cones Remove the speed bumps in the approach zone • Remove the speed bumps in the response zone of the outbound lanes Remove temporary barriers in approach zone and inspection area and utilize traffic cones to close inbound processing lanes • Replace traffic cones in poor condition Replace the existing turnstile pedestrian gate with an automated turnstile pedestrian gate Properly eradicate the STOP legend and STOP line pavement markings at the ID check area Replace non-compliant AVB signals with SDDCTEA Pamphlet 55-15 approved signals • Install safety loops for each AVB "
73	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 6 south of 32nd St and Harbor Dr	"Construct new ECF with the following: • 5 inbound processing lanes with ID check islands • Gatehouse and automated pedestrian gate • Bi-directional POV inspection area • New “Florida-T” signalized internal intersection • New AVBs using SDDCTEA staggered AVB scheme "
74	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 15 on 28th and Le Hardy	Provide an additional processing lane and install AVBs per required response time

	Study	Year	Type	Extents	Description
75	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 9 ECF west of 8th St and East Harbor Drive	"• Remove all non-roadway signs on the perimeter fence and sliding gates • Install SDDCTEA 55-15 compliant gate closure signing on the sliding gates Replace the sliding gate motors to allow automated opening and closing • Replace traffic cones in poor condition • Deactivate and remove all AVBs signs, signals and posts • Remove all bollards in the approach zone protecting AVB signal posts; As per the Port of San Diego Harbor Drive MCS, add real-time wait signs where feasible"
76	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 13/19th St and Tidelands Ave	"• Install lane use signs on all approaches • Install a DO NOT STOP ON TRACKS (R8-8) sign at all at-grade railroad crossings • Restripe faded pavement markings • Upgrade existing curb ramps to include detectable warning surfaces • Stripe crosswalks between curb ramps as appropriate "
77	NBSD Comprehensive Traffic Study	2021	Ped	Main St and Vesta St	"• Restripe all faded pavement markings • Install pedestrian signals with countdown display • Replace pedestrian push buttons • Install crosswalk markings on westbound approach • Install curb ramps with a DWS on NW and NE corners • Install a signal head overhead on a mast arm like what exists on eastbound approach"
78	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Schley St and 26th St	Add a diverter island on 26th St to restrict NB traffic from Schley St
79	MMAS: City of San Diego Capital Improvement Program (CIP GIS Shapefile) (2017)	2017		Main St and Vesta St	Traffic signal improvements
80	NBSD Comprehensive Traffic Study	2021	Roadway	Knowlton Williams Rd and Vesta St	Reconfigure the inbound truck lane and reverse the flow of the access road behind the NAVSUP building to accommodate traffic from Gate 6A once Knowlton Road closes at Vesta St for the new Vesta Bridge

	Study	Year	Type	Extents	Description
81	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 13 east of Kidd St and 19th St	"Construct new ECF with the following: • 3 inbound processing lanes with ID check islands • POV inspection area • Gatehouse and automated pedestrian gate • One-way road network with Kidd Street (inbound only) and Wombley Street (outbound only) • New AVBs using SDDCTEA STOP control scheme "
82	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 13 north of 19th St and Kidd St	"• Install SDDCTEA 55-15 compliant gate closure signing on the sliding gates • Install additional lighting at the ID check area • Relocate the EFO button to where it is more easily accessible "
83	NBSD Parking Traffic Overview	2018	Transit	Near the pedestrian bridge west of parking lot 1Q along Harbor Dr	Improve the existing shuttle origination point near west end of the Pedestrian Bridge into a Mobility Hub capable of supporting multiple shuttles concurrently with personnel weather shelters and provide bicycle racks
84	National City Downtown Specific Plan	2017	Parking	National City	"• Restrict and enforce parking with permitting and begin to convert parallel parking to angled parking • Establish parking bonus for off-street parking/shared parking • Establish paid parking • Expand Residential Permit Zones • Implement oversized vehicle parking restrictions • Implement active monitoring • Transition to digital permitting • Create a parking manager position • Establish a parking benefit district • Invest revenue into parking and transportation improvements"
85	INTRAConnect	2020	Ped	Wilson Road	Add crosswalks, if warranted
86	NBSD Parking Traffic Overview	2018	Parking	Parking lot south of Harbor Dr and 32nd Street intersection	Design and implement a parking structure in Lot 1Q to net at least 800 new spaces. Integrate the parking structure and mobility hub.
87	NBSD Comprehensive Traffic Study	2021		Knowlton Williams Rd and Vesta St	"• Install a W17-1 SPEED HUMP sign with a W16-7PL arrow • Restripe markings throughout the intersection • Install an R4-7 KEEP RIGHT sign at the nose of median on northbound approach"

	Study	Year	Type	Extents	Description
88	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 15 on 28th and Le Hardy	"Construct new ECF with the following: • 3 inbound processing lanes with ID check islands • Gatehouse and automated pedestrian gate • New AVBs using SDDCTEA STOP control scheme "
89	NBSD Comprehensive Traffic Study	2021	Pedestrian	E Harbor Dr and Vesta St	Restripe all faded pavement markings, Remove NO PEDESTRIAN CROSSING sign and replace with a R9-3, modify curb ramp, construct a DWS, provide a minimum 3-foot unobstructed bath to the sidewalk for the SW corner curb ramp
90	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Freight	Base-wide	"• Freight truck geofencing reight signal priority • Community web portal for less queueing and better logistics • Inland port facility to facilitate freight movement • Regional truck parking strategy • Innovative truck parking and rest facilities • Truck parking information management system for reserved parking • Marine-based services between the Port and other locations to reduce pressure on truck and rail corridors."
91	National City Downtown Specific Plan	2017		In the residential area just east of the I-5 in National City	Proposed Multi-Modal Corridor
92	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Ped	28th St rail crossing	Installation of quad gates and pedestrian gates at rail crossing to improve visibility and operations
93	Homefront to Waterfront Plan	2020		W 32nd St from Tidelands Ave to Marina Way	"• Traffic calming and bike priority lanes to connect Pepper Park to Marina Way Drive and Tidelands Ave • Pedestrian recommendations include high visibility crosswalks and curb extensions"
94	MMAS: City of San Diego Capital Improvement Program (CIP GIS Shapefile) (2017)	2017	Ped	32nd St and Norman Scott Rd	"• Upgrade curb ramps • Install ped countdown timers"
95	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Ped	28th St and Harbor Dr	Enhanced pedestrian facilities to accommodate shipyard demand including widened crosswalks, curb extensions, curb ramps, and potential pedestrian scramble

	Study	Year	Type	Extents	Description
96	NBSD Comprehensive Traffic Study	2021	Gate - Signing and Striping	Gate 29 on Vesta St South of Main St	"• Install compliant gate closure signage and horizontal panels with retroreflective, alternating, vertical red/white stripes for both the inbound and outbound directions • Replace the retroreflective sheeting on the gate arm for the outbound direction • Install a crash cushion at the front of the foremost object protecting the automated vehicle processing infrastructure for each travel direction. Delineate the barrier ends using an OM-3 object marker. If desired, install additional barriers to fill in any gaps between the automated vehicle processing infrastructure. Note they must connect end-to-end. • Delineate the AVBs using retroreflective, alternating, vertical red/white stripes on the barriers • Replace the two section signal heads with ones that have three indications (red-yellow-green) and provide sufficient yellow time to transition to the red indication • Replace the “DIM LIGHTS FOR SENTRY” sign with the standard USE PARKING LIGHTS AT GATE (R1"
97	NBSD Final ECF Evaluation	2016		Gate 15 at 28th St and Le Hardy St	"• Install NO LEFT TURN sign on the 28th Street median facing the outbound lane of Gate 15 • Restripe STOP line, STOP legend, and crosswalk on the westbound (outbound) approach "
98	INTRAConnect	2020	Ped	Hoover Ave	Street lighting and crosswalks, if warranted
99	NBSD Comprehensive Traffic Study	2021	Ped	E Harbor Dr and Vesta St	"• Restripe all faded pavement markings • Remove NO PEDESTRIAN CROSSING sign and replace with a R9-3 • Modify curb ramp, construct a DWS, and provide a minimum 3-foot unobstructed path to the sidewalk for the SW corner curb ramp"
100	National City Downtown Specific Plan; Homefront to Waterfront Plan	2017	Transit	Near 8th Ave and rail crossing	NEV shuttle charging and solar panels

	Study	Year	Type	Extents	Description
101	NBSD Final ECF Evaluation	2016		Gate 15 at 28th Street and Le Hardy St	"• Install SDDCTEA 55-15 compliant gate closure signing on the swing gates • Remove the non-compliant pedestrian crossing sign and install W11-2 and W16-7p sign at the mid-block crosswalk after the ID check area for the both inbound and outbound lanes • Remove the LEFT TURN ONLY sign and install ONE WAY signing per Figure 2B-16 of the CA MUTCD • Remove WARNING PEDESTRIAN CROSSING sign on the outbound lane Remove temporary barriers in approach zone and ID check area Deactivate and remove all AVBs signs, signals and posts • Remove all bollards in the approach zone protecting AVB signal posts and being used as passive barrier • Replace traffic cones in poor condition Replace the existing turnstile pedestrian gate with an automated turnstile pedestrian gate Restripe the mid-block crosswalk after the ID check area "
102	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Transit	Base-wide	Allow transit bus access on the Naval Base, with potential Navy contribution toward operating cost. Currently done in Norfolk, VA
103	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 2 on Surface Navy Blvd between Harbor Dr and Norman Scott Rd	"Construct an additional inbound processing lane and site AVBs at the recommended location for the long-term Gate 2 conceptual design "
104	NBSD Parking Traffic Overview	2018	Parking	Parking lot west of gate 6 along Harbor Dr	"• Design and implement a parking structure in Lot 1U to net at least 2,000 new spaces • Add an additional shuttle stop to the Central and Southern routes at the structure"
105	KTUA: National City Downtown Specific Plan (2017)	2017	Land Use	8th Ave and Roosevelt Ave	Downtown Specific Plan adds 5,000 units NOT captured in SANDAG population projections.
106	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 9 west of Harbor Dr and 8th St	"Construct new ECF with the following : • 3 inbound processing lanes with ID check islands • POV inspection area • Gatehouse • New AVBs using SDDCTEA STOP control scheme "

	Study	Year	Type	Extents	Description
107	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 6 south of 32nd St and Harbor Dr	Modify the current POV inspection area to accommodate vehicle processing
108	MMAS: SANDAG Regional Plan (2015)	2015	Transit	Palomar St to 12th & Imperial	Phase I - Blue Line Frequency Enhancements and rail grade separations at 28th St, 32nd St, E St, H St Palomar St, and Blue/Orange Track Connection at 12th/ Imperial
109	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 2 on Surface Navy Blvd between Harbor Dr and Norman Scott Rd	"Construct new ECF with the following: • 3 inbound processing lanes with ID check islands • Gatehouse • New AVBs using SDDCTEA STOP control scheme "
110	NBSD Final ECF Evaluation	2016	Gate - Capacity	Gate 13 east of Kidd St and 19th St	"• Construct an additional receiving lane on Kidd Street and establish a one-way pair road with Kidd Street (inbound only) and Wombley Street (outbound only) • Install AVBs per required response time "
111	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 6/32nd St and E Harbor Dr	"• Install a YIELD sign on the NB channelized right turn • Install overhead NO COMMERCIAL VEHICLE right and left turn signs on the EB and WB approaches of Harbor Drive • Install a vertical clearance warning sign on the pedestrian overpass structures in addition to the painted heights • Replace the overhead guide sign “NAVAL BASE PASS DECAL INFORMATION NEXT LIGHT” for the WB approach that meets CA MUTCD letter height requirements Restripe SB approach railroad crossing markings"

	Study	Year	Type	Extents	Description
112	NBSD Comprehensive Traffic Study	2021	Gate - Pedestrian	Gate 5A on S 32nd Street South of Harbor Dr and 32nd Street	"• In the short-term, close the bypass door so personnel can only gain access by using the card reader. For the long-term, there are two options to address the issue: 1) Redesign the gate with the typical features of a pedestrian turnstile gate that restricts access at all times 2) Utilize a sally port design. This design can be implemented by installing a remotely activated door closer on the existing bypass door and a new remotely activated door in the doorway. • Install a crash cushion at the front of the pedestrian guard booth. Remove the bollards placed along the curb line in the approach zone. If it is desired to protect pedestrians walking on the sidewalk, then install a compliant guardrail system. "
113	National City Balanced Plan EIR	2021	Roadway	Between the existing rail yard along the west side of Marina Way and the east side of the National Distribution Center, north of the Balanced Plan area, to the existing rial line north of the existing 32nd Street and west of Tidelands Avenue	Railroad Reconfiguration
114	NBSD Comprehensive Traffic Study	2021	Pedestrian	Main St and Vesta St	Restripe all faded pavement markings, install pedestrian signals with countown display, replace pedestrian push buttons, install crosswalk markings on westbound approach, install curb ramps with a DWS on NW and NE corners, install a signal head overhead on a mast arm like what exists on easbound approach
115	Homefront to Waterfront Plan	2020	Transit	Multiple locations in National City	Add primary and curbside mobility hubs throughout the area
116	Homefront to Waterfront Plan	2020	Transit	8th St (Highland to Paradise Valley), L Ave (8th to 30th), 30th (NCB to Bonita)	Transit route improvements

	Study	Year	Type	Extents	Description
117	MMAS: SANDAG Regional Plan (2015)	2015	Freight	National City: National City Marine Terminal	National City Marine Terminal (NCMT) Marine Cargo Staging and Handling Projects, including but not limited to: construct garages for additional roll-on/ roll-off cargo storage, wharf extension to create two new berths, and improvements to facilitate "marine highway" cargo
118	INTRAConnect	2020	Ped	W 18th Street	Pedestrian safety improvements including singing, lighting, and traffic calming
119	MMAS: City of San Diego Capital Improvement Program (CIP GIS Shapefile) (2017)	2017		32nd St and Norman Scott Rd	"• Install signal poles with longer mast arms • Remove signal poles off medians • Upgrade vehicle heads to 12"" LED • Install Polara APS"
120	INTRAConnect	2020	Ped	Civic Center Dr near Harbor Dr	Increase number of pedestrian crossings, add bulb outs and LPIs
121	MMAS: National City Downtown Specific Plan (2017)	2017	Transit	8th Street and Yama Street, Connections to NBSD	Electric shuttle system
122	NBSD Comprehensive Traffic Study	2021	Gate - Capacity	Gate 29 on Vesta St South of Main St	"• 3 ID check lanes for POV traffic • Canopy that extends over all ID check lanes • Two-Way POV inspection lane • Canopy that extends over entire inspection area • Post-ID check rejection designed for SU-30 trucks • WB-67 trucks can be rejected through the POV inspection lane • Passive barrier to create a contiguous perimeter • Overwatch provided at internal intersection and intersection south of the proposed Vesta Street bridge (i.e., Cummings Road and Vesta Street) Fully; real time wait signs (as added by the Port of San Diego MCS."
123	MMAS: SANDAG Regional Plan (2015)	2015	Bike	National City Marina to 32nd St	Bayshore Bikeway
124	NBSD Final ECF Evaluation	2016		Gate 9 west of Harbor Dr and 8th St	"• Work with local jurisdiction to change the Harbor Drive northbound leading protected left turn phase to lagging protected left turn phase • Restripe the southbound through movement along Cummings Road to improve sight distance "

	Study	Year	Type	Extents	Description
125	NBSD Comprehensive Traffic Study	2021		Cummings Road and Vesta St	"Install traffic signals with the following lane configuration and phasing: • Eastbound Approach - Left-Thru-Right with protected/permitted left turn phase and restripe to provide separate left-turn lane • Westbound Approach - Left-Thru-Right with protected/permitted left turn phase and widen to provide separate left-turn lane and restripe thru lane to convert to a shared Thru-Right • Northbound Approach - Left-Thru-Right • Southbound Approach - Left-Thru-Right with protected/permitted left turn phase and widen to provide an additional outbound (northbound) lane"
126	NBSD Final ECF Evaluation	2016	Gate - Signing and Striping	Gate 2 and East Harbor Drive	"• Replace non-compliant DO NOT ENTER signs on the General Dynamics parking lot driveway • Install tire shredder signs underneath DO NOT ENTER signs • Install ADA compliant curb ramps, push buttons, and sidewalk in the median and on the General Dynamics parking lot side of the intersection • Restripe the EB right turn lane on Harbor Drive to accommodate bicyclists • Work with General Dynamics to reverse the one-way flow of the parking lot closest to Harbor Drive and construct a median in the parking lot driveway to force exiting drivers to turn right "
127	NBSD Final ECF Evaluation	2016	Gate - Signal Updates	Gate 9/8th St and East Harbor Drive	"• Switch the NB protected left turn phase from leading to lagging to help alleviate queuing during the AM peak hour • Install additional traffic loops on the EB approach (installation outbound lanes) to extend the points of detection closer to the installation perimeter fence "
128	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Gate - Capacity	Gate 6A west of Harbor Dr	Left-turn pocket from WB Harbor Dr to Gate 6A (truck-only gate south of 32nd St)
129	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Freight	E Belt St around the shipyard area	Evaluate roadways and shipyards for additional opportunities to establish bus/ truck loading, parking, and queueing areas

	Study	Year	Type	Extents	Description
130	Port of San Diego Harbor Drive Multimodal Corridor Study	2020	Freight	Harbor Dr	Dedicated lanes and signal priority for truck freight. Includes freight signal priority, queue jumps, delineators and signage; generally aligned in the #1 lanes and median
131	NBSD Parking Traffic Overview	2018	Parking	Parking lot west of gate 6 along Harbor Dr	Design and implement a parking structure in Lot 1U to net at least 2,000 new spaces. Add an additional shuttle stop to the Central and Southern routes at the structure.
132	NBSD Parking Traffic Overview	2018	Transit	Near the pedestrian bridge west of parking lot 1Q along Harbor Dr	Improve the existing shuttle origination point near west end of the Pedestrian Bridge into a Mobility Hub capable of supporting multiple shuttles concurrently with personnel weather shelters and provide bicycle racks.
133	MMAS: December 2018 Workshop NBC Table	2018	Transit	East Side of Bay: NBC	Park and Ride on the east side of the bay with a direct service connection to the NBC bases
134	MMAS: SANDAG Regional Plan (2015)	2015	Roadway	I-15: I-15 to Kinder Morgan MV Terminal	I-15 Access to Kinder Morgan MV Terminal
135	NBSD Parking Traffic Overview	2018		W 8th Street to Dry-Side	"• Install a new pedestrian turnstile with ADA gate for bicycles at the northwest corner of the Defense Logistics Agency (DLA) compound • Add a new pedestrian/bicycle bridge over the 7th Street Channel • Add a multi-use path to McCandless Blvd to provide transit users access to Dry-side that does not currently exist"
136	NBSD Parking Traffic Overview	2018		Pedestrian bridge just east of parking lot 1Q, connecting to McKean St	Expand the existing pedestrian bridge for bicycle usage by including on- and off -ramps and widening the bridge deck
137	1-5 Fly Over CP	N/A	Interstate	East Harbor Drive to Main Street	Interchange to be created between Harbor Drive and Main Street with a bridge structure, raised roadway, and retaining walls
138	NBSD Installation Development Plan	2017	Interstate	East Harbor Drive and 32nd Street	Construct an I-15 flyover ramp
139	Port of San Diego Harbor Drive Multimodal Corridor Study	2020		Boston Ave	Traffic calming improvements including potential bike boulevard between 26th and 28th

Appendix B. Top 26 Prioritized Project Descriptions

	Primary Corridors and Intersections	Location (Start)	Location (End)	Sourced Plan	Project Description
1	32nd St	Harbor Dr	Main St	Port CIP	Grade Separated Improvements: a partially raised tee intersection for turning movement from Harbor Drive to I-5
2	8th Street Transit Station	N/A	N/A	NC HF-2WF	"Six-story Transportation Center • Paid contractor/public parking on levels 1-3 • Navy parking on levels 4-5 • Deployed sailor parking with PV shade shelters and deployment lockers on level 6 • Bottom-floor services, hospitality and retail • Primary structure entrance/ticketing plaza • Central Courtyard for ventilation, natural lighting and day uses • Gates to control courtyard (locked at night) • 3rd to 6th floor parking over existing bus-way and MTS parking • 3rd to 6th floor parking over existing bus-way and MTS parking • Parking structure elevators • Drop-off for the transportation center • Pedestrian bridge across rail line and Harbor Dr. to 8th Street gate"

	Primary Corridors and Intersections	Location (Start)	Location (End)	Sourced Plan	Project Description
3	32nd St @ Transit Station	N/A	N/A	NC HF-2WF	"Formal drop-off locations for: • Trolley Kiss and Ride Uber/Lyft and carpool pick-ups at: • Southbound 32nd St with turn-around circle added at the Exchange Gas Station access road • Northbound 32nd St with drop-off striped at the currently closed gate #6/5B; Westbound Harbor Drive Refurbished drop-off waiting plaza • Gate 5B ADA improvements to allow the gate to be reopened to process bike and pedestrian access • Accessible ramps for wheelchairs and bikes added to the existing pedestrian bridge; SANDAG intends to remove the pedestrian bridge with the Bayshore Bikeway; they will be replaced with intersection bulb-outs, median refuges, LPI's and high visibility crosswalks"
4	28th St	Harbor Dr	Main St	Port HDMC	Reconfigure to increase capacity and improve access between Harbor Dr and Main St; also reconfigure to increase capacity and improve access between Main St and National Ave; initial study assumed 2 NB and 3 SB lanes with raised median
5	28th St @ Boston Ave	N/A	N/A	Port HDMC	Relocate on-ramp from Boston Ave to 28th St to reduce community impacts and improve freight mobility
6	Division St @ Main St	N/A	N/A	NC DT	"• Reconfigure Roosevelt Ave where National City Blvd meets Main St and where Division St comes in from the north • Realign so there is a favorable design for signalization and safe traffic lane alignments"

	Primary Corridors and Intersections	Location (Start)	Location (End)	Sourced Plan	Project Description
7	Main St	Vesta St	Yama St	Port HDMC	In conjunction with Vesta St bridge, operational and capacity improvements to accommodate additional traffic entering Naval Base at Gates 29 and 32
8	Civic Center Dr (Project #1)	Tidelands Ave	Wilson Ave	SANDAG Bike	Construct a class III bike route
9	Bay Marina Dr - Mile of Cars	McKinley Ave	Hoover Ave	NC HF-2WF	"Bike safety enhancements such as: • Bike priority lanes, modified bike priority lanes or shared lane markings • Pedestrian recommendations include high visibility crosswalks, curb extensions, RRFBs or PHBs • Optional: Ramped 10' wide prefabricated bridge for bicycles and pedestrians; support system will need to work in Caltrans approved locations and be able to be a minimum of 10' under power cables on the east side and 20' over the freeway. It will need to meet a <8% grade"
10	Main St @ Yama St	N/A	N/A	Port HDMC	In conjunction with Vesta St Bridge, operational and capacity improvements where feasible and real-time wait signs
11	Civic Center Dr (Project #2)	Tidelands Ave	Wilson Ave	Port CIP	"• Create a direct connection with Harbor Drive and Tidelands Avenue • Signalize Wilson Avenue at Civic Center Drive • Add northbound lane on Wilson Avenue • Widen Northbound 1-5 ramp"
12	8th St @ Hoover Ave	N/A	N/A	Port HDMC	Signalize intersection
13	Bay Marina Dr	Cleveland Ave	Railroad	SANDAG Bike	Construct a class IV bike lane

	Primary Corridors and Intersections	Location (Start)	Location (End)	Sourced Plan	Project Description
14	Cleveland Ave	Civic Center Dr	Bay Marina Dr	Port HDMC	Construct class II bike lanes connecting Civic Center Dr to Bay Marina Dr
15	Boston Ave	29th St	32nd St	NC DT	Construct a class I multi-use path from 29th St to 32nd St
16	19th St	Harbor Dr	McKinley Ave	NC DT	Urban trail
17	Bay Marina Dr	Cleveland Ave	Marina Way	Port HDMC	Cleveland Ave-Marina Way Connection across Bay Marina Dr
18	19th St	Tidelands Ave	McKinley Ave	NC HF-2WF	"Road diet between Tidelands Ave and McKinley Ave • Install two-way cycle track between McKinley Ave and Wilson Ave • Pedestrian recommendations include high visibility crosswalks, traffic calming and curb extensions"
19	19th St @ Tidelands Ave	N/A	N/A	Port HDMC	Reconfigure intersection to add dual NB left turn lanes adn exclusive SB right turn lane on Tideland Ave for access to Naval Base Gate 13 on 19th St.
20	Sampson St @ Harbor Blvd	N/A	N/A	Port HDMC	Reconfiguration of intersection to improve operations and bike/ped access to shipyards
21	National City Blvd	18th St	26th St	INTRA-Connect	Redesign intersection crossing to accommodate peds and add high visibility crosswalks and placemaking

	Primary Corridors and Intersections	Location (Start)	Location (End)	Sourced Plan	Project Description
22	Sampson St @ Logan Ave	N/A	N/A	Port HDMC	Add a new traffic signal and restriping to accommodate exclusive left turn lanes in SB and NB directions
23	19th St @ Wilson St	N/A	N/A	INTRA-Connect	Add stop sign if warranted
24	Hoover Ave	Mile of Cars Way	30th St	Port HDMC	"• Road diet and traffic calming between Mile of Cars Way and 30th Street to install bike lanes • Pedestrian recommendations include high visibility crosswalks • Install truck aprons to slow turning speeds"
25	Harbor Dr to McKinley Bike Path	Civic Center Dr	McKinley Ave	SD Bike	Construct a class I multi-use path
26	Mckinley Ave	14th St	Bay Marina Dr	SD Bike	Construct a class IV bikeway

Appendix C. Current (2023) Peak-Hour Turning Movement Volumes

1. West 19th Street & Cleveland Avenue

NS/EW Streets:	Cleveland Ave				Cleveland Ave				W 19th St				W 19th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	25	18	10	0	8	8	76	0	8	5	6	0	0	0	0	0	164
6:15 AM	52	20	6	0	4	7	77	0	5	4	2	0	0	0	0	0	177
6:30 AM	15	17	7	1	15	6	50	1	8	3	2	0	0	0	0	0	125
6:45 AM	22	14	9	0	18	15	45	0	4	3	5	0	0	0	0	0	135
7:00 AM	24	19	9	0	31	11	38	0	2	3	2	0	0	0	0	0	139
7:15 AM	16	21	3	1	11	11	30	0	2	2	4	0	0	0	0	0	101
7:30 AM	18	32	4	0	23	16	20	0	3	3	4	0	0	0	0	0	123
7:45 AM	16	44	4	0	20	23	22	0	6	2	1	0	0	0	0	0	138
8:00 AM	9	17	4	0	15	10	12	1	2	5	4	1	0	0	0	0	80
8:15 AM	10	42	8	0	15	10	11	0	2	8	5	0	0	0	0	0	111
8:30 AM	9	21	6	0	15	19	13	0	0	0	3	0	0	0	0	0	86
8:45 AM	4	15	7	0	19	10	11	0	2	11	2	0	0	0	0	0	81
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	220	280	77	2	194	146	405	2	44	49	40	1	0	0	0	0	1460
APPROACH %'s :	38.00%	48.36%	13.30%	0.35%	25.97%	19.54%	54.22%	0.27%	32.84%	36.57%	29.85%	0.75%					
PEAK HR :	06:00 AM - 07:00 AM																TOTAL
PEAK HR VOL :	114	69	32	1	45	36	248	1	25	15	15	0	0	0	0	0	601
PEAK HR FACTOR :	0.548	0.863	0.800	0.250	0.625	0.600	0.805	0.250	0.781	0.750	0.625	0.000	0.000	0.000	0.000	0.000	0.849
	0.692				0.897				0.724								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0.5	0.5	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	7	8	3	0	27	13	10	0	9	43	23	0	0	0	0	0	143
2:15 PM	4	10	2	0	33	27	16	0	2	32	26	0	0	0	0	0	152
2:30 PM	0	11	7	0	43	66	13	0	9	49	38	0	0	0	0	0	236
2:45 PM	3	9	4	0	32	30	8	0	6	20	28	0	0	0	0	0	140
3:00 PM	3	10	7	0	31	53	10	0	4	41	33	0	0	0	0	0	192
3:15 PM	0	5	6	0	35	62	11	0	3	28	23	0	0	0	0	0	173
3:30 PM	2	8	9	0	36	50	6	0	6	45	35	0	0	0	0	0	197
3:45 PM	0	7	7	0	30	46	3	0	4	20	18	0	0	0	0	0	135
4:00 PM	5	7	5	0	34	41	7	0	5	35	23	0	0	0	0	0	162
4:15 PM	4	6	5	0	30	39	2	0	3	20	15	0	0	0	0	0	124
4:30 PM	1	3	9	0	35	42	7	0	2	11	18	0	0	0	0	0	128
4:45 PM	5	5	12	0	39	39	4	0	3	10	6	0	0	0	0	0	123
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	34	89	76	0	405	508	97	0	56	354	286	0	0	0	0	0	1905
APPROACH %'s :	17.09%	44.72%	38.19%	0.00%	40.10%	50.30%	9.60%	0.00%	8.05%	50.86%	41.09%	0.00%					
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	6	35	24	0	141	211	42	0	22	138	122	0	0	0	0	0	741
PEAK HR FACTOR :	0.500	0.795	0.857	0.000	0.820	0.799	0.808	0.000	0.611	0.704	0.803	0.000	0.000	0.000	0.000	0.000	0.785
	0.813				0.807				0.734								

2. West 19th Street & McKinley Avenue

NS/EW Streets:	McKinley Ave				McKinley Ave				W 19th St				W 19th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	2	0	3	2	0	0	5	11	5	0	0	0	0	0	28
6:15 AM	0	0	1	0	4	2	0	0	3	12	1	0	0	0	0	0	23
6:30 AM	0	1	3	0	1	2	0	0	2	15	6	0	0	0	0	0	30
6:45 AM	0	4	2	0	0	3	0	0	2	21	9	0	0	0	0	0	41
7:00 AM	0	3	5	0	3	5	0	0	6	30	10	0	0	0	0	0	62
7:15 AM	0	1	5	0	2	4	0	0	1	14	3	0	0	0	0	0	30
7:30 AM	0	1	3	0	6	2	0	0	1	22	4	0	0	0	0	0	39
7:45 AM	0	1	1	0	2	2	0	0	0	26	3	0	0	0	0	0	35
8:00 AM	0	1	1	0	2	4	0	0	1	21	3	0	0	0	0	0	33
8:15 AM	0	2	1	0	5	0	0	0	3	24	3	0	0	0	0	0	38
8:30 AM	0	3	4	0	8	0	0	0	1	18	2	0	0	0	0	0	36
8:45 AM	0	1	2	0	3	1	0	0	4	28	4	0	0	0	0	0	43
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	18	30	0	39	27	0	0	29	242	53	0	0	0	0	0	438
APPROACH %'s :	0.00%	37.50%	62.50%	0.00%	59.09%	40.91%	0.00%	0.00%	8.95%	74.69%	16.36%	0.00%					
PEAK HR :	06:45 AM - 07:45 AM																TOTAL
PEAK HR VOL :	0	9	15	0	11	14	0	0	10	87	26	0	0	0	0	0	172
PEAK HR FACTOR :	0.000	0.563	0.750	0.000	0.458	0.700	0.000	0.000	0.417	0.725	0.650	0.000	0.000	0.000	0.000	0.000	0.694
	0.750				0.781				0.668								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	1	0	0	2	1	0	0	1	66	4	0	0	0	0	0	75
2:15 PM	0	1	3	0	2	1	0	0	1	62	6	0	0	0	0	0	76
2:30 PM	0	1	5	0	6	3	0	0	0	98	0	0	0	0	0	0	113
2:45 PM	0	0	1	0	9	1	0	0	0	55	0	0	0	0	0	0	66
3:00 PM	0	0	5	0	3	4	0	0	1	75	4	0	0	0	0	0	92
3:15 PM	0	0	4	0	4	4	0	0	1	63	1	0	0	0	0	0	77
3:30 PM	0	0	3	0	4	2	0	0	1	89	2	0	0	0	0	0	101
3:45 PM	0	2	3	0	11	1	0	0	0	58	2	0	0	0	0	0	77
4:00 PM	0	1	0	0	4	1	0	0	1	65	3	0	0	0	0	0	75
4:15 PM	0	0	3	0	3	4	0	0	1	56	1	0	0	0	0	0	68
4:30 PM	0	1	3	0	6	4	0	0	1	51	5	0	0	0	0	0	71
4:45 PM	0	0	3	0	3	1	0	0	0	55	3	0	0	0	0	0	65
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	7	33	0	57	27	0	0	8	793	31	0	0	0	0	0	956
APPROACH %'s :	0.00%	17.50%	82.50%	0.00%	67.86%	32.14%	0.00%	0.00%	0.96%	95.31%	3.73%	0.00%					
PEAK HR :	02:30 PM - 03:30 PM																TOTAL
PEAK HR VOL :	0	1	15	0	22	12	0	0	2	291	5	0	0	0	0	0	348
PEAK HR FACTOR :	0.000	0.250	0.750	0.000	0.611	0.750	0.000	0.000	0.500	0.742	0.313	0.000	0.000	0.000	0.000	0.000	0.770
	0.667				0.850				0.760								

3. West 19th Street & Tidelands Avenue

NS/EW Streets:	Tidelands Ave				Tidelands Ave				W 19th St				W 19th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	32	9	4	0	0	4	54	0	0	0	1	0	2	108	5	0	219
6:15 AM	48	10	0	0	0	3	38	0	0	0	0	0	2	107	2	0	210
6:30 AM	31	7	3	0	2	2	27	0	0	0	1	0	0	55	0	0	128
6:45 AM	25	4	2	0	3	5	20	0	0	1	0	0	0	51	6	0	117
7:00 AM	16	11	0	0	0	4	11	0	0	0	0	0	0	46	1	0	89
7:15 AM	14	8	0	0	0	4	7	0	1	0	0	0	1	35	0	0	70
7:30 AM	4	6	1	0	2	7	3	0	0	0	0	0	2	21	6	0	52
7:45 AM	8	5	2	0	1	6	3	0	0	0	0	0	3	12	1	0	41
8:00 AM	0	6	2	0	1	1	0	2	0	0	0	0	0	0	1	0	13
8:15 AM	2	5	2	0	1	3	0	0	2	3	0	0	1	3	4	0	26
8:30 AM	0	10	0	1	0	5	0	0	0	1	0	0	1	3	4	0	25
8:45 AM	0	14	0	0	0	2	2	1	1	3	2	0	0	2	2	0	29
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	180	95	16	1	10	46	165	3	4	8	4	0	12	443	32	0	1019
APPROACH %'s :	61.64%	32.53%	5.48%	0.34%	4.46%	20.54%	73.66%	1.34%	25.00%	50.00%	25.00%	0.00%	2.46%	90.97%	6.57%	0.00%	
PEAK HR :	06:00 AM - 07:00 AM																TOTAL
PEAK HR VOL :	136	30	9	0	5	14	139	0	0	1	2	0	4	321	13	0	674
PEAK HR FACTOR :	0.708	0.750	0.563	0.000	0.417	0.700	0.644	0.000	0.000	0.250	0.500	0.000	0.500	0.743	0.542	0.000	0.769
	0.754				0.681				0.750				0.735				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	2	7	2	0	2	10	1	1	22	44	8	0	1	0	5	0	105
2:15 PM	0	12	0	0	1	9	0	0	9	35	13	0	4	1	3	0	87
2:30 PM	0	7	1	0	2	11	2	0	16	52	23	0	1	3	4	0	122
2:45 PM	0	2	2	0	1	12	0	0	12	25	9	0	1	2	2	0	68
3:00 PM	0	10	4	0	2	8	1	0	12	44	13	0	0	2	5	0	101
3:15 PM	0	4	0	0	2	6	1	0	13	28	12	0	1	0	1	0	68
3:30 PM	0	6	4	1	5	13	0	0	13	53	15	0	0	1	1	0	112
3:45 PM	0	4	1	0	1	6	0	0	6	34	8	0	1	0	3	0	64
4:00 PM	0	3	1	0	1	7	0	0	12	39	13	0	1	2	3	0	82
4:15 PM	0	3	0	0	0	5	0	0	2	30	10	0	0	0	1	0	51
4:30 PM	0	2	1	0	6	3	1	0	2	5	1	0	2	2	0	0	25
4:45 PM	0	3	2	0	5	5	0	0	0	0	1	0	0	0	1	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	63	18	1	28	95	6	1	119	389	126	0	12	13	29	0	902
APPROACH %'s :	2.38%	75.00%	21.43%	1.19%	21.54%	73.08%	4.62%	0.77%	18.77%	61.36%	19.87%	0.00%	22.22%	24.07%	53.70%	0.00%	
PEAK HR :	02:00 PM - 03:00 PM																TOTAL
PEAK HR VOL :	2	28	5	0	6	42	3	1	59	156	53	0	7	6	14	0	382
PEAK HR FACTOR :	0.250	0.583	0.625	0.000	0.750	0.875	0.375	0.250	0.670	0.750	0.576	0.000	0.438	0.500	0.700	0.000	0.783
	0.729				0.867				0.736				0.844				

4. Main Street & 32nd Street

NS/EW Streets:	32nd St				32nd St				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	14	3	12	0	10	45	0	0	2	27	35	0	118	93	8	0	367
6:15 AM	18	5	3	0	9	43	0	0	2	23	30	0	100	79	15	0	327
6:30 AM	32	8	15	0	12	26	2	0	1	23	46	0	110	85	9	0	369
6:45 AM	25	7	7	0	9	31	0	0	0	26	36	0	109	90	10	0	350
7:00 AM	26	3	17	0	11	29	2	0	0	34	29	0	95	89	7	0	342
7:15 AM	40	3	23	0	17	33	0	0	1	30	57	0	107	121	21	0	453
7:30 AM	38	14	19	0	17	27	2	0	0	23	53	0	90	149	17	0	449
7:45 AM	28	6	13	0	18	12	3	0	2	27	47	0	75	149	24	0	404
8:00 AM	30	9	13	0	15	6	4	0	3	19	36	0	54	180	31	0	400
8:15 AM	24	9	17	0	15	9	1	0	1	23	18	0	60	188	20	0	385
8:30 AM	38	7	19	0	15	7	4	0	1	28	21	0	57	147	24	0	368
8:45 AM	22	7	27	0	23	15	8	0	2	21	17	0	53	91	17	0	303
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	335	81	185	0	171	283	26	0	15	304	425	0	1028	1461	203	0	4517
APPROACH %'s :	55.74%	13.48%	30.78%	0.00%	35.63%	58.96%	5.42%	0.00%	2.02%	40.86%	57.12%	0.00%	38.19%	54.27%	7.54%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	136	32	68	0	67	78	9	0	6	99	193	0	326	599	93	0	1706
PEAK HR FACTOR :	0.850	0.571	0.739	0.000	0.931	0.591	0.563	0.000	0.500	0.825	0.846	0.000	0.762	0.832	0.750	0.000	0.942
	0.831				0.770				0.847				0.960				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	0.5	0.5	0	1	1	0	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	33	24	72	0	14	13	4	0	4	62	29	0	40	36	13	0	344
2:15 PM	52	22	61	0	26	11	4	0	8	79	37	0	34	41	17	0	392
2:30 PM	48	26	69	0	27	12	6	0	6	129	28	0	42	69	32	0	494
2:45 PM	41	21	59	0	26	10	4	0	8	131	32	0	30	56	30	0	448
3:00 PM	45	19	66	0	36	23	2	0	7	159	25	0	36	54	29	0	501
3:15 PM	66	39	54	0	43	23	5	0	8	184	20	0	44	47	35	0	568
3:30 PM	53	36	70	0	42	28	4	0	12	198	31	0	41	53	31	0	599
3:45 PM	49	26	55	0	32	22	4	1	11	175	39	0	37	58	25	0	534
4:00 PM	32	22	50	0	40	17	3	0	3	184	47	0	33	40	34	0	505
4:15 PM	41	26	61	0	51	8	3	0	11	192	43	0	54	39	15	0	544
4:30 PM	39	21	44	0	26	15	3	0	5	160	55	0	28	39	21	0	456
4:45 PM	42	17	53	0	30	13	2	0	4	146	37	0	28	31	11	0	414
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	541	299	714	0	393	195	44	1	87	1799	423	0	447	563	293	0	5799
APPROACH %'s :	34.81%	19.24%	45.95%	0.00%	62.09%	30.81%	6.95%	0.16%	3.77%	77.91%	18.32%	0.00%	34.31%	43.21%	22.49%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	200	123	229	0	157	90	16	1	34	741	137	0	155	198	125	0	2206
PEAK HR FACTOR :	0.758	0.788	0.818	0.000	0.913	0.804	0.800	0.250	0.708	0.936	0.729	0.000	0.881	0.853	0.893	0.000	0.921
	0.868				0.892				0.946				0.948				

5. Main Street & I-5 On/Off-Ramp

NS/EW Streets:	I-15 On/Off-Ramp				I-15 On/Off-Ramp				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0.5	0	0.5	0	1	2	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	32	0	149	0	7	33	0	0	0	81	35	0	337
6:15 AM	0	0	0	0	41	0	127	0	5	32	0	0	0	83	39	0	327
6:30 AM	0	0	0	0	44	0	115	0	14	28	0	0	0	96	38	0	335
6:45 AM	0	0	0	0	51	0	112	0	5	40	0	0	0	105	40	0	353
7:00 AM	0	0	0	0	48	0	105	0	16	58	0	0	0	90	45	0	362
7:15 AM	0	0	0	0	58	0	117	0	13	53	0	0	0	124	52	0	417
7:30 AM	0	0	0	0	65	0	117	0	14	45	0	0	0	133	81	0	455
7:45 AM	0	0	0	0	42	0	126	0	11	45	0	0	0	136	70	0	430
8:00 AM	0	0	0	0	14	0	139	0	8	50	0	0	0	136	65	0	412
8:15 AM	0	0	0	0	13	0	107	0	27	42	0	0	0	150	57	0	396
8:30 AM	0	0	0	0	16	0	95	0	27	48	0	0	0	122	37	0	345
8:45 AM	0	0	0	0	16	0	57	0	20	52	0	0	0	115	38	0	298
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	440	0	1366	0	167	526	0	0	0	1371	597	0	4467
APPROACH %'s :					24.36%	0.00%	75.64%	0.00%	24.10%	75.90%	0.00%	0.00%	0.00%	69.66%	30.34%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	179	0	499	0	46	193	0	0	0	529	268	0	1714
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.688	0.000	0.897	0.000	0.821	0.910	0.000	0.000	0.000	0.972	0.827	0.000	0.942
					0.931				0.905				0.931				

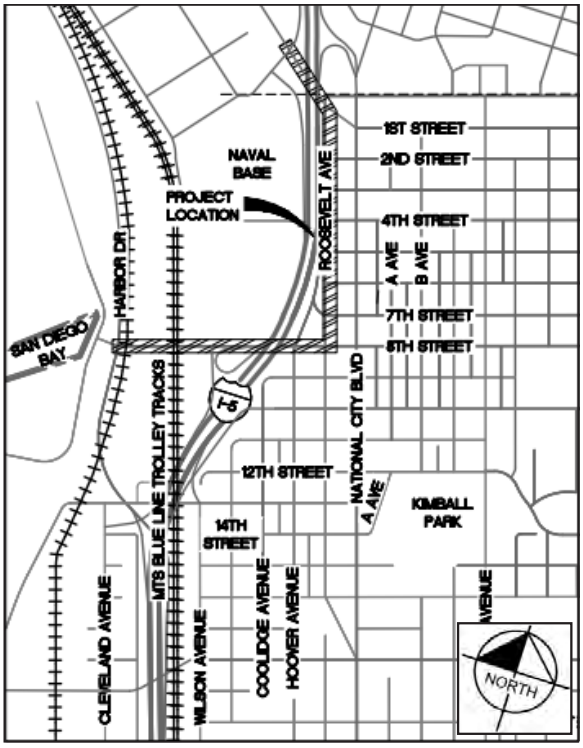
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0.5	0	0.5	0	1	2	0	0	0	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	24	0	35	0	74	93	0	0	0	84	43	1	354
2:15 PM	0	0	0	0	21	0	40	0	64	117	0	0	0	69	61	0	372
2:30 PM	0	0	0	0	21	0	46	0	68	147	0	0	0	110	79	0	471
2:45 PM	0	0	0	0	63	0	43	0	90	144	0	0	0	88	43	0	471
3:00 PM	0	0	0	0	37	0	44	0	116	164	0	0	0	88	43	0	492
3:15 PM	0	0	0	0	54	0	28	0	107	192	0	0	0	92	38	0	511
3:30 PM	0	0	0	0	78	0	45	0	102	217	0	0	0	87	44	0	573
3:45 PM	0	0	0	0	103	0	40	0	93	165	0	0	0	67	43	0	511
4:00 PM	0	0	0	0	54	0	36	0	96	195	0	0	0	90	30	0	501
4:15 PM	0	0	0	0	44	0	19	0	74	211	0	0	0	76	38	0	462
4:30 PM	0	0	0	0	54	0	39	0	82	174	0	0	0	58	30	0	437
4:45 PM	0	0	0	0	79	0	30	0	85	170	0	0	0	56	19	0	439
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	632	0	445	0	1051	1989	0	0	0	965	511	1	5594
APPROACH %'s :					58.68%	0.00%	41.32%	0.00%	34.57%	65.43%	0.00%	0.00%	0.00%	65.34%	34.60%	0.07%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	289	0	149	0	398	769	0	0	0	336	155	0	2096
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.701	0.000	0.828	0.000	0.930	0.886	0.000	0.000	0.000	0.913	0.881	0.000	0.914
					0.766				0.915				0.937				

Appendix D. Future Baseline Conditions for 8th and Roosevelt Active Transportation Corridor Project and West 19th Street Greenway Improvement Project

1. 8th and Roosevelt Active Transportation Corridor Project

Project Descriptions:

Project provides streetscape, lighting, signage, mobility options, urban greening, and stormwater runoff to the north side of 8th Street between Harbor Drive and Roosevelt Avenue, the west side of Roosevelt Avenue between 8th Street and Main Street, and the south side of Main Street between Roosevelt Avenue and Yama Street. The project also includes parking improvements, traffic signal modifications/additions, and at-grade crossing improvements.



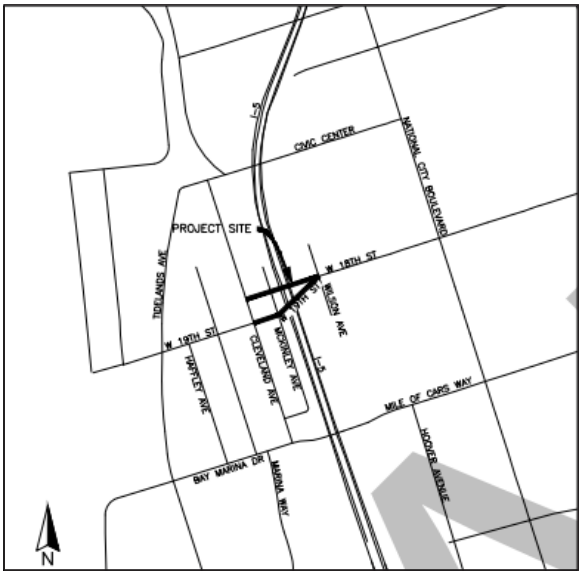
Work to be Done:

1. Shared-use path
2. Sidewalk
3. Curb extensions at 8th Street & Roosevelt Avenue and at Division Street & Main Street
4. Landscape
5. Irrigation
6. Lighting
7. Water quality basin
8. Parking
9. Traffic signal improvements
10. At-grade crossing modifications

2. West 19th Street Greenway Improvement Project

Project Descriptions:

Improvements to West 19th Street, between Cleveland Avenue and Wilson Avenue. Improvements to West 18th Street between McKinley Avenue and Wilson Avenue.



Work to Be Done:

1. Class I bikeway and pedestrian path along West 19th Street, between McKinley Avenue and Wilson Avenue.
2. Pedestrian and site amenities along West 19th Street, between McKinley Avenue and Wilson Avenue.
3. Signing and striping modifications on West 19th Street, between Cleveland Avenue and Wilson Avenue.
4. Electrical and lighting modifications on West 19th Street, between McKinley Avenue and Wilson Avenue.
5. Landscape and irrigation modifications on West 19th Street, between McKinley Avenue and Wilson Avenue.
6. Temporary water pollution controls on West 19th Street, between McKinley Avenue and Wilson Avenue.
7. Signing and striping modifications on West 18th Street, between McKinley Avenue and Wilson Avenue.

Appendix E. Project Concepts

Level 1

Mile of Cars Way, Alternative 1

Mile of Cars Way, Alternative 2

Main Street, Alternative 1

Main Street, Alternative 2

Level 2

National City Boulevard

8th Street (Dry Side)

Level 3

W. 19th Street, Alternative 1

W. 19th Street, Alternative 2

8th Street (Wet Side)

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

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Bay Marina Drive and Mile of Cars Way Between Cleveland Avenue and National City Blvd | Page 1/2

Project Concept Alternative 1

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OF ALTERNATIVE 1 OR
ALTERNATIVE 2

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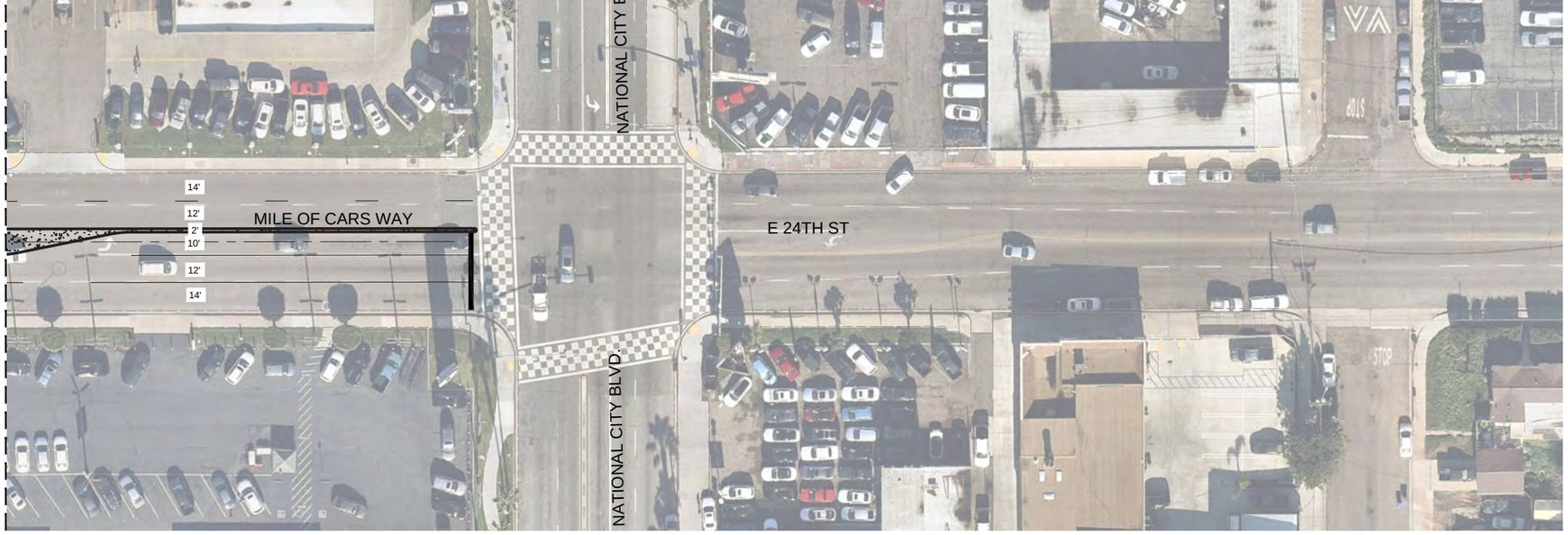

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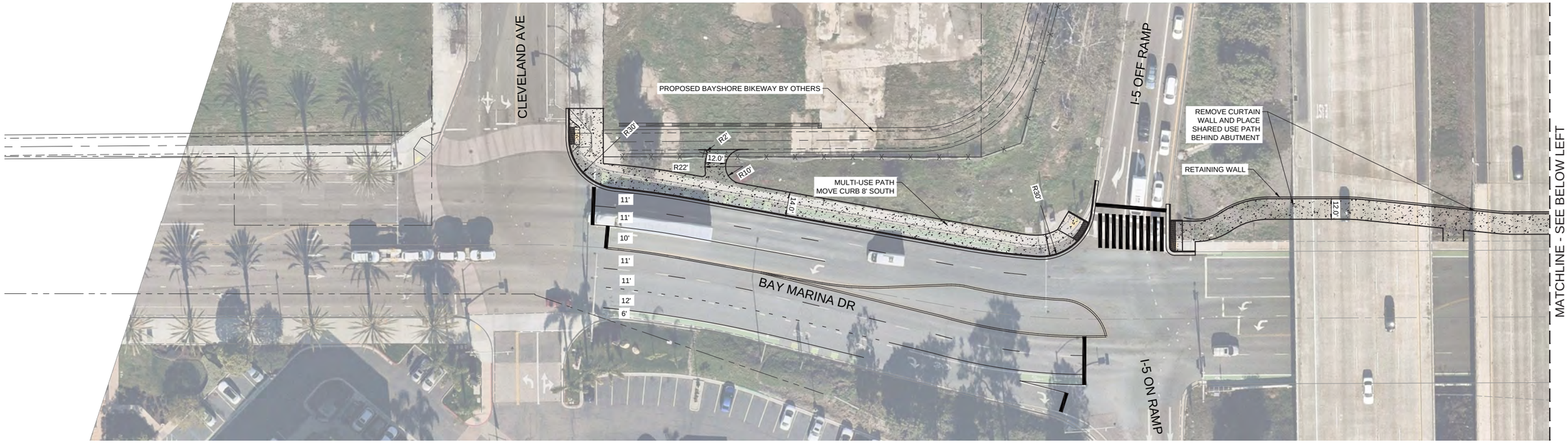
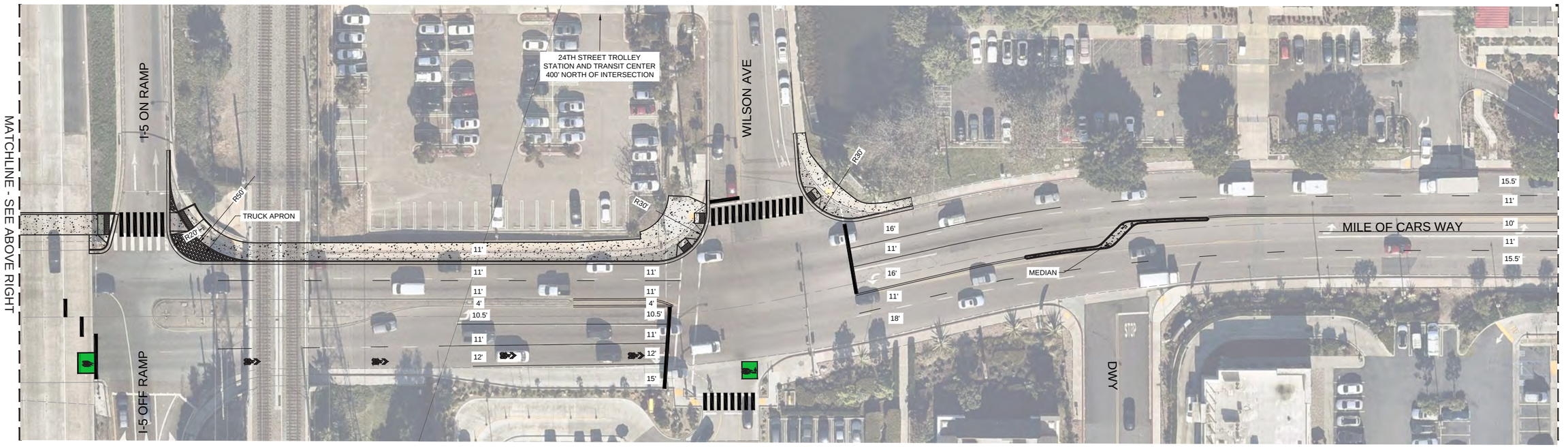
Bay Marina Drive and Mile of Cars Way Between Cleveland Avenue and National City Blvd | Page 2/2

Project Concept Alternative 1





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Bay Marina Drive and Mile of Cars Way Between Cleveland Avenue and National City Blvd | Page 1/2

Project Concept Alternative 2

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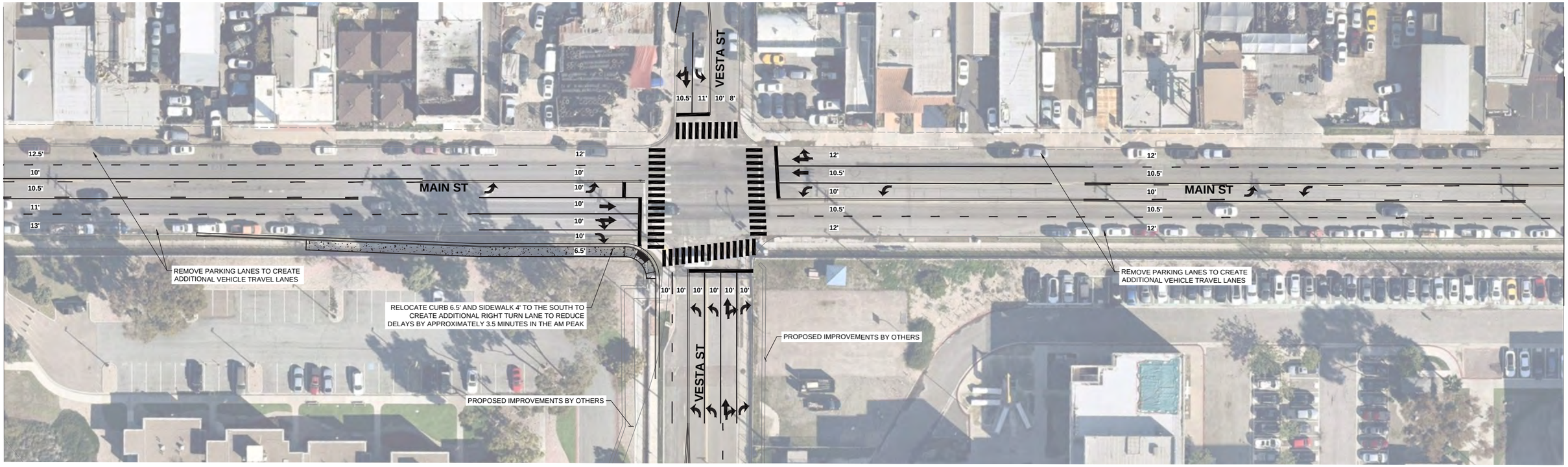

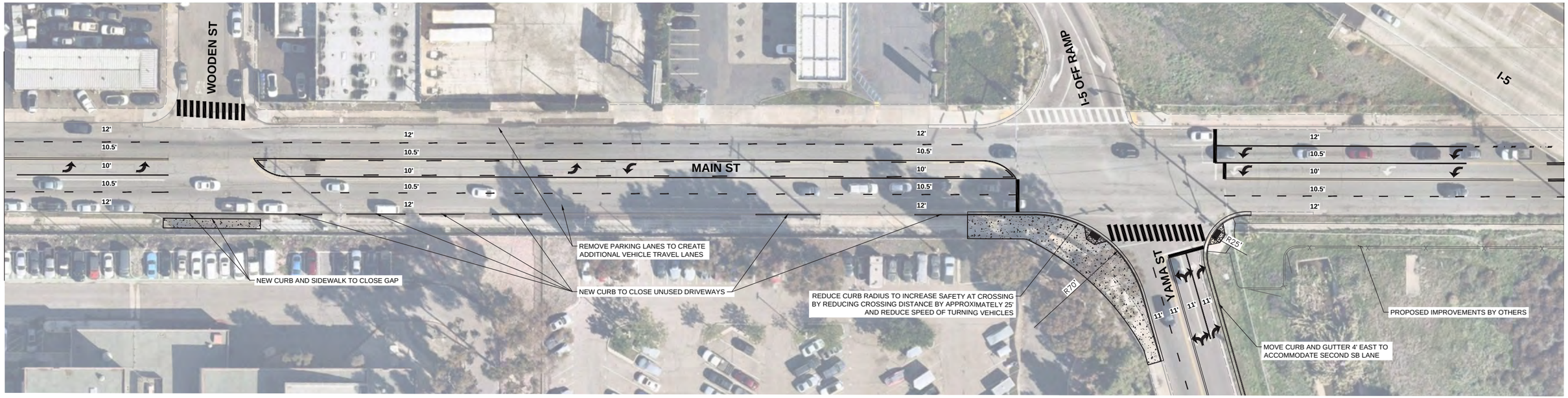

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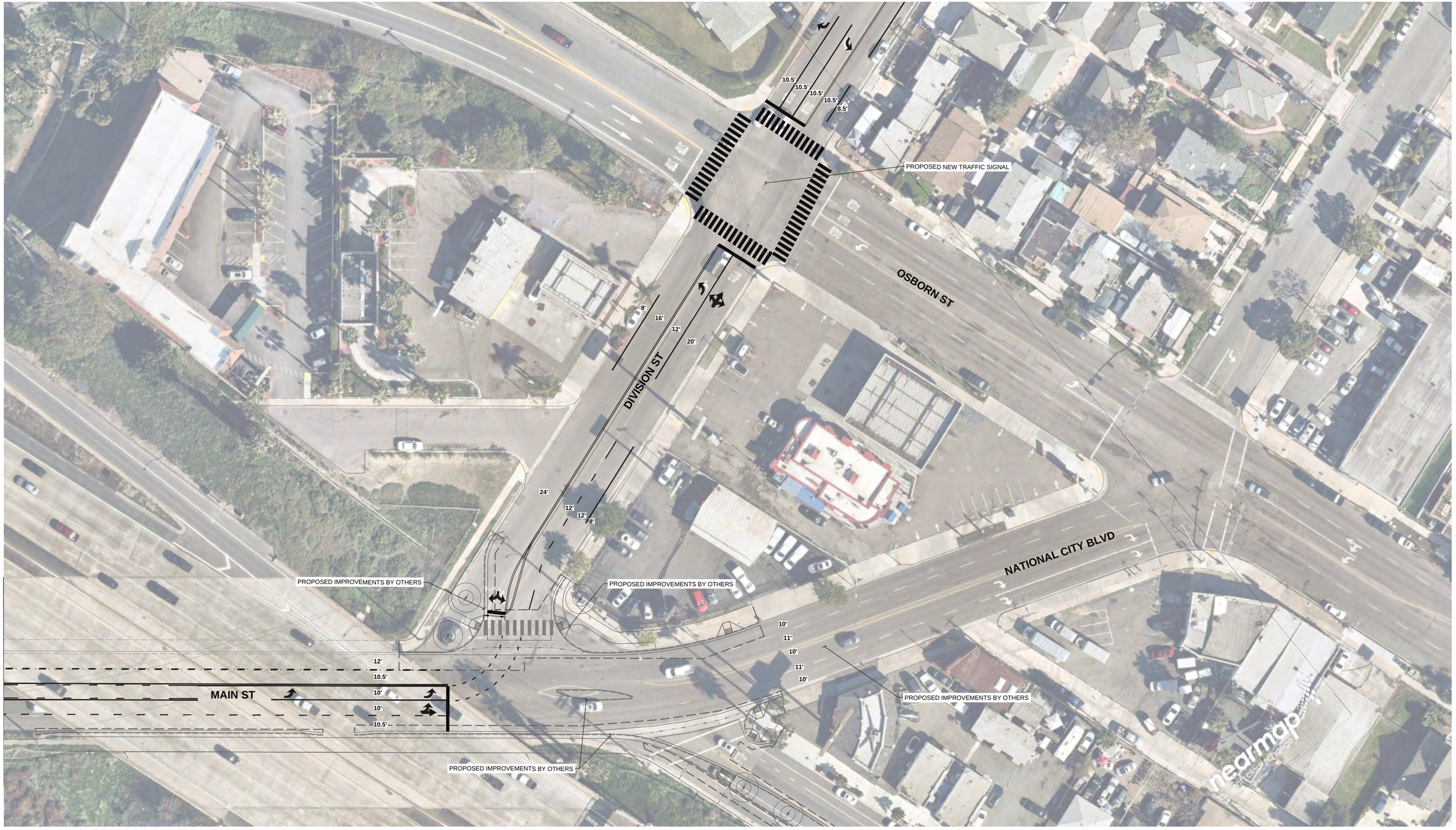
Main Street Between Vesta Street and Osborn Street | Page 1/2

Project Concept Alternative 1



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Main Street Between Vesta Street and Osborn Street | Page 2/2

Project Concept Alternative 1

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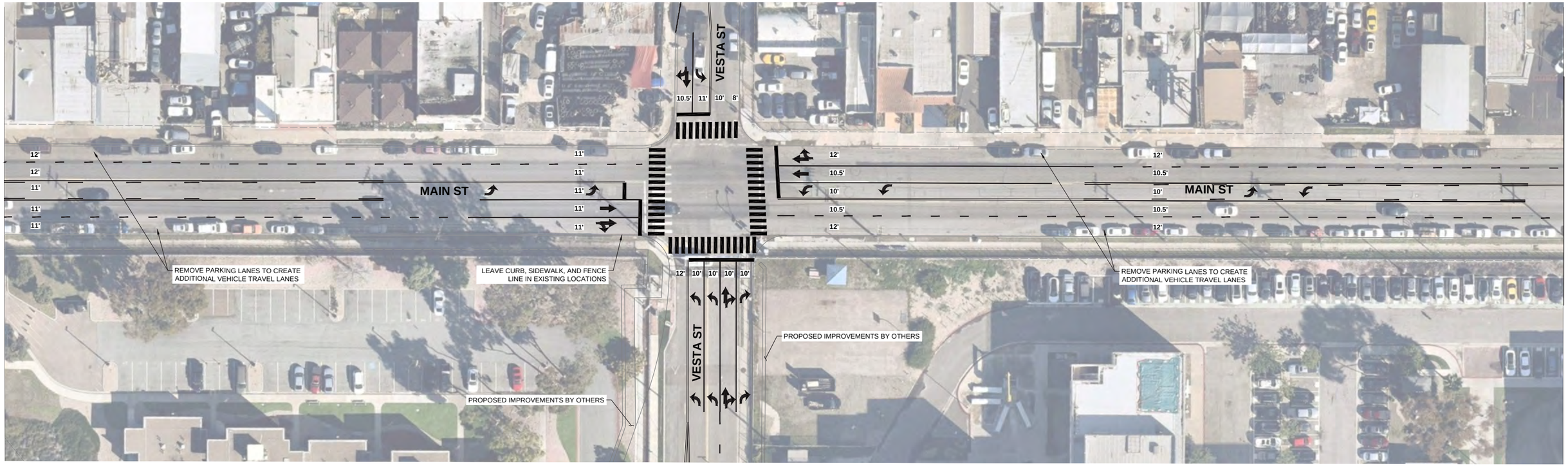

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GRAPHIC SCALE IN FEET
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Main Street Between Vesta Street and Osborn Street | Page 1/1
Project Concept Alternative 2

GRAPHIC SCALE IN FEET
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National City Boulevard Between 18th Street and 26th Street | Page 1/2

Project Concept Alternative 1

k: \snd_tpto\095206016_oldcc\design\plans\206016-03_national city blvd.dwg 11/14/2023

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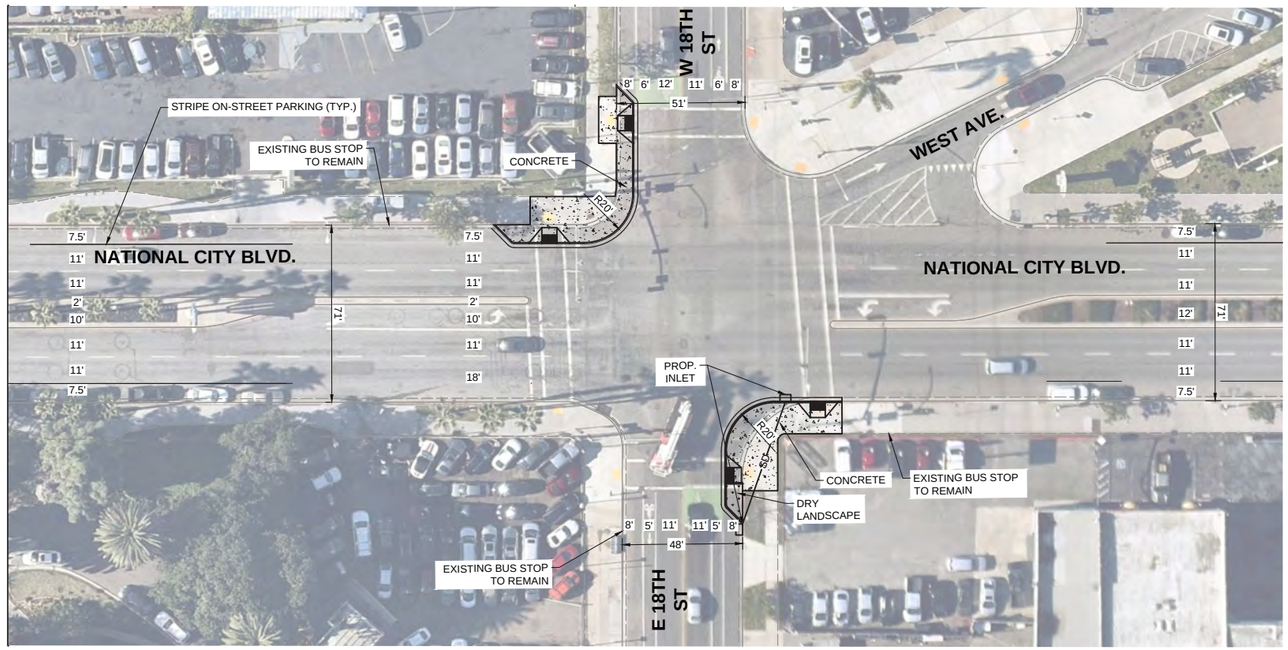

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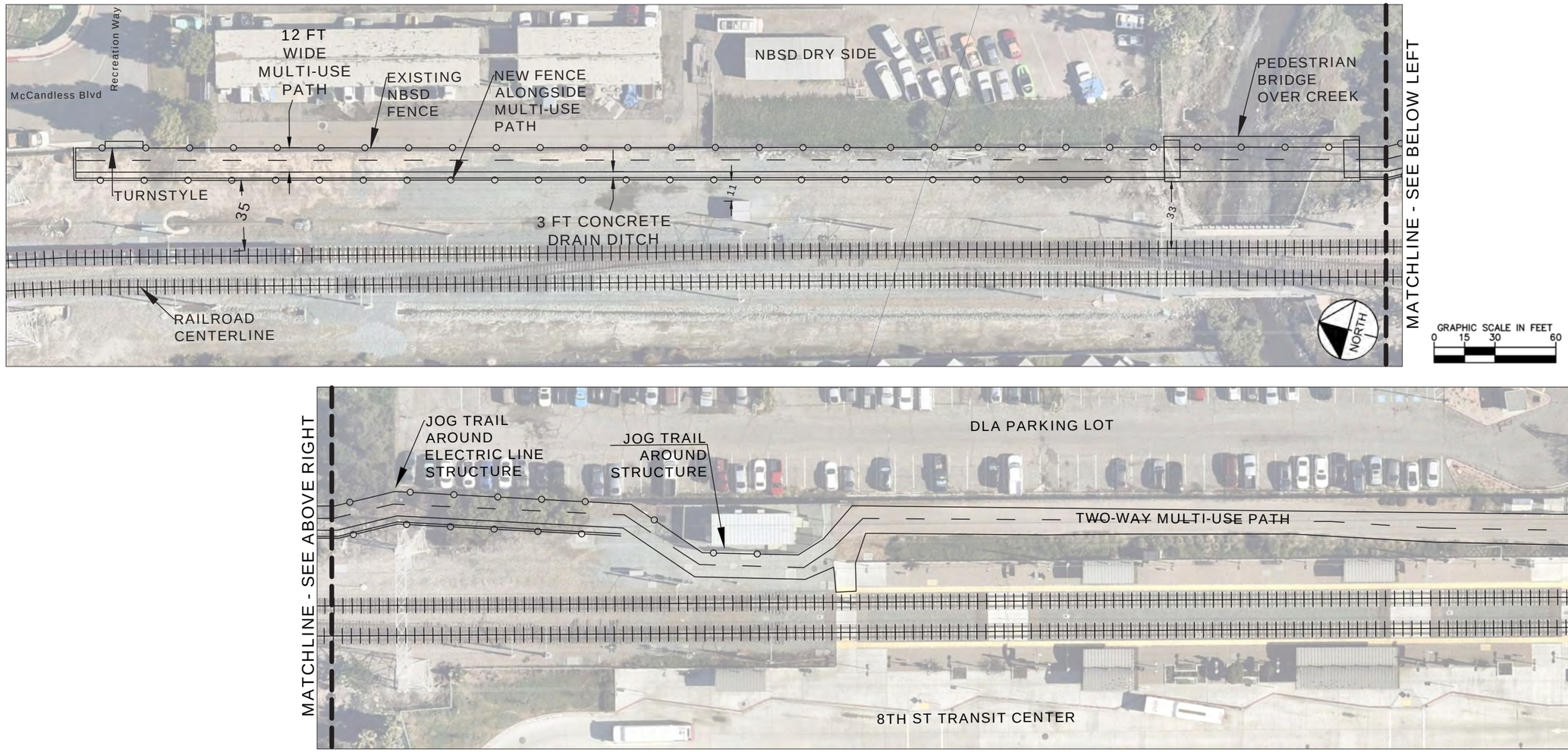
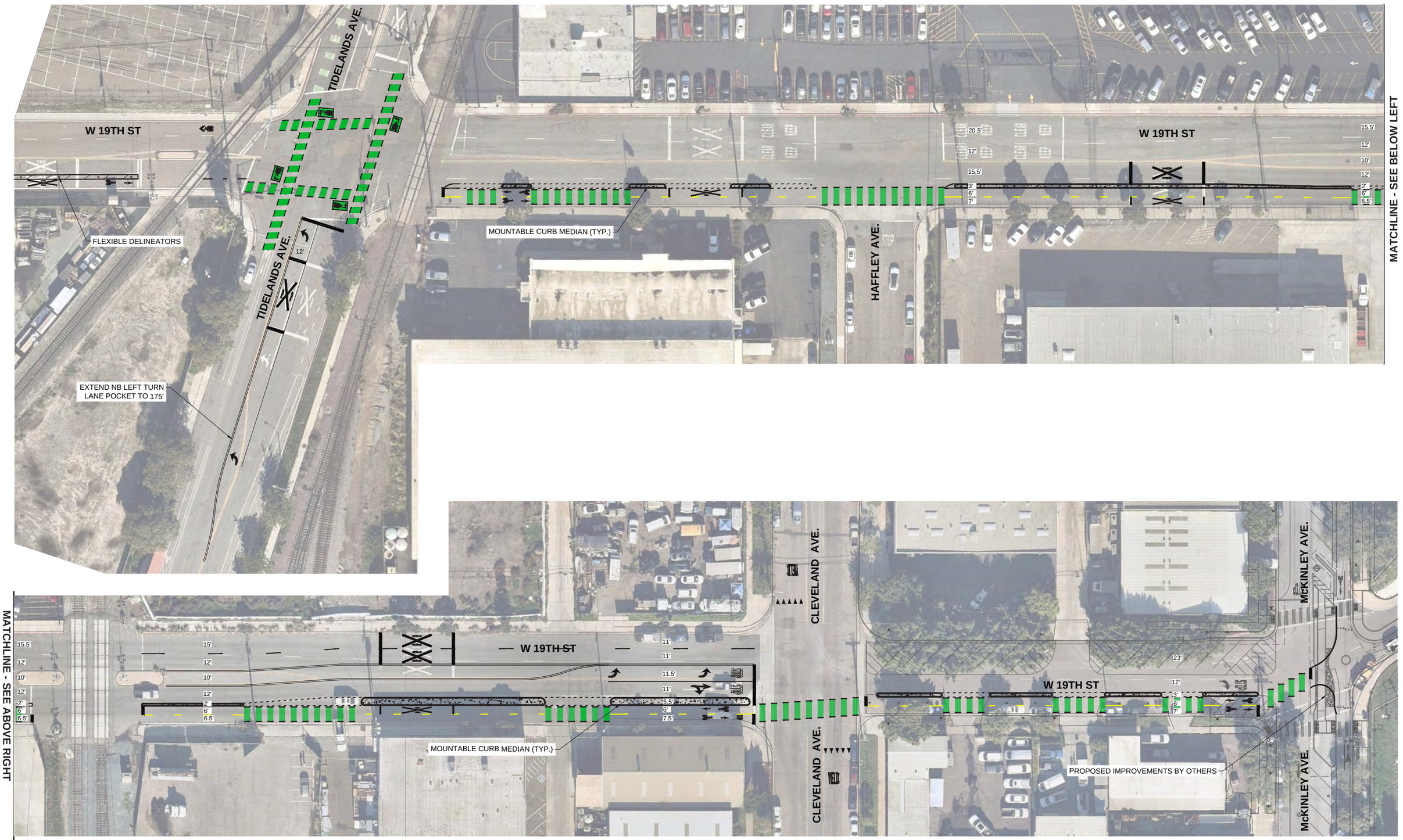
National City Boulevard Between 18th Street and 26th Street | Page 2/2

Project Concept Alternative 1



Bike Turnstile sample

8th St to NBSD Dry Side
-Two-Way Multi-Use Path
-Bike Turnstile
-Bridge Over Creek



GRAPHIC SCALE IN FEET
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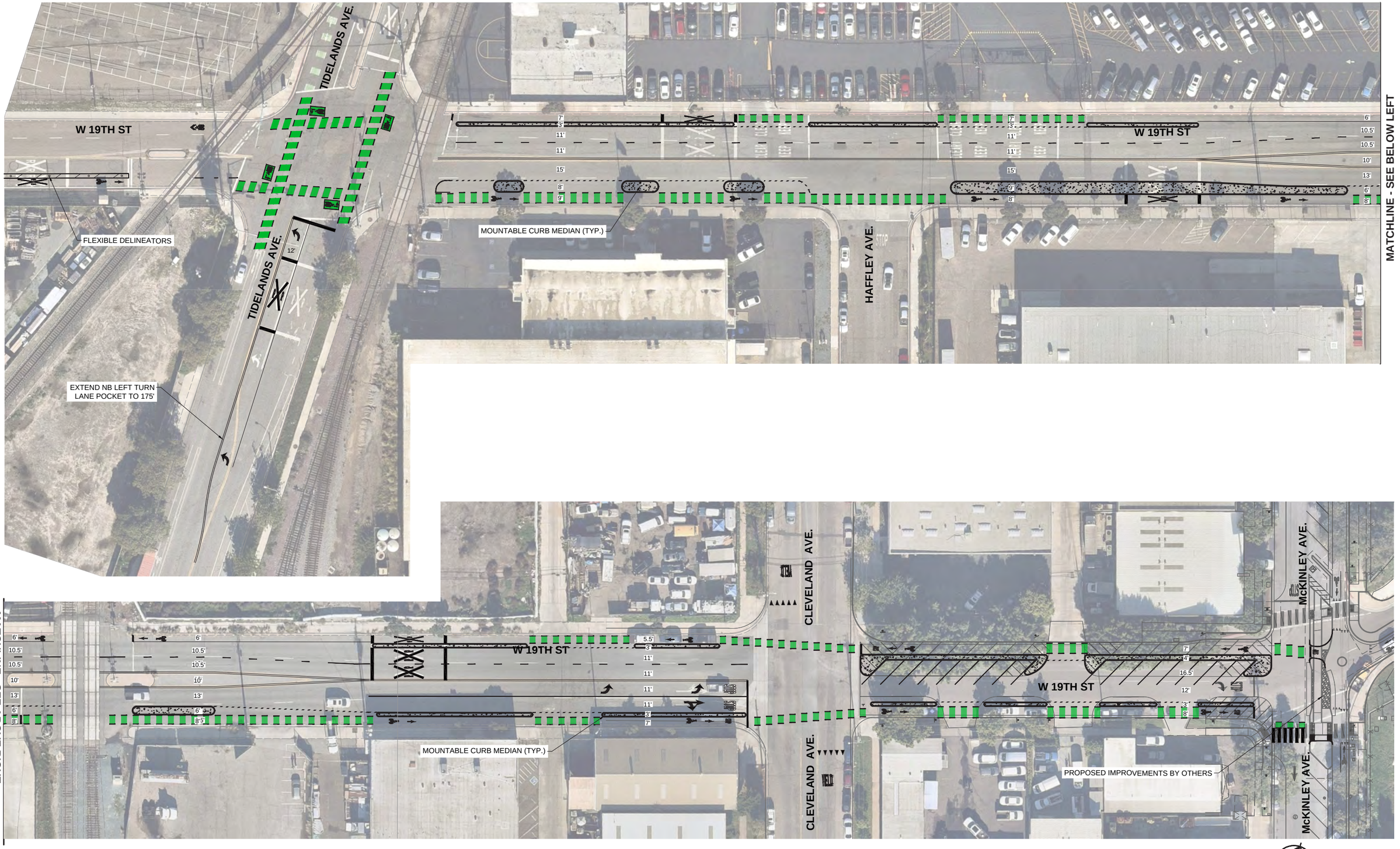
W 19TH Street Between Tidelands Street and McKinley Avenue | Page 1/1

Project Concept Alternative 1



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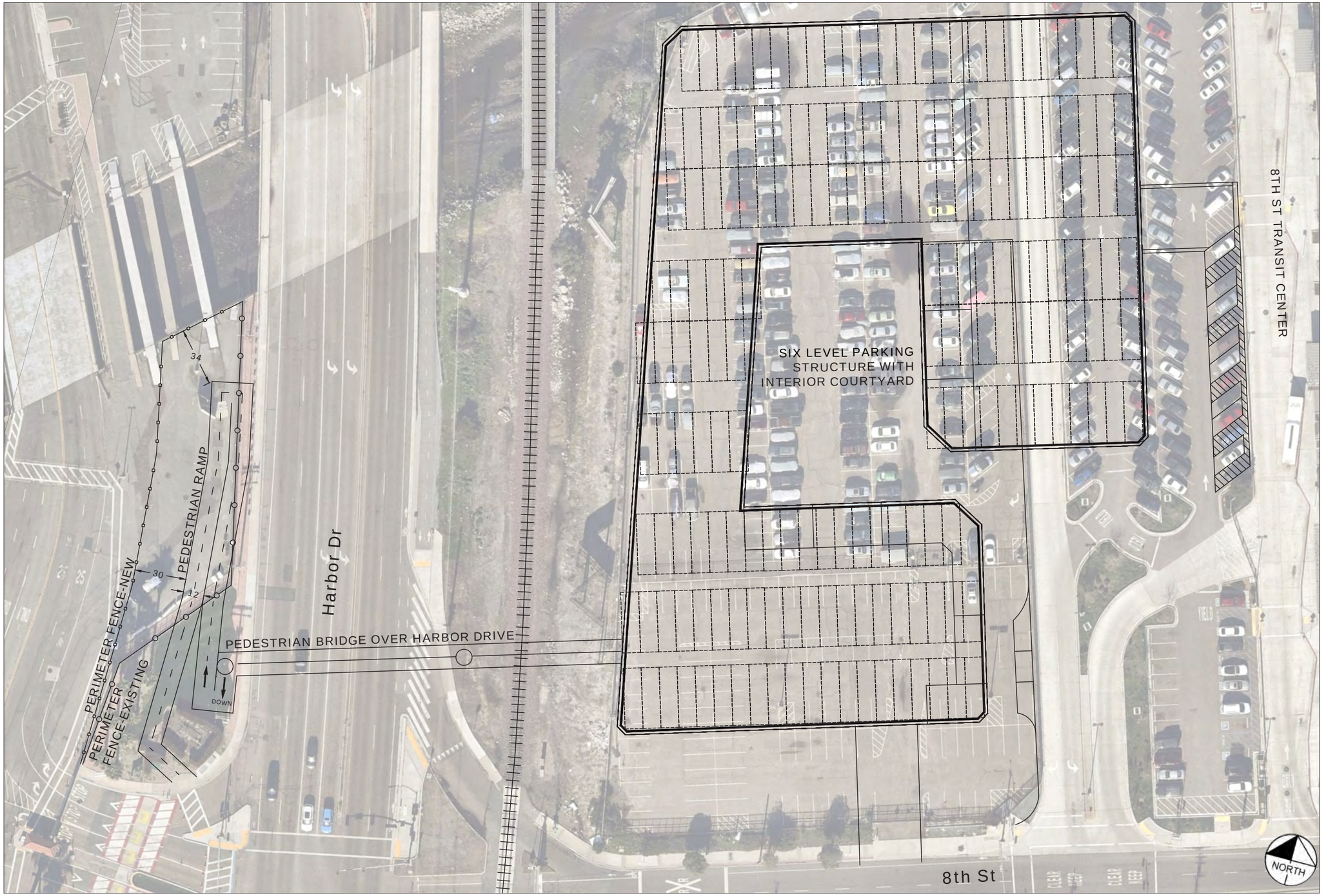
W 19TH Street Between Tidelands Street and McKinley Avenue | Page 1/1

Project Concept Alternative 2



8th St to NBSD Wet Side
-Multi-Story Parking Structure
-Pedestrian Bridge Over Harbor Drive