Transportation Demand Management Plan for the Dana Point Harbor Revitalization Plan

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1. INTRODUCTION

This report details the transportation demand management (TDM) plan for the Dana Point Harbor (DPH) Revitalization Project (Revitalization Plan). This report summarizes the current trip reduction activities at DPH and details new facilities and policies that are recommended to reduce vehicular trips associated with the planned DPH Revitalization Project. This report has been assembled to meet both the obligation of the 2010 *Dana Point Harbor Revitalization Plan & District Regulations* Policy 6.2.1-4, which requires the preparation of a TDM plan prior to the approval of a Coastal Development Permit for development within the Commercial Core, and the City of Dana Point's Transportation Demand Management Ordinance.

HARBOR LOCATION & EXISTING TRANSPORTATION ACCESS

DPH is a County of Orange owned and operated facility located in Dana Point. Primary regional access to the harbor is via I-5, which runs north/south approximately two miles east of the Harbor, and Pacific Coast Highway (Route 1) which runs east/west in the vicinity of the Harbor, but generally provides regional north/south coastal access in Orange County. Primary local access to the Harbor is provided by Dana Point Harbor Drive and Street of the Golden Lantern ("Golden Lantern").

Vehicle Access

Vehicle access to the Commercial Core area of the Harbor is via the signalized Golden Lantern/Dana Point Harbor Drive intersection, and the Casitas Place/Dana Point Harbor Drive intersection. Northbound traffic on Casitas Place is stop-controlled. Access to the public boat launch, boater parking areas, and other boating facilities, are via the unsignalized Embarcadero Place/Dana Point Harbor Drive and Puerto Place/Dana Point Harbor Drive intersections. Vehicle access to the marinas are through Dana Point Harbor Drive and Dana Drive by way of Island Way and Casitas Place.

Pedestrian and Bicycle Access

Bicycle lanes are provided on Dana Point Harbor Drive and on Golden Lantern. They extend into the Harbor Commercial Core on Dana Point Harbor Drive.

Sidewalks are provided on all north-south streets that provide access to the Harbor (Island Way, Casitas Place, Golden Lantern, Embarcadero Place, and Puerto Place), and on the south side of Dana Point Harbor Drive. The intersection of Golden Lantern/Dana Point Harbor Drive is the only access point with a signalized crossing and marked crosswalks, so it is the primary pedestrian access location.

PROPOSED PROJECT

The Revitalization Plan will enhance the Commercial Core (that includes the northerly portion of Planning Area 1 and Planning Area 2 as illustrated in Figure 1) by replacing and/or remodeling all of the existing retail and restaurant buildings. The Commercial Core revitalization also includes the reconfiguration of all existing surface parking areas and construction of a two-level parking deck to provide additional parking, new boater loading and drop-off areas, a new dry-stack boat storage facility and improvements to several boater service and public restroom buildings. The initial phase of the Revitalization Plan will include the

relocation of certain yacht brokerage firms and other harbor-related offices uses to the new Commercial Core.

The Revitalization Project will be designed to cluster buildings together to provide a comfortable pedestrian-oriented environment surrounding retail and restaurant uses. The new village, moved closer to the existing Dana Wharf, will create a stronger pedestrian link with the remaining buildings and adjacent parking areas.

The existing Planning Area 2 Commercial Core area includes approximately 26,600 square feet (SF) of retail and 51,300 SF of restaurant, and 4,000 SF of office. As proposed, the Revitalization Plan would include approximately 32,800 SF retail, 78,400 SF restaurant, and 6,800 SF office, for a net increase of 6,200 SF retail, 27,100 restaurant, and 2,800 SF office.

For additional information, see the Construction Management Parking/Phasing Plan and Parking Management Plan for this project.

Figure 1 – Planning Area Map

(Exhibit 1.1-2 from Revitalization Plan)

2. EXISTING TRANSPORTATION SYSTEM

This chapter provides a detailed summary of the existing transportation facilities and services that provide access to, from, and within the Harbor.

PEDESTRIAN AND BICYCLE

Pedestrian Circulation

Crossings

The primary pedestrian access to the Harbor is via the signalized Golden Lantern/Dana Point Harbor Drive intersection. The following pedestrian facilities are provided at this intersection:

- White parallel crosswalks on all four approaches with diagonal curb ramps
- Truncated domes tactile warning strips installed at all curb ramps with the exception of the southwest corner
- Countdown pedestrian signals with pedestrian push button actuation at all crossings
- Protected left-turn signal phases on all approaches

East-west pedestrian crossings on the south side of Dana Point Harbor Drive are provided at the following locations:

- Casitas Place – A striped white parallel crosswalk is provided across Casitas Place. Diagonal curb ramps are provided. Truncated domes are not installed. On the north side of Dana Point Harbor Drive, roughly at Casitas Place, a curb ramp is provided to provide access to off-street walking trails in Heritage Park.
- Embarcadero Place – There are no marked crosswalks at this intersection. Diagonal curb ramps are provided. Truncated domes are not installed. Embarcadero Place has two lanes that run one-way southbound.
- Puerto Place – There are no marked crosswalks at this intersection. Diagonal curb ramps are provided. Truncated domes are not installed. The northbound approach is controlled by a stop sign

Sidewalks

Continuous sidewalks are located along the southern side of Dana Point Harbor Drive, and a portion of the northern side between Golden Lantern and the entrance to Heritage park to the west, roughly at Casitas Place. The sidewalk connects with an off-street path at that point, and does not continue further west along the street. Sidewalks are provided both sides of Island Way, Golden Lantern, Embarcadero Place, and Puerto Place south of Dana Point Harbor Drive.

Sidewalks on Golden Lantern extend north of Dana Point Harbor Drive on both sides of the street. A walking trail through Lantern Bay Park connects to Dana Point Harbor Drive at the Golden Lantern/Dana Point Harbor Drive intersection.

Pedestrian pathways are provided along the marina (both north and south) and along Dana Drive.

Bicycle Circulation

Bicycle circulation is provided via two on-street bicycle lane facilities:

- Dana Point Harbor Drive – A striped bicycle lane is located on Dana Point Harbor Drive, from Cove Road to the west of the Harbor's Commercial Core, to Pacific Coast Highway (PCH). After PCH, the bicycle lane continues north on Del Obispo Street. The bicycle lane is curb-adjacent, and is generally 7' to 8' wide in the vicinity of the Harbor.

- Golden Lantern – A striped bicycle lane runs from the southern terminus of Golden Lantern in the Harbor's Commercial Core, to Stonehill Drive to the north. The bicycle lane is generally curb-adjacent, with the exception of some locations where on-street parking is allowed and at some intersections, where the bicycle lane is located between the right-turn only lane and the through lane. The lane is generally 6' wide in the vicinity of the Harbor.

Harbor Bicycle Parking Facilities

Bicycle parking racks are provided at several locations throughout the Harbor, as illustrated in Figure 2. In the Harbor's Commercial Core (Planning Area 2), there are a total of seven racks in six different locations, with a total bicycle parking capacity of 19 bicycles. Figures 3A through 3F provide photos of the existing bicycle racks. Existing bicycle rack types include:

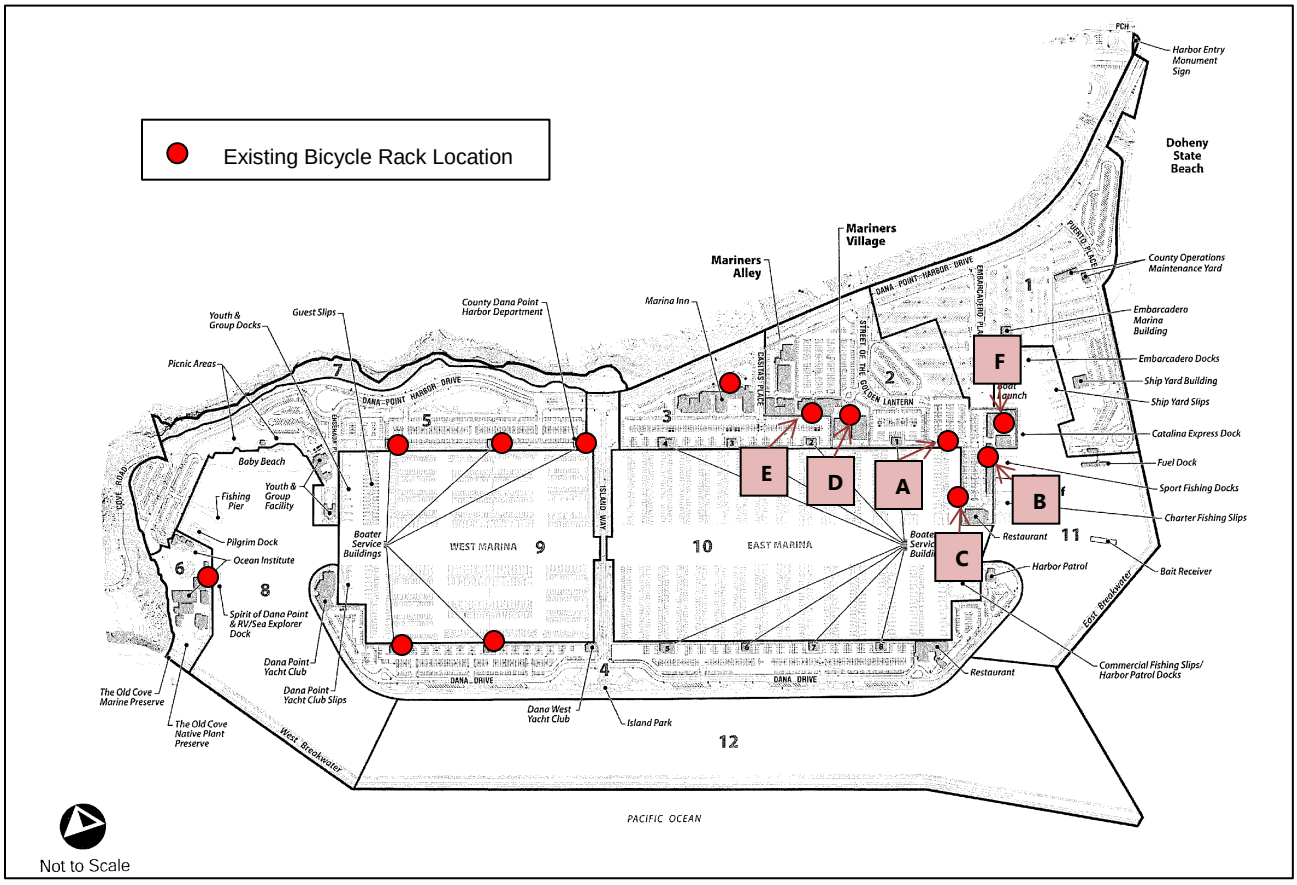
- Post and Ring racks
- Coathanger racks

Usage of the bicycle racks is low, according to input provided by the manager of the Commercial Core. At the time the bike racks were surveyed, 4 of the 19 spaces in the Commercial Core were occupied (21% occupancy). The racks located in the West Marina are typically used by wet slip boaters, who often leave their bicycles at the racks for long periods of time. The use of other racks in the Commercial Core is typically most often by restaurant employees, according to the manager.

Short-Term Bicycle Rental

The Marina Inn (Planning Area 3) offers short-term rental of beach cruiser bicycles to hotel guests for $5.00 per hour.

Figure 2 – Existing Bicycle Rack Locations



Figures 3A-3B – Commercial Core Existing Post and Ring Style Bicycle Racks

Figures 3C-3F – Commercial Core Existing Coathanger Style Bicycle Racks

TRANSIT

Area Public Transit

The Orange County Transportation Authority (OCTA) operates three bus routes that serve the Harbor at stops located on Golden Lantern north of Dana Point Harbor Drive, and on Dana Point Harbor Drive east of Park Lantern:

- Route 85 – Route 85 operates between Mission Viejo and Dana Point Harbor, serving the interim community destinations of Laguna Niguel and Capistrano Beach. In the vicinity of the Harbor, the route operates on Dana Point Harbor Drive (southbound buses) and Golden Lantern (northbound buses).

  The route runs seven days per week, from approximately 5:30 AM to 10:00 PM during weekdays, and approximately 7:00 AM to 8:00 PM on weekends.

  During the week, bus frequencies are every 30 to 40 minutes on average. On weekends, service is generally every 90 minutes.

  Total one-way route run time is 55 minutes on average.

- Route 90 – Route 90 operates between Tustin and Dana Point Harbor, serving the interim community destinations of Irvine, Laguna Woods, Aliso Viejo, Laguna Hills, Laguna Niguel, and Dana Point before the Route reaches its southern terminus at Dana Point Harbor. The route provides a transit connection between the Tustin Station, with connections to Metrolink Commuter Rail Service, several OCTA routes, and the Irvine iShuttle. In the vicinity of the Harbor, the route operates on Golden Lantern.

  The route runs seven days per week, from approximately 5:20 AM to 12:20 AM during weekdays, and approximately 6:20 AM to 11:30 PM on Saturdays, and 6:00 AM to 9:00 PM on Sundays.

  During the week, bus frequencies are generally every 60 minutes on average, though during the morning commute period, eastbound buses operate more frequently (every 15 to 30 minutes). On weekends, service is generally every 80 minutes.

  Total one-way route run time is 70 minutes on average.

- Route 187 – Route 187 operates between the Laguna Hills Transportation Center and Dana Point Harbor, serving the interim community destinations of Laguna Woods, Aliso Viejo, Laguna Niguel, and Dana Point. The route provides bus transit connections to several OCTA routes and park and ride opportunities at the Laguna Hills Transportation Center. In the vicinity of the Harbor, the route operates on Dana Point Harbor Drive (southbound buses) and Golden Lantern (northbound buses).

The route runs Monday to Friday only, from approximately 5:30 to 9:15 AM, and 2:00 to 6:30 PM. Bus frequencies are generally every 30 to 40 minutes.

Total one-way route run time is 60 minutes on average.

Temporary Event Shuttles

During several special events each year, contracted temporary shuttle service is provided to serve circulation needs within the Harbor, and to take advantage of available off-site parking at Dana Hills High School to address peak event parking demand. Current events with shuttle operations include:

- Festival of Whales (two weekends in March)
- Dana Point Harbor Boat Show (four day weekend in May)
- 4th of July
- Tall Ships Festival (three day weekend in September)

3. APPLICABLE POLICIES

TDM plans are typically implemented at a workplace to reduce commute trips. However, the Harbor is not a typical employer: activity peaks are weekends not weekdays, and the type of employment (retail, boating oriented businesses) provides work schedules that typically fall during off-peak commuting hours, when public transit service is most limited. Uses at the Harbor (such as boater oriented businesses and restaurants) may experience their peak activities at different times of the day, making it difficult to develop a larger pool of employees that could be encouraged to carpool. The vast majority of trips to the Harbor are visitor trips, which are more difficult to target with traditional TDM policies.

This chapter details the local policies relevant to TDM at the Harbor, including the City of Dana Point's TDM ordinance (Municipal Code Chapter 9.43), as well as the *Dana Point Harbor Revitalization Plan Land Use Component* (Land Use Plan). The applicability and relevancy of these policies and strategies to the transportation context of the Harbor are discussed, and relevant strategies from these policies are identified for implementation.

CITY OF DANA POINT TDM ORDINANCE

Policy Applicability & Goals

The City's TDM ordinance is applicable to new commercial, industrial, or mixed use development with at least 100 employees. This employment threshold will likely be met at the Harbor. The TDM ordinance details the following TDM goals:

a) *Reduce the number of peak-period vehicle trips generated in association with additional development;*

b) *Promote and encourage the use of alternative transportation modes such as ridesharing, carpools, vanpools, public bus and rail transit, bicycles and walking, as well as those facilities that support such modes;*

c) *Achieve related reductions in vehicle trips, traffic congestion, and public expenditure and achieve air quality improvements through utilization of existing local mechanisms and procedures for project review and permit processing;*

d) *Promote coordinated implementation of strategies on a county-wide basis to reduce transportation demand;*

e) *Achieve the most efficient use of local resources through coordinated and consistent regional and/or local TDM programs.*

Facility Standards

The TDM ordinance requires that either "Option A" or "Option B" improvements be incorporated into a project's site development. The applicability and implementation approach of each of these individual strategies are discussed below:

Option A Facility Standards

1. Preferential Parking for Carpools – The TDM ordinance specifies the percentage of employee parking spaces that should be reserved for carpools and where the carpool reserve spaces should be located. Because of the unique context and characteristic of the Harbor, there are fewer opportunities for retail/restaurant/boating employees to carpool, and reserved parking facilities for employees are not contemplated as part of the Revitalization Plan, because the Harbor wants to prioritize access for boaters and visitors to convenient parking spaces rather than employees. Employees will park in the shared parking facilities with visitors, who make up the vast majority of trips to the Harbor. Because visitors are already more likely to travel with more than one person per car, there is little additional incentive to carpool as a result of preferential parking.

   Implementation: Not recommended.

2. Bicycle Parking and Shower Facilities – The TDM ordinance requires a minimum of five bicycle parking spaces per 100 employees, and a minimum of two shower/changing facilities (one for men, one for women). End-of-trip facilities for cyclists are important to encourage bicycle usage to the Harbor. Existing bicycle parking facilities, while available, can be much enhanced. Planned shower/changing facilities for boaters can be made available to employees who choose to bike to the Harbor.

   Implementation: Recommended. See detailed discussion in Chapter 4.

3. Information of Transportation Alternatives – The TDM ordinance requires a commuter information area, which provides information about connecting transit service, rideshare matching, etc. Lack of information is often one of the barriers that discourage people from using alternative forms of transportation, so this strategy is a simple means to address this issue. In the context of the Harbor, alternative transportation information for both employees and visitors would be beneficial. We recommend installing map kiosks showing bike routes, transit routes and stop locations, and transit schedules in a prime location in the commercial core area to target visitors. We also recommend designating a specific contact as part of the facility/leasing management team to provide more employee specific information, including assisting employees with signing in to rideshare matching services.

   Implementation: Recommended. See detailed discussion in Chapter 4.

4. Rideshare Vehicle Loading Areas – The TDM ordinance requires that a vehicle loading area be designated for rideshare vehicles. As discussed above, designating carpool reserved spaces at the Harbor is not recommended. However, vehicle loading areas can be designated as part of the project. Designated valet parking areas are recommended to be signed as valet parking/passenger loading/rideshare loading zones.

   Implementation: Recommended. See detailed discussion in Chapter 4.

5. Vanpool Vehicle Accessibility – The TDM ordinance specifies the number of employee spaces that should be reserved for vanpools, and indicates where those spaces should be located. Given the barriers to carpooling at the Harbor, and the lack of designated employee reserved parking spaces, demand for vanpools is expected to be negligible. However, if demand dictates in the

future, one or more spaces could be converted to accommodate vanpools. This would likely require the removal of two standard parking stalls per one vanpool stall.

Implementation: Not recommended, unless employees form a vanpool.

6. Bus Stop Improvements – The TDM ordinance requires that all developments on high volume streets and established bus routes provide bus pads, bus pullouts, and right of way for bus shelters. The primary bus stops in the vicinity of the Harbor are located on Golden Lantern, north of Dana Point Harbor Drive, and on Dana Point Harbor Drive east of Park Lantern, neither of which are along the project's frontage, so this strategy would not apply. If OCTA pursues service changes, including locating transit stops along the project frontage, or with the introduction of new service (e.g. the City of Dana Point's pending OCTA Project "V" grant application), this strategy will be considered for implementation by the Harbor, if requested by OCTA. Additional measures to enhance wayfinding and access to bus stops are detailed in Chapter 4.

   Implementation: Recommended if consultation with OCTA indicates additional transit stops fronting the project site are desirable. These stops fronting or in the project site could be related to the routes proposed in the City of Dana Point's pending OCTA Project "V" grant application for a Harbor/community shuttle to serve weekends and events, or related to changes to the public transit lines that operate adjacent to the Harbor. Any additional transit stops with shelters must be designed to protect public views.

Option B

The TDM ordinance provides flexibility to implement additional or alternative TDM measures to those specified in Option A Facility Standards, as long as they would have a similar level of benefit. A variety of additional TDM measures, described in more detail in Chapter 4 are recommended for implementation at the Harbor, including:

7. Pedestrian-oriented design of the Harbor area to encourage a "park once" environment where visitors walk from use to use, rather than driving between uses

8. Wayfinding improvements to public transit stops

LAND USE PLAN

In 2010, the City of Dana Point's Local Coastal Program Amendment No. 1-08 was certified by the California Coastal Commission and adopted by the City of Dana Point. The primary element of that amendment is the *Dana Point Harbor Revitalization Plan & District Regulations Land Use Plan Component ("Land Use Plan")*, which replaced elements of the Dana Point Specific Plan relevant to Dana Point Harbor. This LCP amendment establishes new land use policies and development standards that make up the Revitalization Plan.

The Land Use Plan designates several specific transportation management goals and policies for the Revitalization Plan. These policies have been excerpted below, with the corresponding policy number, but grouped according to strategy/theme area. Strategies that apply to multiple theme areas are repeated in each theme area. Implementation of these policies is discussed in more detail in Chapter 4.

Improve Transit Facilities at the Harbor, Introduce Shuttle Service (Land and Waterside), and Encourage Use of Transit

A. *6.2.1-1 Promote Harbor improvements that are designed in a manner that: (1) facilitates provision or extension of transit service;*

B. *6.2.1-2 The City of Dana Point and OC Dana Point Harbor shall cooperate to the maximum extent feasible to provide a convenient shuttle service to link Dana Point Harbor with the Town Center and reduce energy consumption and vehicle miles traveled wherever feasible. (Coastal Act 30252, 30253)*

C. *6.2.2 Public Transit Implement A seasonal water taxi service could be provided as an alternative means of transportation during high usage periods in the Harbor for boaters and business patrons and to potentially reduce average daily trips. Prior to completion of Dana Point Harbor Revitalization Plan improvements, OC Dana Point Harbor will evaluate the feasibility of such a venture. Based on the results, OC Dana Point Harbor will implement such a program.*

D. *6.2.2-1 Transit service and pedestrian/bicycle trails shall be maintained and enhanced wherever possible in order to reduce the demand for parking.*

E. *6.2.2-3 Promote ridesharing and public transportation through publicity and provision of information to the public.*

F. *6.2.2-4 Ensure accessibility of public transportation for elderly and disabled persons.*

G. *6.2.2-6 Provide for a non-vehicular circulation system that encourages mass-transit, bicycle transportation, pedestrian circulation. (Coastal Act Section 30252, 30253)*

H. *6.2.2-7 Encourage the provision of safe, attractive and clearly identifiable transit stops and related high quality pedestrian facilities throughout the Harbor. (Coastal Act Section 30252)*

I. *6.2.2-8 Work with the Orange County Transit Authority (OCTA) and other appropriate agencies to provide express transportation to regional airports.*

J. *6.2.2-9 To promote energy conservation as part of new development, OC Dana Point Harbor in cooperation with the County and adjacent cities will determine the feasibility of the Tri-City Trolley being operational prior to or concurrent with buildout and occupancy of the commercial core. Funding mechanisms and the option to serve Dana Point Town Centre as an activity center will be evaluated.*

K. *6.2.2-10 To reduce traffic congestion and parking demand within OC Dana Point Harbor and enhance connectivity between areas of high public use within the Dana Point coastal zone (e.g. Harbor, Town Center, Doheny State Beach, hotels, etc.), the OC Dana Point Harbor shall implement a shuttle service to link the Harbor with other areas of high public use when anticipated ridership suggests demand for such service. The City and OC Dana Point Harbor shall continually evaluate traffic and parking demand within the harbor to determine whether implementation and/or expansion of existing shuttle service is required. Where shuttle service implementation and/or expansion is determined to be necessary to offset the impacts of new development, the City and/or OC Dana Point Harbor shall require new development to participate in the provision of such service.*

L. *6.2.2-11 A seasonal water taxi service may be incorporated throughout the Harbor to reduce average daily trips (ADT's) during peak Harbor usage days.*

M. *6.2.6-7 c. Convenient pedestrian access shall be provided to transit stops; and turnouts, benches and shelters shall be provided, as appropriate, at bus stops in order to maximize the safety, comfort and convenience of transit passengers.*

Improve Bicycle and Pedestrian Facilities and Access at the Harbor

N. *6.2.1-5 Bike racks shall be incorporated into the design of the Harbor wherever feasible.*

O. *6.2.2-1 Transit service and pedestrian/bicycle trails shall be maintained and enhanced wherever possible in order to reduce the demand for parking.*

P. *6.2.2-6 Provide for a non-vehicular circulation system that encourages mass-transit, bicycle transportation, pedestrian circulation. (Coastal Act Section 30252, 30253)*

Q. *6.2.3-4 Encourage safe and convenient bicycle and pedestrian access throughout the community. (Coastal Act Sections 30210-212.5, 30250, 30252)*

R. *6.2.3-5 Develop stronger pedestrian, bicycle and visual linkages between public spaces and along the shoreline and bluffs. (Coastal Act Sections 30210, 30212)*

S. *6.2.3-6 Support and coordinate the development and maintenance of bikeways in conjunction with the County of Orange Master Plan of Countywide Bikeways to assure that local bicycle routes will be compatible with routes of neighboring jurisdictions.*

T. *6.2.3-7 Require the provision of showers, changing rooms and an accessible and secure area for bicycle storage at all new and existing developments and public places whenever feasible. (Coastal Act Section 30213)*

U. *6.2.3-10 Maximize public access to and along the waterfront and bulkhead. As a goal, maintain, and where necessary establish, continuous, uninterrupted public access along the waterfront and bulkhead, except along those segments of the bulkhead in the Marine Service Commercial area where provision of such access would interfere with boat launch and repair operations (in which case connecting detours shall be provided around those areas). Remove existing obstructions to public access along the waterfront and bulkhead and establish new public accessways through those areas.*

V. *6.2.3-11 Pedestrian walkways and trails shall provide connection points to off-site, existing or proposed walkways/trails, including integration with the California Coastal Trail.*

Other TDM Strategies

W. *6.2.1-4 Prior to Coastal Development Permit approval for development within the commercial core, plans shall be prepared indicating the use of Transportation Demand Management Plan (TMP) measures such as preferential parking for vanpooling/carpooling, employee subsidy for transit passes or vanpooling/carpooling, flextime work schedules, etc. A TMP shall be required for implementation as part of the Coastal Development Permit process.*

X. *6.2.2-2 Require the implementation of employer Transportation Demand Management (TDM) requirements included in the Southern California Air Quality Management District's Regulation XV of the Air Quality Management Plan. Participate in regional efforts to implement (TDM) requirements.*

Y. *6.2.2-3 Promote ridesharing and public transportation through publicity and provision of information to the public.*

Z. *6.2.2-5 Require employers to reduce vehicular trips by offering employee incentives.*

4. TDM PLAN RECOMMENDED FOR IMPLEMENTATION

The TDM measures recommended for implementation are in three primary areas: transit, pedestrian/bicycle, and employment TDM strategies. Because of the unique nature of the Harbor, traditional employment based TDM strategies have less applicability and benefit, so this plan focuses on other strategies that would have greater benefit.

TRANSIT

Transit 1. Provide Local Match Funding Support for Harbor Event/Parking Shuttle

In spring 2013, the City of Dana Point submitted a grant application to OCTA for the Project 'V' Community-Based Transit/Circulators grant. The application detailed five proposed shuttle routes, four of which will have connections to or near the Harbor as , illustrated in Figures 4A through 4D. These include a route that would operate from Dana Hills High School to Dana Point Harbor for summer weekends and special events. The shuttle would provide east/west circulation along Dana Point Harbor Drive, providing mobility opportunities for visitors who choose to park once and travel around the Harbor without driving. It would also serve riders who choose to park at Dana Hills High School, and take the shuttle to the Harbor, thereby reducing auto trips at the Harbor, and potentially reducing vehicle emissions and excess vehicle miles traveled. In support of this route, the Harbor has agreed to designate any savings realized from the elimination of special events shuttles (funded by the Harbor) to assist with a portion of the 10% financial match required by OCTA. The grant application is pending. The Harbor will evaluate future funding opportunities once grant funds are exhausted.

Targeted population: Visitors, Employees (if any live along proposed shuttle routes)

Figure 4A – PCH Weekend Shuttle Proposed Route

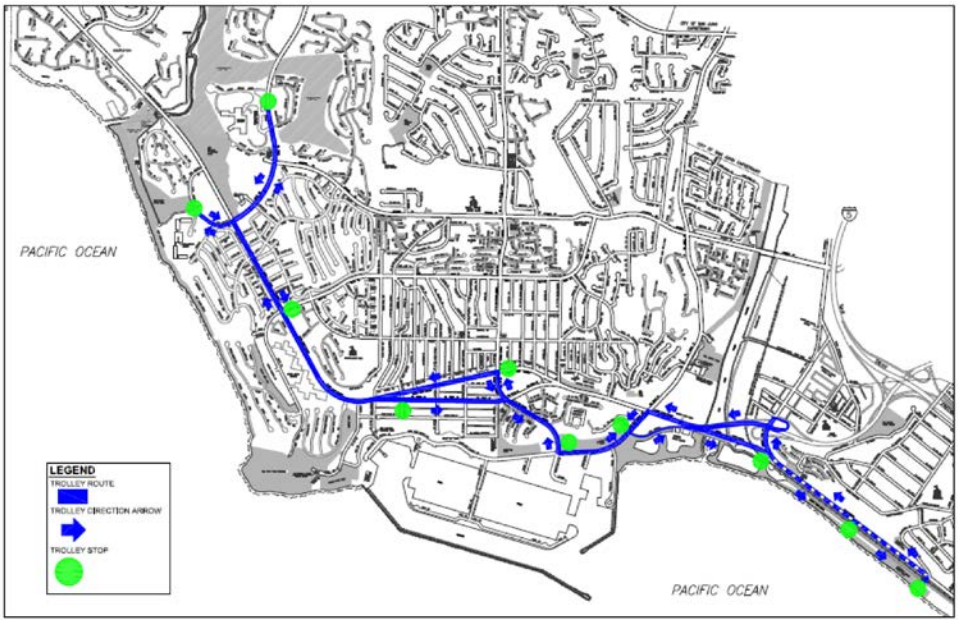


Figure 4B – Harbor Weekend Shuttle Proposed Route

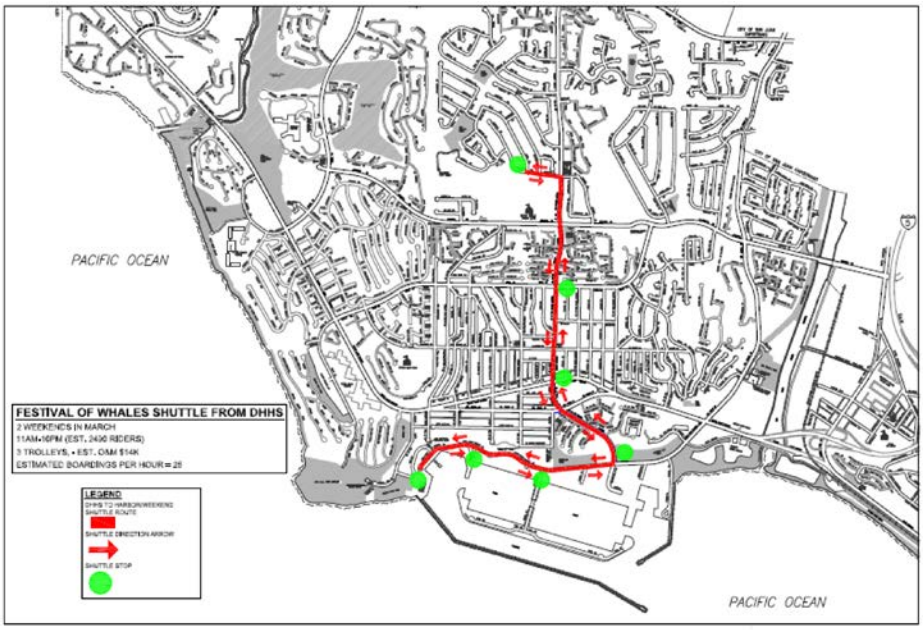


Figure 4C – Festival of Whales Shuttle Proposed Route

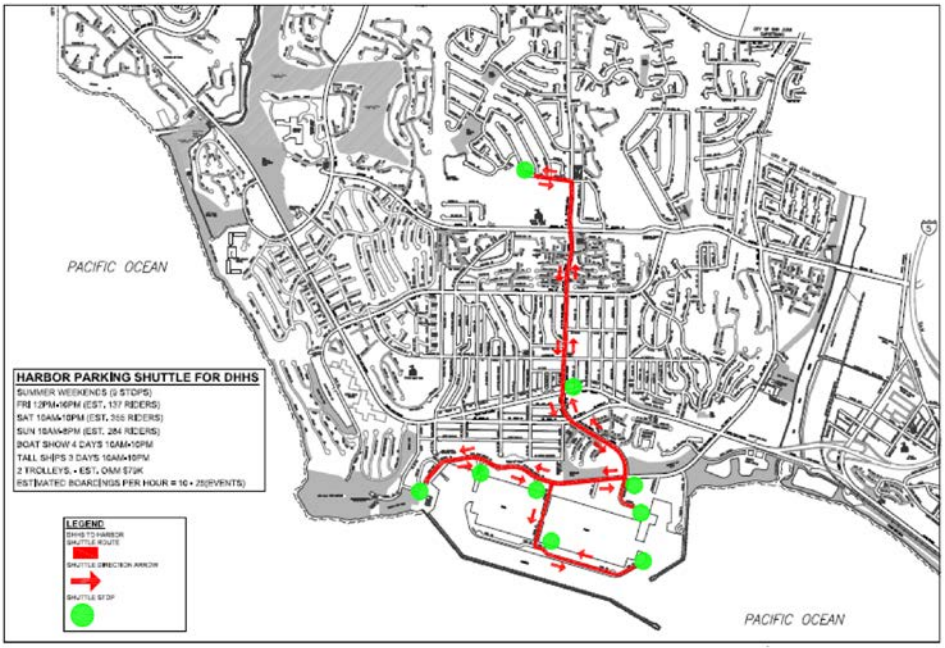
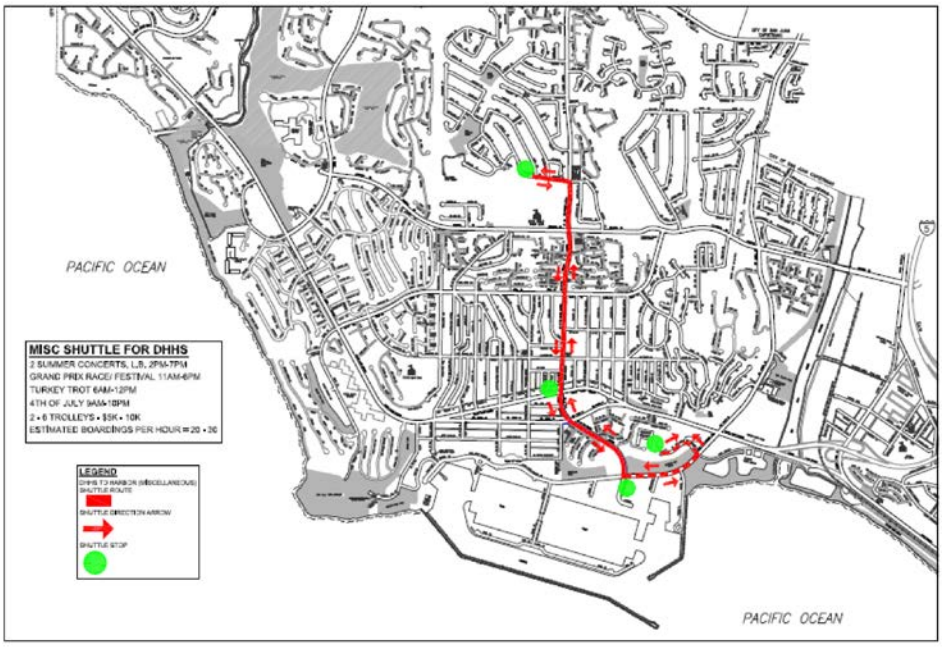


Figure 4D – Miscellaneous Events Shuttle Proposed Route



Transit 2. Implement a Pedestrian Wayfinding System to Direct Visitors and Employees to Public Transit Stop on Golden Lantern; If Harbor Shuttle Service is Implemented Include Those Stops in Wayfinding Plan

One of the barriers to transit usage at the Harbor is that the existing transit stop on Golden Lantern has minimal signage, so employees and visitors may not realize that OCTA transit actually serves the Harbor. To address this barrier, pedestrian wayfinding signage should be implemented that provides clear direction from central areas of the Commercial Core to bus stops.

If the City's OCTA grant application is successful, wayfinding to weekend shuttle stops should be included as well.

Targeted population: Visitors and employees

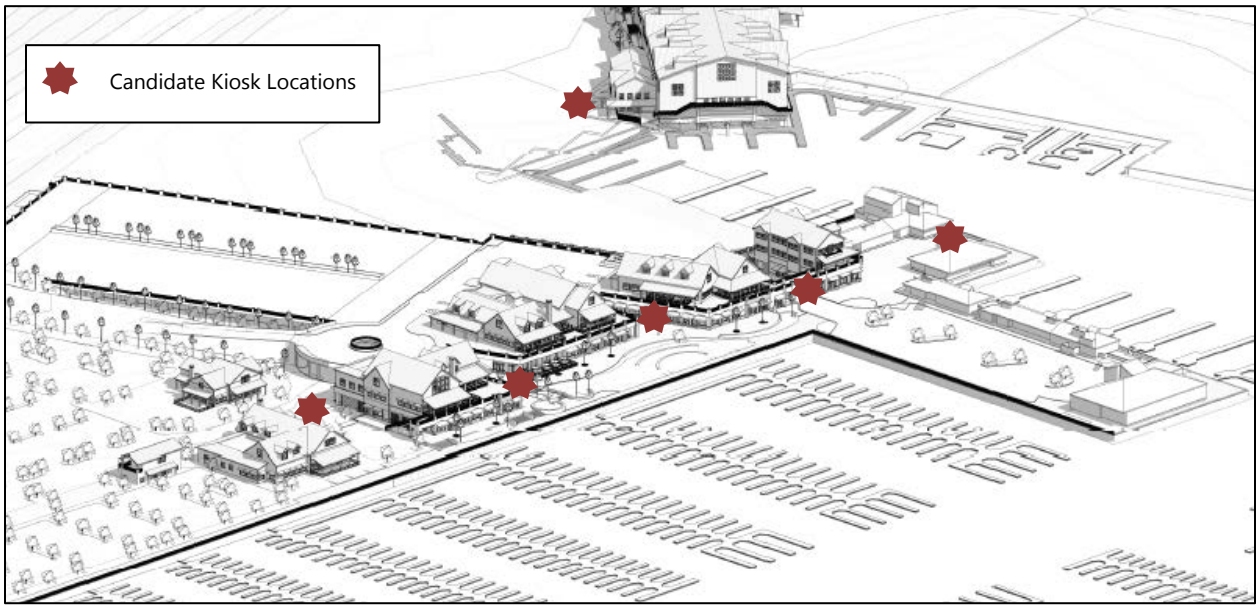
Transit 3. Install Map Kiosks in Prominent Locations that Provide a Map and Schedule of Area Public Transit

In Tandem with strategy *Transit 2*, install one or more kiosks in high visibility locations similar to the examples shown in Figure 5, that provide a Harbor vicinity map illustrating the location of public transit stops (and shuttle stops if implemented), with a walking path identified. Kiosks should include a larger regional map indicating the destinations served by public transit, and should include published OCTA route schedule and service hours information. Candidate kiosk locations are illustrated in Figure 6.

Targeted population: Visitors

Figure 5 – Map Kiosk Examples

Figure 6 – Candidate Kiosk Locations



Transit 4. Contact OCTA Service Planning to Determine if Transit Stop Locations Could be Relocated or Added Closer to the Harbor Commercial Core

The existing public transit stop on Golden Lantern north of Dana Point Harbor Drive is roughly a six minute walk from the Commercial Core, depending on how long a pedestrian must wait to cross Dana Point Harbor Drive. The public transit stop on Dana Point Harbor Drive east of Park Lantern is approximately a nine minute walk. The Revitalization Plan will bring increased visitor activity to the Harbor, but because of the walking distance of the bus stops from the Commercial Core, few visitors will choose to take transit. However, if stops are located closer to, or even within the Harbor area, the destinations of the Commercial Core will have much better transit connections, which will encourage transit use, and in particular, will benefit mobility impaired visitors, who might otherwise not be able to take the bus because of the walk distance from stops. The Harbor and OCTA should discuss the feasibility of shifting the location of transit stops closer to the Commercial Core.

Targeted population: Visitors and employees

Transit 5. Work with OCTA to Determine the Best Available Transit Service to Serve the Harbor's Transit Service Needs

Aside from stop location, visibility, and wayfinding addressed above, the primary barrier to higher transit use at the Harbor is the infrequent service of the three OCTA routes that serve the Harbor. On weekends, when the Harbor is most active, Route 85 and 90 run every 80 to 90 minutes, and Route 187 does not provide weekend service. Weekend service frequency should be every 30 minutes or less to provide greater opportunity for visitors interested in taking transit to the Harbor. OCTA has route performance measures and criteria to determine when service frequency can be improved. The Harbor and OCTA should discuss the feasibility of improving service frequency during the summer, and to confirm that OCTA vehicles that serve the Harbor should ideally provide bike racks on buses.

Targeted population: Visitors and employees

PEDESTRIAN & BICYCLE

Bike 1. Provide High Quality Bicycle Parking that can be increased as Demand Dictates

Bicycle parking should be provided in highly visible, well lit locations, preferably located within 50' of the front door of destination uses in the Commercial Core (restaurants and retail), and near the bicycle lanes on Golden Lantern. Where feasible, racks should be installed under existing structures to provide some weather and shade protection.

Bicycle parking should be provided in locations where the capacity for increasing the number of racks can be provided as demand dictates. As a post-construction best management practice (BMP) OC Dana Point Harbor staff should monitor demand for bicycle parking, and increase bicycle parking capacity if excess bicycle parking demand is observed in the form of full bicycle racks, bicycles chained to fences, trees, etc.

Inverted U-racks are the preferred bike rack type because they provide two points of support for the bike, and allow the most flexibility in the locking location(s). They provide capacity for two bikes (one on either side of the rack), and can be installed individually, or in a series with multiple racks installed on a base cross beam. The Inverted U series is the preferred bike parking type for bike corrals, which are the clustering of several bike parking spaces in one vehicle parking stall.

Figure 7 – Bicycle Parking Examples

U-Racks

U-Racks in Series/Bike Corral

Post and Ring

Coathanger

The post and ring style bike racks in the Harbor are also a preferred bike parking type. The coathanger style is less preferred because it is difficult to accommodate side by side bikes, and provides less support and fewer connection choices than U-racks. Figure 8 illustrates candidate bike parking locations.

Estimating bike parking capacity needs is difficult to predict given that existing utilization of bike parking is low. However, given that the Revitalization Plan will increase the retail and restaurant square feet, additional bike parking capacity is warranted. The Association of American Bicycle Professionals provides recommendations on the number of bicycle parking spaces that should be provided given a particular type and size of a land use. Relevant standards are:

Short Term (U-Racks)

- Restaurant – 1 space per 2,000 sf floor area, minimum two spaces
- Retail – 1 space per 5,000 sf floor area, minimum two spaces
- Office – 1 space per 20,000 sf floor area, minimum two spaces

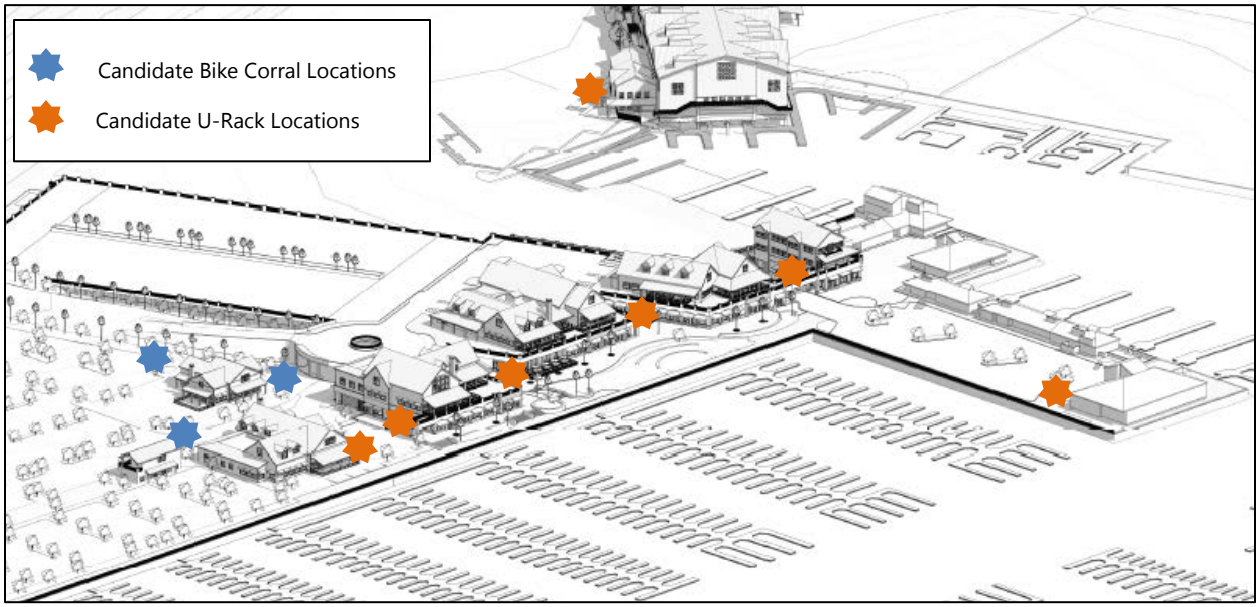
Long Term (Secured Storage)

- Restaurant – 1 space per 10,000 sf floor area, minimum two spaces
- Retail – 1 space per 10,000 sf floor area, minimum two spaces
- Office – 1.5 space per 10,000 sf floor area, minimum two spaces

Given these standards, approximately 37 spaces should be implemented in the Commercial Core to start (assumes 27 short-term spaces, and 10 long-term spaces). Long term bicycle parking is typically for a work day, or in the case of the Harbor, a full day of boating or other beachfront activities. Because of the longer duration, it is preferable for long term bicycle parking to be covered from the elements, in as highly visible and secure location as possible. A bike corral with a shade structure in a visible location would be one opportunity to accommodate long term spaces. Short term bicycle spaces typically turn over more frequently (for example the length of a meal at one of the Harbor restaurants), so shading and protection from the elements, while desirable, is less critical. Over time, bicycle parking capacity should be increased if excess demand is observed.

Targeted population: Visitors and employees

Figure 8 – Candidate Bike Parking Locations



Bike 2. Provide Access to Shower and Changing Facilities for Employees who Bike to Work

The lack of end of trip facilities (bicycle parking, showers, and changing facilities), is a typical barrier for employees who would otherwise be interested in commuting via bicycle. Especially during summer months, it is difficult to commute via bicycle and still maintain professional standards of appearance and hygiene without such a facility. The Revitalization Plan will provide for shower and changing facilities. Access to these facilities will be made available to employees who choose to commute to work via bicycle.

Targeted population: Employees

Bike 3. Implement Improved Bicycle Wayfinding Signage

Bicycle wayfinding signage will help direct cyclists to on-street bicycle facilities and bicycle paths, key destinations within the Commercial Core, and importantly, to the location of bicycle parking racks. A primary barrier to the use of existing bicycle parking racks is their visibility. Highly visible bicycle racks, with clear wayfinding signage directing recreational cyclists to locations where they may conveniently park their bike encourages the use of bicycles by visitors as their transportation to the Harbor, as well as encourages recreational riders, who may now ride past the Harbor, to stop and enjoy the new destinations that will be provided in the Commercial Core.

Targeted population: Visitors

Bike 4. Work with the City of Dana Point to Determine the Preferred Design of the Class II Bicycle Lane on Dana Point Harbor Drive in the Context of the Roadway and Intersection Improvements Planned for Dana Point Harbor Drive

The existing bike lane on Dana Point Harbor Drive is well used by recreational cyclists. Because of the high vehicular travel speeds and width of the roadway, it is a good candidate location for enhancements to the bike lane, such as a buffered lane, and/or high visibility striping treatments in conflict zones (such as intersections). In the context of the roadway improvements being designed for Dana Point Harbor Drive, the City and the Harbor should negotiate a preferred design for the bicycle facility that will be implemented as the roadway improvements are completed. East of Golden Lantern, the striping will conform to City of Dana Point standards. West of Golden Lantern, the striping will conform to County of Orange standards.

Targeted population: Visitors and employees

Bike 5. Ensure Direct, Comfortable, and Visible Access from the Bike Lanes on Golden Lantern to Bike Parking in the Commercial Core

Golden Lantern will provide the primary bicycle access to the Commercial Core with the bicycle lanes that will be retained on the redesigned street. To ensure a high-quality bicycle facility, appropriate bicycle access from the lanes into the Commercial Core area will need to be incorporated in the final design. Bike lanes should lead bikes away from parking ramps towards bike parking facilities on grade, to avoid the physical challenges of riding up the steeper grade of a parking ramp, and the speed management challenges of riding down a parking ramp.

Targeted population: Visitors and employees

Ped 1. Develop Project with a Pedestrian Orientation and Improved Pedestrian Connections to Adjacent Attractions

The Revitalization Project is designed to cluster buildings together to provide a comfortable pedestrian oriented environment surrounding retail and restaurant uses. The new village, moved closer to the existing Dana Wharf, will create a stronger pedestrian link with the remaining buildings and adjacent parking areas. A waterfront promenade and pedestrian "Festival Plaza" gathering space will encourage "park once" with visitors choosing to leave their vehicles parked and walk around the Harbor, rather than driving from one area to another. Improved pedestrian connections will also be provided from the Commercial Core (Planning Area 1) to Dana Wharf (Planning Area 2), and to Doheny State Beach, further fostering a "park once" environment.

Targeted population: Visitors and employees

Ped 2. Ensure Direct, Comfortable, and Visible Pedestrian Access from Dana Point Harbor Drive to the Commercial Core via Signalized Crossings

The design of pedestrian crossing facilities at the Golden Lantern/Dana Point Harbor Drive intersection should receive extra attention in the design implementation of the Revitalization Plan. The City and the Harbor should negotiate a preferred design for the pedestrian crossing facilities at Golden Lantern that will be implemented as the roadway improvements are completed. High visibility crosswalk striping and directional curb ramps are recommended for this intersection. Within the Harbor, sidewalks on Golden Lantern should be wider than the existing sidewalks if feasible (8' minimum) to facilitate comfortable pedestrian access.

Targeted population: Visitors and employee

Ped 3. Implement a Pedestrian Wayfinding System

Pedestrian wayfinding signage will help direct pedestrians to destinations in the Commercial Core, and the Harbor overall, as well as to/from the waterfront promenade, transit stops, potential shuttle stops, and parking facilities. This is an important element of fostering a "park once" environment.

Targeted population: Visitors

TDM

TDM 1. Designate Transportation Coordinator

OC Dana Point Harbor will stipulate in a future agreement with the property management service that one member of the property manager's staff will be designated as the transportation coordinator for commercial core employees. This individual will provide information to employees related to public transit routes and schedules, provide maps of bicycle facilities, and will assist employees who are interested in signing up for rideshare matching services. This individual will be responsible for ensuring that provided transportation information is kept current.

Targeted population: Employees

TDM 2. Implement Rideshare Matching Service

OC Dana Point Harbor will initiate a partnership with a rideshare matching service to provide Harbor employees online portals where they can access rideshare matching services to facilitate carpooling.

Targeted population: Employees

TDM 3. Designate Rideshare Pick-up/Drop-off Zone

Designated valet parking zones will allow pick up/drop off activities for passenger loading/unloading for rideshare vehicles. The valet parking zone will be signed to indicate that rideshare loading/unloading will be allowed, and wayfinding signage directing vehicles to the valet zones will include reference to rideshare loading/unloading.

Targeted population: employees

CORRESPONDING POLICIES

The following table summarizes the components of the City's TDM ordinance and the policies of the Land Use Plan that correspond with the recommended TDM strategies detailed above.

TABLE 1
RECOMMENDED TDM STRATEGIES & APPLICABLE POLICIES

Recommended TDM Strategy	Corresponding Policies	
	City TDM Ordinance	Land Use Plan Policy
Transit 1 – Harbor Weekend/Events Shuttle		A, B, D, G, H, J, K
Transit 2 – Wayfinding to Transit Stops	8	G, H
Transit 3 – Map Kiosks	3	E, G, H
Transit 4 – Transit Stop Location	6	A, F, G, H, M
Transit 5 – Transit Service Frequency		A, B, G, I
Bike 1 – Bike Parking	2	N, P
Bike 2 – Showers/Changing Facilities	2	P, T
Bike 3 – Improved Bicycle Wayfinding		P, R
Bike 4 – Class II Bike Lane Enhancements		D, O, P, S
Bike 5 – Direct Connections from Golden Lantern Bike Lanes		O, P
Ped 1 – Pedestrian Oriented Design	7	G, R, U, V
Ped 2 – Direct Pedestrian Paths/Crossings	7	G, R, V
Ped 3 – Wayfinding	7	G
TDM 1 – Transportation Coordinator	3	E, G, Y
TDM 2 – Rideshare Matching		G
TDM 3 – Rideshare Loading	4	G

REFERENCES

Bicycle Parking Guidelines, 2nd Edition, Association of Pedestrian and Bicycle Professionals, 2010

Dana Point Harbor Revitalization Plan & District Regulations Land Use Plan Component, City of Dana Point, 2010

APPENDIX A – TRAFFIC ANALYSIS

FEHR PEERS

DRAFT MEMORANDUM

Date: 14 August 2012

To: Bill Koster, MVE Institutional, Inc.

From: Steve Brown & Michael Kennedy

Subject: ***Dana Point Harbor Drive Traffic Analysis***

Ref: OC12-0209

This memorandum summarizes the results of the traffic analysis prepared by Fehr & Peers, and details our recommendations for lane configurations and signal phasing for Dana Point Harbor Drive where it intersections with Casitas Place, Street of the Golden Lantern, and Puerto Place.

At the outset of this effort, we were directed to consider the standing environmental document, *Dana Point Harbor Revitalization Project Program Environmental Impact Report* (2006) as still valid and sufficient in defining the scope of off-site traffic impacts and mitigations, given that the magnitude of the planned project has not materially changed. Therefore, our study does not evaluate intersections outside the immediate Harbor area, and does not replace the conclusions of the EIR. The purpose of our study is to evaluate the on-site circulation system and identify detailed design recommendations for intersections adjacent to Dana Point Harbor.

TRAFFIC COUNT VALIDATION

The *Dana Point Harbor Revitalization Project Program Environmental Impact Report* was issued in 2006. In order to substantiate the use of the prior traffic forecasts to design improvements on Dana Point Harbor Drive, we compared the 2005 traffic counts collected for the EIR with newly collected traffic counts collected in June 2012 at the following intersections:

- Casitas Place & Dana Point Harbor Drive
- Street of the Golden Lantern & Dana Point Harbor Drive
- Puerto Place & Dana Point Harbor Drive

Traffic counts in 2012 were collected on Saturday June 9, 2012, between the hours of 11:30 AM and 3:30 PM. June 9, 2012 was an active day at the Harbor, with clear weather and high levels of activity from fishermen due to a strong run of albacore according to Orange County Dana Point Harbor staff. Separate peak hours were determined for each two-hour period, and are summarized below in Table 1 for the 2005 counts in the EIR, the 2012 forecasts from the EIR, and the 2012 counts. Figures 1 and 2 compare the traffic volumes from the three sources for the weekend noon and weekend PM peak hours.

As shown in the table, the 2012 traffic counts were actually lower than the 2005 counts, with the exception of the noon peak hour at the intersection of Puerto Place & Dana Point Harbor Drive, where the 2012 counts were 6% higher. Compared with the 2012 base year forecasts in the EIR, the 2012 traffic counts were 1% to 23% lower than what was forecast. Therefore, given that the 2012 forecasts from the EIR are higher than the traffic counts, the use of the EIR traffic volumes for this analysis is appropriate and conservative.

TABLE 1: EIR TRAFFIC VOLUME COMPARISION

Intersection	Weekend Noon/PM Volume Comparison						2012 Count Comparison to:			
	2005 Counts (EIR)		EIR Base Year Forecast (2012)		2012 Counts (F&P)		2005 Counts (EIR)		EIR Base Year Forecast (2012)	
	Noon	PM	Noon	PM	Noon	PM	Noon	PM	Noon	PM
Casitas Pl & Dana Point Harbor Dr.	1,023	1,122	1099	1209	1,011	1,031	0.99	0.92	0.92	0.85
Street of the Golden Lantern & Dana Point Harbor Dr.	2,151	2,222	2,313	2,398	1,923	1,838	0.89	0.83	0.83	0.77
Puerto Pl & Dana Point Harbor Dr.	1,385	1,521	1,485	1,635	1,466	1,429	1.06	0.94	0.99	0.87

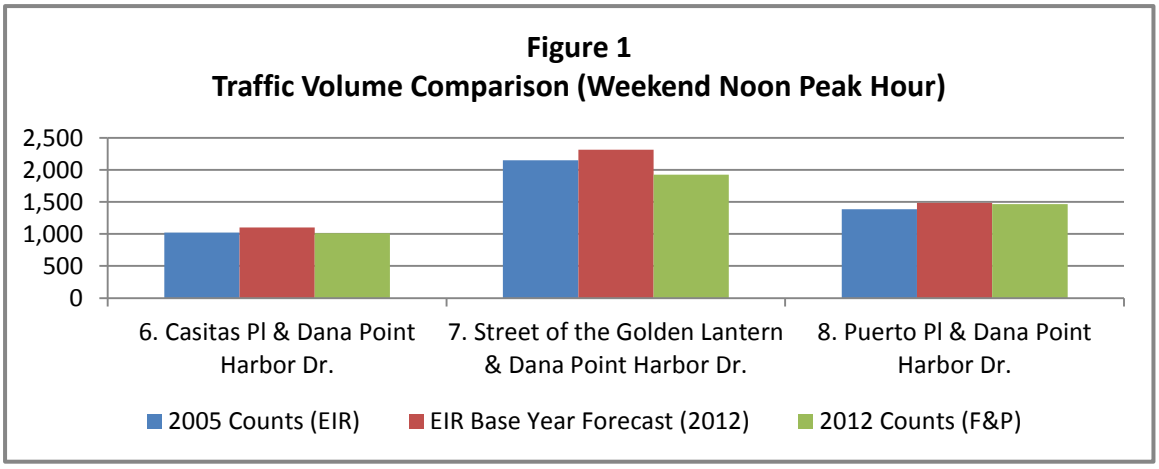
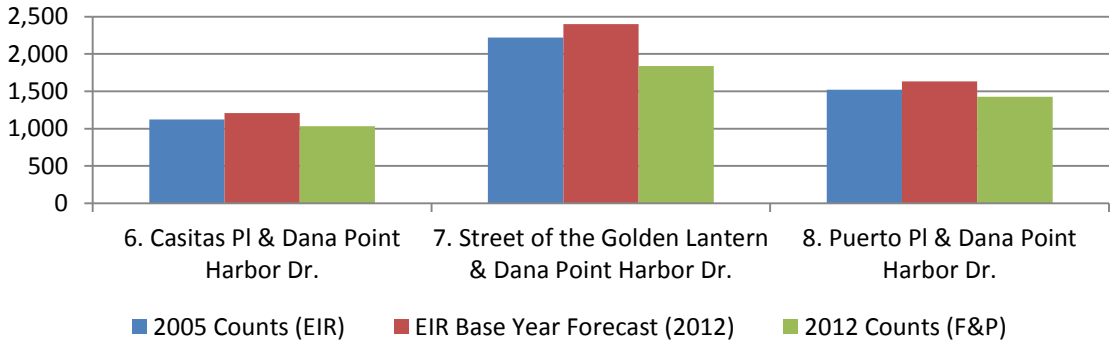


Figure 2
Traffic Volume Comparison (Weekend PM Peak Hour)



TRAFFIC ANALYSIS

Analysis Approach and Assumptions

A traffic operations analysis was prepared using the *Synchro* software package. Future (Year 2030) traffic volumes (Harborwide Project Volumes) were obtained from *Dana Point Harbor Revitalization Traffic & Parking Analysis*, (RBF Consulting, 2005), which is Appendix J to the *Dana Point Harbor Revitalization Project Program Environmental Impact Report* (January 2006).

Based on a review of the forecast traffic volumes, it was determined that the weekend afternoon peak hour would have the highest traffic volumes, so would be the worst case for analysis.

Entrance Distribution

The EIR had the following distribution of traffic between the three entrances on Dana Point Harbor Drive during the weekend afternoon peak hour:

- Casitas Place 12% of total in/out traffic
- Golden Lantern 50% of total in/out traffic
- Puerto Place 38% of total in/out traffic

We have used this distribution pattern and the resulting forecast 2030 volumes in our traffic analysis.

We collected a traffic count at the intersection of Embarcadero Place & Dana Point Harbor Drive. During the weekend PM peak hour, 36 vehicles used this entrance to the Harbor (30 vehicles inbound and 6 vehicles outbound). This intersection was not a study intersection in the EIR because it is planned for removal per the Harbor Revitalization Plan. We reviewed the EIR traffic

volumes, and determined that they account for shifts in traffic associated with the closure of Embarcadero Place.

Large Vehicle Adjustment

We have applied a passenger car equivalent (PCE) factor to some turning movements that access the Harbor to account for boat trailers that affect intersection operations because they take up more space and travel slower than passenger vehicles. Based on vehicle classification counts collected on Saturday June 9, 2012, we determined that larger vehicles (trucks, as well as vehicles with boat trailers) made up approximately 1% to 4% of traffic volumes on a given movement (about 1% of total intersection volumes) during the weekend afternoon peak hour. Since the percentage of large vehicles likely fluctuates, to ensure a worst-case analysis, we have applied a PCE factor assuming that 10% of traffic volumes accessing the Harbor would be large vehicles.

Analysis Results Future Volumes with Existing Intersection Configurations

We applied the 2030 volumes as detailed above to existing intersection geometries to evaluate how the Dana Point Harbor Drive intersections would be expected to operate in the future, assuming growth in traffic, but no physical improvements to the existing intersection configurations.

Using the *Synchro* software package, we evaluated intersection level of service (LOS), and approach queuing, using the 2000 Highway Capacity Manual (HCM) methodology for signalized intersections. Table 2 summarizes the results of our testing, noting intersection level of service, as well as where queuing would be expected:

TABLE 2: EXISTING INTERSECTION CONFIGURATIONS + FUTURE VOLUMES

Intersection	Delay	Average Intersection LOS	Individual Moves w/ Queues Exceeding Storage
1. Casitas Place & Dana Point Harbor Drive	11.6	B	None
2. Street of the Golden Lantern & Dana Point Harbor Drive	80.1	F	WBL, SBL
3. Puerto Place & Dana Point Harbor Drive	25.9	C	NBL, WBL

As shown in the table, the intersection of Casitas Place and Dana Point Harbor Drive is expected to operate well in the future after signalization.

The intersection of Street of the Golden Lantern & Dana Point Harbor Drive is expected to operate at a poor level of service (LOS F), with queues exceeding available storage on the westbound left and (to a lesser extent) the southbound left movements, suggesting the need for physical improvements to the intersection configuration to improve traffic operations.

The intersection of Puerto Place and Dana Point Harbor Drive is expected to operate at an acceptable LOS C, but with the potential for westbound left queues to spillback beyond the turn pocket, and for northbound left movements to experience a degraded level of service, suggesting the need for physical improvements to the intersection

RECOMMENDED LANE CONFIGURATIONS/SIGNAL PHASING

Based on the traffic analysis, we recommend the following intersection lane configuration and signal phasing improvements along Dana Point Harbor Drive:

1. Casitas Place – We recommend the installation of a traffic signal with a westbound left protected phase. While the protected phase is not needed to serve anticipated traffic volumes after completion of the Harbor Revitalization Plan, because Casitas Place will be the main ingress for delivery truck movements to the Harbor, the protect left-turn phase is recommend to facilitate truck movements. During portions of the construction phase, the entrance at Street of the Golden will be closed, and traffic will shift to Casitas Place. The left-turn phase will be beneficial during that time. To facilitate truck movements from the parking drive aisle onto Casitas Place, Casitas Place should be widened. Widening will accommodate two lanes northbound, a left-turn only lane as well as a right-turn only lane. U-turns could be allowed at this intersection since no northbound right-turn overlap phase is recommended. See Figure 1 for the proposed conceptual plan for this intersection.

2. Golden Lantern – We recommend maintaining the existing protected left-turn signal phasing on all approaches, and the northbound and southbound right-turn overlap phasing. However cycle length and signal splits may need to be adjusted. We recommend adding an additional westbound left-turn lane to serve traffic into the Harbor at Golden Lantern. This appears to be feasible within the existing cross section if lanes are narrowed and the raised median is removed for the length of the turn pocket. Since the lighting standards are in the median, they would need to be relocated. Figure 2 illustrates the intersection's proposed conceptual plan.

   As an alternative, the westbound left-turn pocket could be extended. This would provide additional storage, and would reduce the potential for queue spillbacks that would interfere with westbound through traffic, but would not allow the westbound left-turn

movement to be served quicker (because only one lane would be turning at the same time). The following matrix summarizes the benefits and drawbacks with each option:

TABLE 3: GOLDEN LANTERN WESTBOUND LEFT-TURN EVALUATION MATRIX

	A. Second Left-Turn Lane	B. Extended Left-Turn Pocket
Additional Storage	Yes (more than Option B)	Yes
Reduced WBL Queues	Mostly eliminates	Partially eliminates
Impacts to Median Lighting	3 lights to be relocated	1-2 lights to be relocated
Impacts to Median Trees	Possible to avoid	Would likely impact 2 clusters of median trees
Vehicular Safety	Improvements to safety by eliminating westbound left-turn lane queues Loses safety benefit of existing raised median separating westbound left-turn lane from eastbound receiving lanes	Improvements to safety by reducing westbound left-turn lane queues Retains raised median separating westbound left-turn lane from eastbound receiving lanes

The additional left-turn lane is the preferable option in terms of traffic operations and existing tree retention. However, it requires the relocation of more existing lights than an extended left turn lane, and it requires the removal of the existing raised median that separates the westbound left-turn lane from the eastbound receiving lanes.

3. Puerto Place – We recommend the installation of a traffic signal with a westbound left protected phase and a northbound right-turn overlap phase. The traffic analysis indicates that additional northbound capacity is needed via a dedicated left-turn only and right-turn only lanes (two lanes northbound). It would be beneficial to implement a northbound right-turn overlap phase to operate concurrently with the westbound left-turn protected phase.

   The analysis does indicate that queuing would extend beyond the westbound left storage pocket by a few vehicles on some occasions. Due to the queuing, an additional westbound left-turn lane is desirable and can be accommodated by reducing the median, which would require the removal of some trees. To accommodate the double left-turn lane, southbound Puerto Place would need to be widened to include two receiving lanes. The westernmost lane would be striped as a trap right-turn only lane into the entrance to the parking lot west of Puerto Place. The second lane would be striped as a through/right lane. Right turns into the parking lot would only be allowed when the lot

would operate as two inbound lanes. The lot would be designed to include three lanes, inclusive of a center reversible lane.

Figure 3 illustrates the conceptual plan for the intersection.

Due to the existing right-turn overlap on northbound Street of the Golden Lantern, and the recommended northbound right overlap on Puerto Place, westbound U-turns would need to be prohibited at both intersections. Westbound U-turns could be accommodated at Casitas Place, which would not have a northbound right overlap phase.

The following table details the forecast average intersection level of service with the addition of the improvements detailed above, as well as adjustments to cycle lengths, signal splits, and signal phases to reflect the physical improvements. As shown in the table, the recommendations above would reduce or eliminate queue spillback, and would improve average intersection LOS to an acceptable LOS D or better.

TABLE 4: PROPOSED INTERSECTION CONFIGURATIONS + FUTURE VOLUMES

Intersection	Delay	Average Intersection LOS	Individual Moves w/ Queues Exceeding Storage
1. Casitas Place & Dana Point Harbor Drive	11.1	B	None
2. Street of the Golden Lantern & Dana Point Harbor Drive	49.8	D	Westbound Left, Southbound Left (though reduced through proposed improvements)
3. Puerto Place & Dana Point Harbor Drive	11.4	B	None

FEHR & PEERS

MEMORANDUM

Date: October 29, 2012

To: Bill Koster, MVE Institutional, Inc.

From: Steve Brown & Michael Kennedy

Subject: ***Dana Point Harbor Drive Signal Warrant Analysis***

Ref: OC12-0209

Fehr & Peers previously completed traffic analysis evaluating the vehicular access needs of the proposed Dana Point Harbor Revitalization Plan. Based on the results of that analysis, we recommended that two intersections on Dana Point Harbor Drive (DPHD), Casitas Place/DPHD and Puerto Place/DPHD, be signalized as part of the following package of improvements:

- Casitas Place—Widen the northbound approach to provide a left-turn lane and a right-turn lane
- Puerto Place—Widen the northbound approach to provide a left-turn lane and a right-turn lane; add an additional westbound left turn lane

To determine whether the installation of traffic signals at these intersections is justified, we completed peak hour signal warrant analyses for both intersections using the thresholds established in the *California Manual on Uniform Traffic Control Devices*. This memorandum summarizes our findings.

EXISTING SIGNAL WARRANT ANALYSIS

Traffic counts were collected at both intersections on Saturday June 9, 2012, between the hours of 11:30 AM and 3:30 PM. We selected the peak hour for each intersection and evaluated it to determine whether the signal warrant would be met. As shown in Tables 1 and 2, the intersection of DPHD and Casitas Place does not meet signal warrants based on the existing peak hour traffic volumes, but the intersection of DPHD and Puerto Place does meet the signal warrant.

FUTURE SIGNAL WARRANT ANALYSIS

Because the intersection of DPHD and Puerto Place meets the peak hour signal warrant based on current traffic volumes, we did not prepare a future warrant analysis for that intersection.

To evaluate whether the intersection of DPHD and Casitas Place will meet signal warrants in the future, we obtained estimated weekend peak hour traffic volumes for the intersection (including project trips associated with the Dana Point Harbor Revitalization Plan, as well as general background traffic growth) from the *Dana Point Harbor Revitalization Project Program Environmental Impact Report (EIR)* issued in 2006. We tested the 2030 Future with Project (Harborwide Build-out) volumes, and determined they are sufficient to meet the peak hour signal warrant.

The EIR includes a background traffic growth factor of approximately 1% per year, applied to intersection traffic volumes. Because there are fewer sites with development potential west of the Harbor area (accessed off DPHD) compared with other areas of the City, a 1% annual growth rate could likely overstate future baseline traffic volumes on DPHD. We prepared comparisons between the traffic counts we collected in June 2012, to those collected for the EIR in 2005. Our comparisons showed that traffic volumes have not increased beyond 2005 levels in the seven intervening years since 2005 (influenced in part by the economic recession). Reflecting this limited growth, we cut the background growth factor in half (0.5% per year rather than 1% per year used in the EIR), while keeping the estimated project trips static (assuming full build-out of the Harbor Revitalization Plan) in order to develop a more conservative signal warrant analysis. As shown in Table 3, the peak hour signal warrant will be met assuming this more modest growth in background traffic.

ANALYSIS SUMMARY

The intersection of DPHD and Puerto Place currently meets the peak hour signal warrant during the weekend afternoon peak hour.

The intersection of DPHD and Casitas Place does not currently meet the peak hour warrant, but with the addition of project traffic generated by the Dana Point Harbor Revitalization Plan, combined with a modest increase in general background traffic on DPHD, the peak hour signal warrant will be met. If the higher assessments of background traffic growth from the EIR hold true, the signal warrant will be met sooner. Regardless, after full build-out of the project and the addition of modest background traffic growth, the peak hour signal warrant at DPHD and Casitas Place will be met.

TABLE 1
PEAK HOUR VEHICULAR VOLUME TRAFFIC SIGNAL WARRANT (MUTCD Warrant 3)

Major Street:	Dana Point Harbor Drive		
Minor Street:	Casitas Place		
Scenario:	Existing (2012 Traffic Volumes)		
Urban/Rural:	u (U=urban, R=rural [a])		

SOURCE: CALIFORNIA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Number of Lanes on Each Approach			
Major Street:	2		
Minor Street:	1		
Vehicles Per Hour (Peak Hour)			
Major Street (Approach 1-Westbound):	434	Major Street Left Turn (see note [b]):	56
Major Street (Approach 2-Eastbound):	461	Minor Street (Higher Volume App.):	80
Major Street Total (Both Approaches):	895	Minor Street Total:	136
Minimum Volume on Major Street to Satisfy Warrant (see note):	510	Minimum Volume on Minor Street to Satisfy Warrant (see note):	320
PEAK HOUR VOLUME WARRANT SATISFIED?	**NO**		

Notes:

a. May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000.
b. Heavier left-turn movement from the major street may be included with minor street volume if a separate signal phase is proposed for left-turn movements.

TABLE 2
PEAK HOUR VEHICULAR VOLUME TRAFFIC SIGNAL WARRANT (MUTCD Warrant 3)

Major Street:	Dana Point Harbor Drive
Minor Street:	Puerto Place
Scenario:	Existing (2012 Traffic Volumes)
Urban/Rural:	u (U=urban, R=rural [a])

SOURCE: CALIFORNIA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Number of Lanes on Each Approach			
Major Street:	2		
Minor Street:	1		
Vehicles Per Hour (Peak Hour)			
Major Street (Approach 1-Westbound):	632	Major Street Left Turn (see note [b]):	90
Major Street (Approach 2-Eastbound):	620	Minor Street (Higher Volume App.):	124
Major Street Total (Both Approaches):	1,252	Minor Street Total:	214
Minimum Volume on Major Street to Satisfy Warrant (see note):	510	Minimum Volume on Minor Street to Satisfy Warrant (see note):	200
PEAK HOUR VOLUME WARRANT SATISFIED?	**YES**		

Notes:

a. May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000.
b. Heavier left-turn movement from the major street may be included with minor street volume if a separate signal phase is proposed for left-turn movements.

TABLE 3
PEAK HOUR VEHICULAR VOLUME TRAFFIC SIGNAL WARRANT (MUTCD Warrant 3)

Major Street:	Dana Point Harbor Drive
Minor Street:	Casitas Place
Scenario:	With Project and 0.5%/yr Background Growth
Urban/Rural:	u (U=urban, R=rural [a])

SOURCE: CALIFORNIA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, FIGURE 4C-3

Number of Lanes on Each Approach			
Major Street:	2		
Minor Street:	1		
Vehicles Per Hour (Peak Hour)			
Major Street (Approach 1-Westbound):	583	Major Street Left Turn (see note [b]):	141
Major Street (Approach 2-Eastbound):	508	Minor Street (Higher Volume App.):	114
Major Street Total (Both Approaches):	1,091	Minor Street Total:	255
Minimum Volume on Major Street to Satisfy Warrant (see note):	510	Minimum Volume on Minor Street to Satisfy Warrant (see note):	250
PEAK HOUR VOLUME WARRANT SATISFIED?	**YES**		

Notes:

a. May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000.
b. Heavier left-turn movement from the major street may be included with minor street volume if a separate signal phase is proposed for left-turn movements.

Appendix J
Traffic and Parking Study

DANA POINT HARBOR REVITALIZATION
TRAFFIC & PARKING ANALYSIS

City of Dana Point

Prepared for

COUNTY OF ORANGE
DANA POINT HARBOR DEPARTMENT

Prepared by

RBF CONSULTING

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JN 10-102529