Technical Memorandum

October 02, 2024

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Project Name	Redding Riverfront Specific Plan (RRSP)		
Subject	Existing Conditions and Opportunities Framework: Mobility Assessment		

1. Mobility Assessment

This memo provides an assessment of existing multi-modal access and circulation, and identifies mobility opportunities and constraints, relevant to the Redding Riverfront Specific Plan (RRSP) study area. Existing levels of multi-modal access and connectivity are described based on a review of existing conditions, background information and available data. Key barriers to multi-modal circulation and access are summarized.

1.1 Existing Mobility & Access

How people move around is an important indicator of the success of a transportation system. Redding developed as the most important California hub north of Sacramento. Its locational advantages and the natural transportation routes into surrounding counties have made Redding the commercial center for northern California, and today it serves as regional headquarters for a host of businesses and government agencies. The Shasta *Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS) developed by the Shasta Regional Transportation Agency (SRTA) notes that the Redding urban area has a low population density (2 persons per acre) relative to comparable cities outside of Shasta County (for example: Chico has a population density of 6 persons per acre). Given the low-density development patterns, most trips in Redding are made by motor vehicle, with relatively low rates of travel by other modes such as transit, walking or bicycling as compared to other cities. In addition, there

are existing gaps in the sidewalk and bikeway networks within Redding. Nonetheless, Redding residents generate lower rates of vehicle miles traveled (VMT) per capita than other areas of Shasta County, given greater proximity to jobs, commercial areas, schools and services including public transit as compared to other parts of the county.

The City of Redding classifies City streets as arterials, collectors and local streets as defined by *the Redding 2045 General Plan* (RGP) Transportation Element. In addition, Caltrans facilities within Redding include two additional classifications: freeways and expressways. **Figure 1** illustrates the street network serving the RRSP plan area based on the adopted RGP Circulation Plan map. As shown on Figure 1: the RGP envisions a future collector street along the western border of the study area that would include a future river crossing. This future collector street and river crossing is not currently funded, but has been included in the RGP as a desired street connection since at least the late 1990s.

Figure 2 illustrates the pedestrian network within and near the study area, including planned trails identified in the Redding *2045 General Plan (2024)* and *Parks Master Plan* (2018) that would serve the southern riverfront and enhance direct access to the river. As shown, there are gaps on key portions of the sidewalk network along Park Marina Drive. In addition, pedestrian travel to/from the Northern Riverfront area is limited to just a few crossing locations, due to barriers to crossing Highway 44, Redding Memorial Park and the Sacramento River.

Figure 3.1 shows the existing bikeways serving the plan area. **Figure 3.2** shows future bikeway network identified in the City of Redding's adopted *Active Transportation Plan* (ATP). To promote greater connectivity within and to/from Redding, the ATP was developed in conjunction with the *GoShasta Regional Active Transportation Plan* developed by the SRTA in 2018. Together, both plans support a healthier, more livable, and economically competitive region. The future bikeways are not yet funded, and the ultimate configuration of each future bikeway is not yet confirmed. Within the study area, the ATP identifies several future bikeway improvements including:

- Provision of a multi-use bicycling and walking path along the east side of Park Marina Drive, in addition to upgrading the existing on-street bike lanes on Park Marina Drive to include buffered treatments;
- Extension of the existing multi-use path from the Northern Riverfront area west along Highway 44, through the Redding Memorial Park, to Continental Street; and
- Provision of "bicycle boulevard" treatments to prioritize bicycle travel on South Street and Placer Street that would improve bicycling connections between downtown Redding and the study area.

1.1.1 Key Streets

Major thoroughfares providing access to the study area include Highway 44 and Cypress Avenue. Several collector streets provide access to the study area from Downtown Redding including South Street, Placer Street and Continental Street.

Sundial Bridge Drive is a local street that provides access to the Northern Riverfront from Highway 44 and Park Marina Drive, and internal circulation within the Northern Riverfront area and parking areas via a loop configuration. Sidewalks are generally limited to just one side of Sundial Bridge Drive, along the outer perimeter of the loop. Excess traffic capacity is provided on Sundial Bridge, with up to four lanes (two per direction) on key segments to accommodate special events at the auditorium or rodeo grounds. Bicycle lanes are provided on just a portion of Sundial Bridge Drive.

Park Marina Drive is the key arterial street serving the study area, with four automobile lanes (two per direction) on most segments, narrowing to three lanes (one per direction with a two-way left-turn lane) on southern segments near Cypress Avenue. Bicycle lanes are provided in both directions, but sidewalks are limited with gaps on key segments. Figures 4.1 to 4.3 present existing cross-section drawings that show existing street dimensions on segments of Park Marina Drive. **Figure 4.4** shows future redesign concepts that were prepared during preparation of the draft *Park Marina Drive Corridor Plan* (PMCP) in 2020.

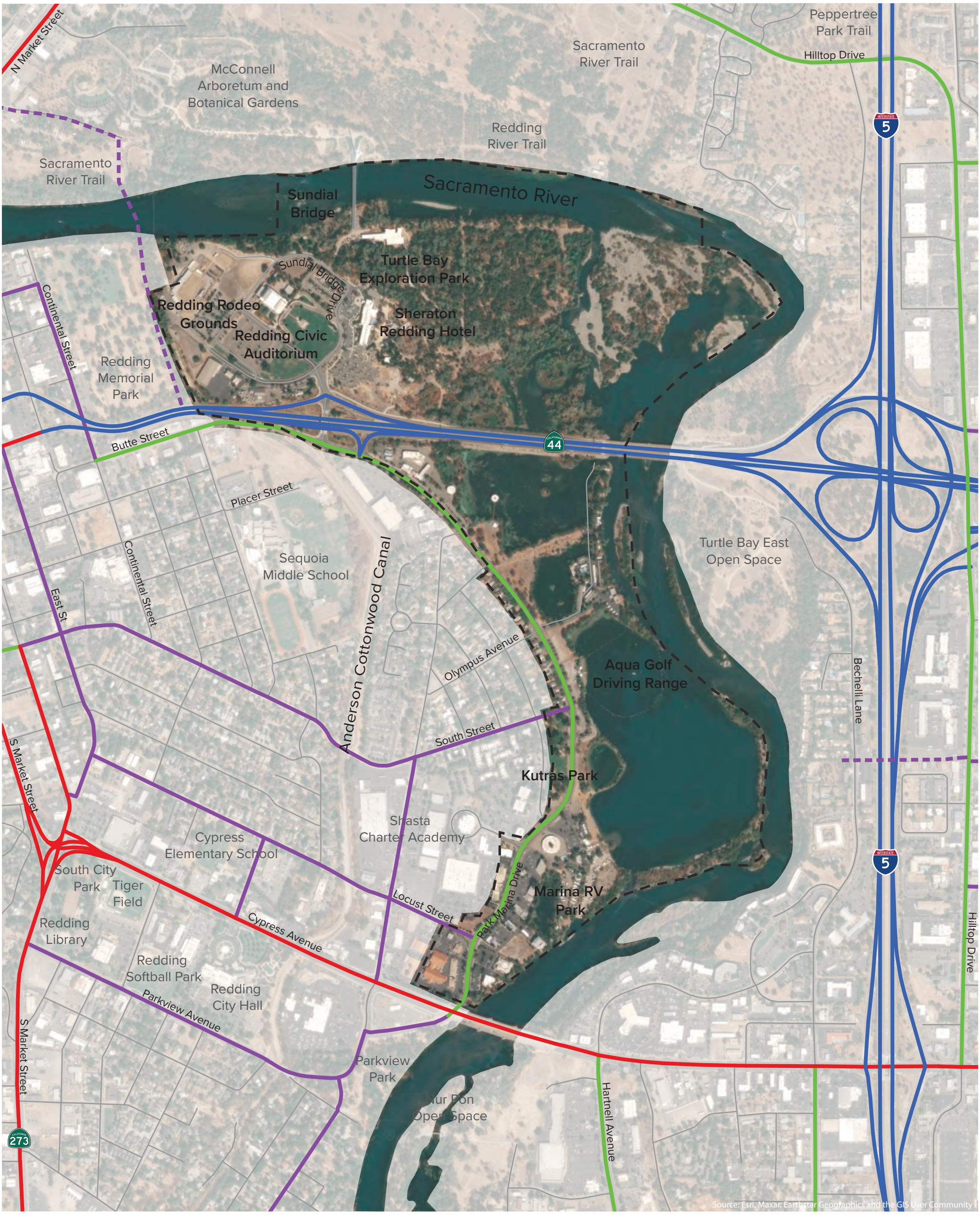

Figure 1. Street Network

Legend

- Study Area Boundary
- Proposed Collector Roadway
- Existing Freeway
- Existing Principal Arterial Roadway
- Existing Minor Arterial Roadway
- Existing Collector Roadway
- Existing Local Roadway

1 inch = 800 feet

Figure 2. Pedestrian Network

Legend

- Study Area Boundary
- Existing Shared Use Path
- Existing Sidewalk
- Existing Trails
- Planned Shared Use Path
- Planned Sidewalk Improvements
- Planned Trails

1 inch = 800 feet

Figure 3.1 Existing Bikeway Network

Legend

- Study Area Boundary
- Existing Shared Use Path
- Existing Standard Bike Lane
- Existing Signed Shared Roadway

1 inch = 800 feet

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Existing 3.2 Planned Bikeway Network

Legend

Study Area Boundary

Existing Bikeways
- Shared Use Path
- Standard Bike Lane
- Signed Shared Roadway

Planned Bikeways
- Shared Use Path
- Separated Bikeway
- Separated Bikeway or Bufferd Bike Lane
- Standard Bike Lane
- Bike Boulevard
- Signed Shared Roadway

1 inch = 800 feet

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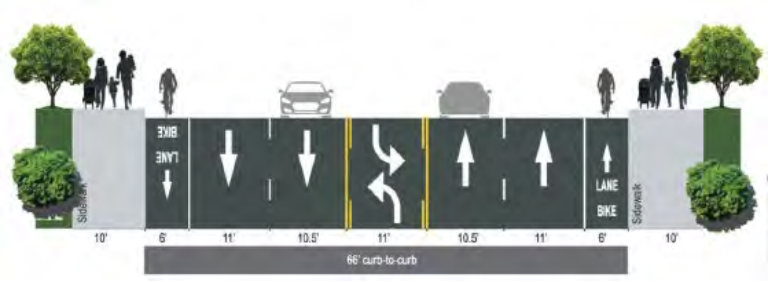
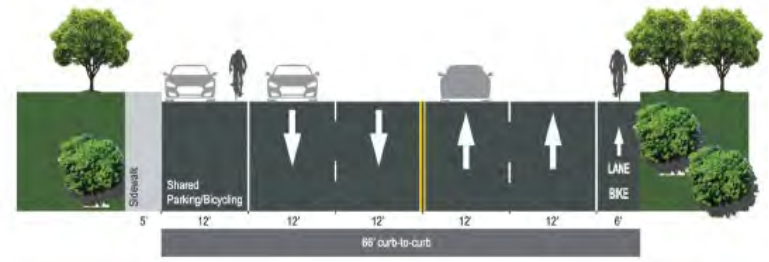
Figure 4.1 Park Marina Drive near Athens Avenue (Existing)



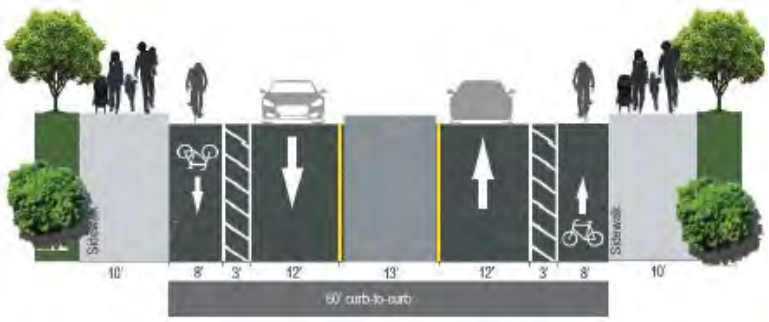
Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

Figure 4.2 Park Marina Drive near South Street (Existing)



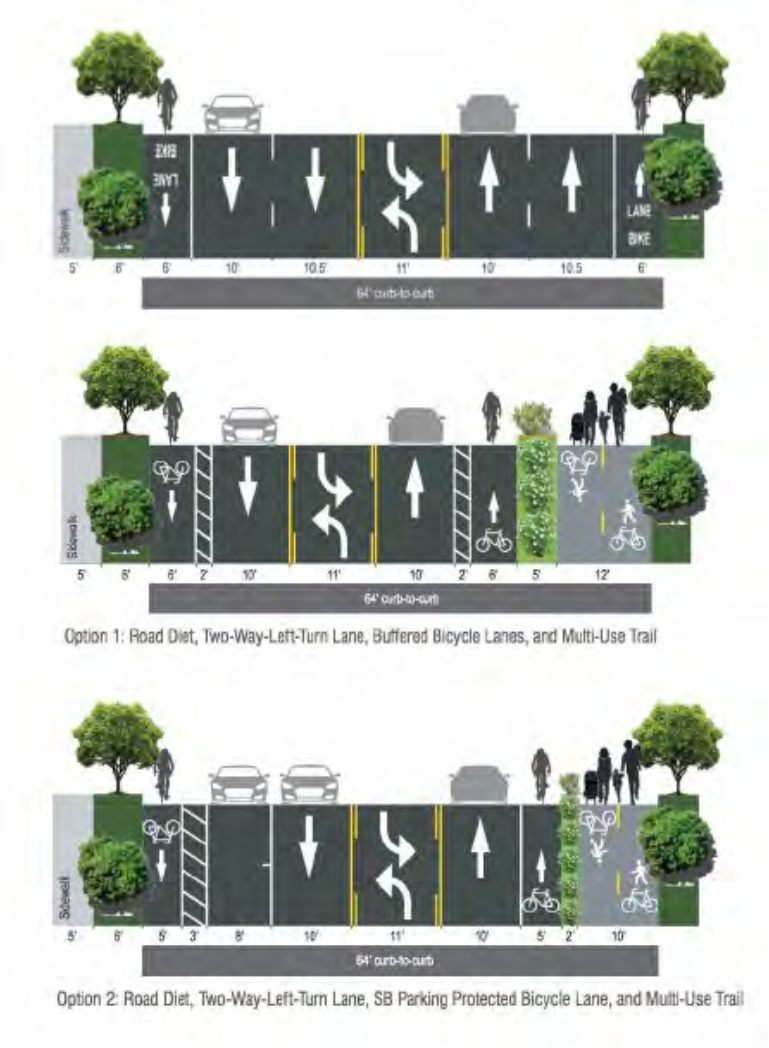
Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

Figure 4.3 Park Marina Drive near Cypress Avenue (Existing)



Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

Figure 4.4 Future Proposed Concepts (Park Marina Drive Corridor Plan) near Athens Avenue



Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

1.1.2 Traffic Conditions

Table 1 shows the typical existing daily traffic volumes and capacities for key thoroughfares within and near the study area. The volume/capacity percentages are based on the typical peak-hour share of daily volumes (roughly 10 percent of daily volumes occur during the peak hour). As shown, the existing roadway network provides significant excess traffic capacity, with traffic volumes on most street segments that are less than 50 percent of capacity. This is particularly true for street segments within the study area including Butte Street, Continental Street, Locus Street and South Street where traffic volumes range from just 14 percent to 47 percent of capacity. Existing traffic volumes are not available for Sundial Bridge Drive, but based on frequent observations: significant excess capacity is provided on Sundial Bridge Drive as well.

Table 1 Traffic Volumes & Capacities

Street / route	Segment Location	Automobile Lanes	Estimated Capacity (Daily Vehicles)	Volume (Daily Vehicles)[1]	Volume/ Capacity (V/C)
Park Marina Drive	E of SR-44 Ramps / W of Village Dr	4	26,000	**12,100**	*47%*
	S of Village Dr / N of South St		26,000	**9,600**	*37%*
	S of Park Marina Circle	3 (including two-way left-turn lane)	20,000	**7,700**	*39%*
	N of Cypress Ave		20,000	**5,000**	*25%*
	S of Cypress Ave / N of Parkview Dr		20,000	**6,100**	*31%*
Butte Street	W of Sequoia St / E of Continental ST	2	13,000	**5,700**	*44%*
Continental Street	N of Butte St / S of Shasta St	2	13,000	**4,100**	*32%*
	S of Placer St / N of Sacramento St		13,000	**3,000**	*23%*
Locust Street	W of Park Marina Dr / E of Athens Ave	3 (including left-turn lane)	20,000	**3,300**	*17%*
South Street	E of Canal Dr / W of Athens Ave	2	13,000	**4,100**	*32%*
	E of Athens Ave		13,000	**2,400**	*18%*
	E of Washington Ave / W of Park Marina Dr		13,000	**1,800**	*14%*
Cypress Avenue	E of Civic Center Dr / W of Athens Ave	6 (plus left-turn pockets at intersections)	55,000	**21,100**	*38%*
	Cypress Bridge (E of Athens Ave / W of Hartnell Ave)		55,000	**27,900**	*51%*
	E of Hartnell Ave		55,000	**19,000**	*35%*
	E of I-5 / W of Hilltop Dr		55,000	**31,200**	*57%*
Hilltop Drive	N of Cypress Ave / S of Commerce Ave	4 (plus left-turn pockets at intersections)	35,000	**12,100**	*35%*
Park View Avenue	S of Park Marina Dr / N of Freebridge St	3 (including left-turn lane)	20,000	**10,600**	*53%*
Highway 44 (SR-44)	W of I-5 / E of Butte St	4 to 6	110,000	**56,000**	*51%*
	E of I-5 / W of Hilltop Dr		110,000	**48,000**	*44%*
	E of Hilltop Dr / W of Victor Ave		110,000	**37,000**	*34%*
Interstate 5 (I-5) freeway	N of SR-44 / S of SR-299	6	132,000	**60,000**	*45%*
	S of SR-44 / N of Cypress Ave		132,000	**69,000**	*52%*
	S of Cypress Ave / N of Churn Cr Rd		132,000	**61,000**	*46%*

[1] City of Redding and Caltrans daily count data (2006 to 2021).

Traffic Growth Patterns: Traffic volumes on streets in central Redding, including Cypress Avenue and Park Marina Drive, have remained relatively flat, with little or no growth since the 1990s. Instead, traffic growth in central Redding has primarily been limited to the freeways that connect central Redding with surrounding areas.

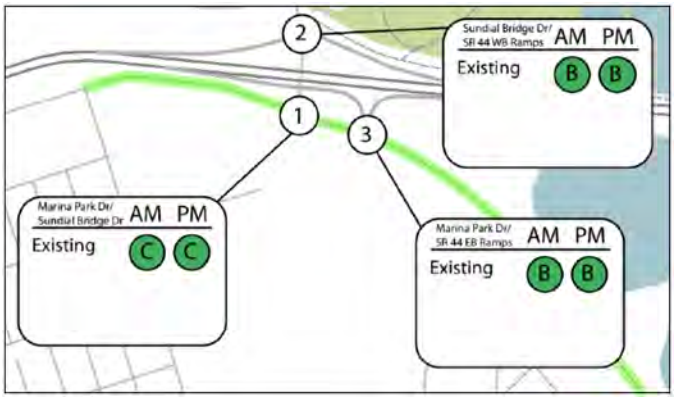
Traffic Operations: Traffic operations are frequently evaluated based on a metric referred to as level of service (LOS) that is typically based on weekday peak-hour operations at intersections. In addition, the City of Redding also evaluates peak-hour LOS on segments. Each LOS is assigned a letter, ranging from "A" to "F". City of Redding standards specify that LOS "C" is acceptable for most arterial streets and their intersections, except that LOS "D" is considered acceptable on downtown area arterials (including Cypress Avenue) and on freeway segments.

Figure 4.5 shows the existing peak hour intersection level of service at three key intersections within the study area, based on a traffic analysis conducted during preparation of the *Draft Park Marina Drive Corridor Plan (PMCP)* in 2020: (1) Park Marina Drive & Sundial Bridge Drive; (2) Highway 44 Westbound On/Off Ramps & Sundial Bridge Drive; and (3) Highway 44 Westbound On/Off Ramps & Park Marina Drive. As shown, each of the three intersections operates at LOS B or C during both the a.m. and p.m. peak hours, indicating acceptable operations.

The primary traffic constraint within the study area is limited to peak-period queues on northbound Park Marina Drive approaching the signalized intersections with Sundial Bridge Drive and the Highway 44 On/Off Ramps (intersections #1 and #3 below). Despite those queues, intersection operations remain acceptable based on LOS. At times, the eastbound off-ramp to Park Marina Drive backs up onto the highway, and during major events, the westbound off-ramp approaching Sundial Bridge Drive sometimes backs up onto the highway as well.

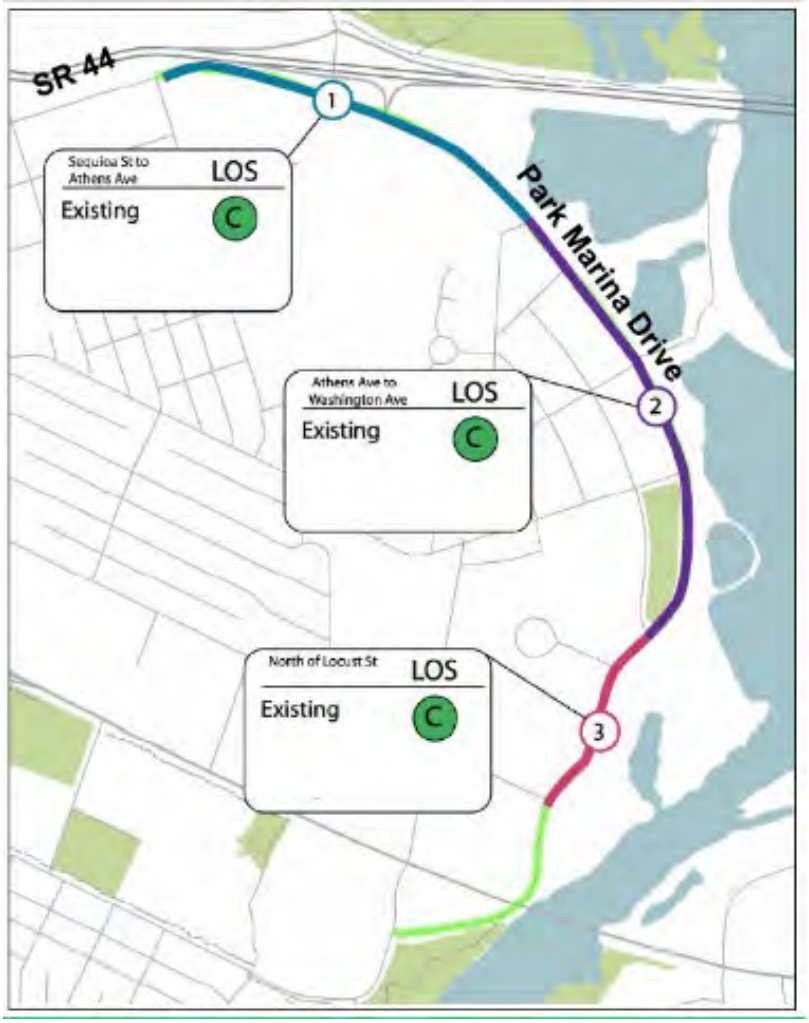
The Draft PMCP also evaluated segment LOS based on the City of Redding methodology and found that each segment of Park Marina Drive operates acceptably at LOS C or better.

Figure 4.5 Peak Hour Intersection Level of Service (LOS)



Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

Figure 4.6 Peak Hour Segment Level of Service (LOS)



Source: *Park Marina Drive Corridor Plan Visioning Workshop,* City of Redding, November 18, 2020.

1.1.3 Public Transit Service

Public transportation in the Redding area is provided by the Redding Area Bus Authority (RABA) that provides both fixed-route and demand-response transit services. Most RABA riders are highly transit dependent and commute by public transit. The RABA Intermodal Transit Center, also known as the RABA Downtown Transit Center, is located in Downtown Redding and is the main transit hub in Shasta County, serving as a point of connection to RABA and other interregional transportation services (e.g., Amtrak Rail, Capitol Corridor Bus, Greyhound, Sage Stage, Susanville Indian Rancheria, and Trinity Transit).

RABA fixed route service consists of ten local routes and three express routes. The local routes operate 12 or 13 service hours per weekday, Monday - Friday, starting at either 6:00, 6:30, or 7:00 am. Saturday service commences three hours later than the Monday - Friday start time, but ends at the same times. There is no Sunday service.

Figure 6 illustrates the fixed-route RABA bus routes serving the study area:

- The Route 18 (Crosstown) bus operates between the Downtown Transit Center and the Canby Transit Center east of the river near Hilltop Drive, with a stop within the study area at Turtle Bay Exploration Park. Weekday headways range from one to two hours. At the Canby Transit Center: Route 18 becomes Route 15 before continuing south to/from Redding Airport.
- The Route 5 bus operates with hourly weekday headways between the Downtown Transit Center and neighborhoods east of the river via Hartnell Avenue. Route 5 serves the study area with stops on East Street (near Butte Street), Placer Street (near Continental Street), Sequoia Street (near Sacramento Street), and South Street (near Athens Street).

1.1.4 Safety

Figure 7 illustrates reported collisions for the five-year period from 2017 to 2021. The inclusion of data from 2017 to 2019 thus includes typical conditions prior to the COVID pandemic that began in 2020. Most of the reported collisions in the study area occurred on Highway 44 or Park Marina Drive. Excess capacity may play a contributing role by resulting in higher traffic speeds on Park Marina Drive.

Figure 6. Existing Transit

Legend

- Study Area Boundary
- Transit Stops

Transit Routes

- Anderson Commuter
- Crosstown Express
- Route 11
- Route 14
- Route 2E
- Route 3
- Route 4
- Route 5
- Route 7
- School Express Afternoon
- School Express Morning

1 inch = 800 feet

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Figure 7. Collision Severity (2017 - 2021, TIMS)

Legend

- Study Area Boundary
- Collisions by Severity
  - Fatal Injury
  - Severe Injury
  - Other Visible Injury
  - Complaint of Pain Injury

1 inch = 800 feet

1.2 Mobility Opportunities & Issues

The following is a summary of key constraints to multi-modal circulation and access, and key opportunities for enhancing multi-modal travel and access in the study area.

1.2.1 Constraints to Access and Circulation

Highway 44

- Highway 44 creates a significant physical barrier to connectivity between the northern and southern riverfronts, particularly for cyclists and pedestrians.
- Lengthy vehicular queues often develop on northbound Park Marina Drive during PM peak periods as vehicles work through the signal to enter Highway 44 eastbound.
- The eastbound off-ramp to Park Marina backs up onto the highway during peak travel periods, and during major events the westbound off-ramp backs up onto the highway as well.

Lack of Secondary Access to the Northern Riverfront

- Potential secondary access for emergency vehicles and bicyclists/pedestrians through the private cemetery to the west has been proposed, which if feasible would also allow access to Downtown parking during special events.
- A breakaway fence exists along Highway 44 between Sundial Drive and Continental Street that is intended to allow for emergency evacuation.
- The Redding General Plan envisions a potential future multi-modal bridge connection across the river to the north (west of the Sundial Bridge) that, if pursued and funded, could connect to North Market Street.

Park Marina Drive

- The current four-lane configuration on Park Marina Drive provides excess traffic capacity on most segments, contributing to higher than desired traffic speeds. It would be desirable to have lower and consistent speeds.
- Reconfiguring Park Marina Drive to one through traffic lane per direction can adequately serve existing and future traffic volumes with the exception of the signalized intersections with the Highway 44 On/Off Ramps and Sundial Bridge Drive.
- There is a lack of adequate provisions for bicycle and pedestrian travel, and lighting for bicycles and pedestrians is poor. Redding's Active Transportation Plan recommends creating a multi-use path on the river side, plus on-street bicycle lanes.
- Single-family residential homes front onto Park Marina Drive between Athens and South Streets, creating access conflicts between driveways and street traffic.
- Access to the Sacramento River from Park Marina Drive is extremely limited.

1.2.2 Key Opportunities

Northern Riverfront: Potential mobility concepts for the Northern Riverfront could place an emphasis on identifying feasible cost-effective options for secondary public street access, and assessing the need for such access based on the intensity and range of uses envisioned for the northern riverfront. There are a range of possible options for secondary access that could include:

- Direct secondary access to northern downtown via local street or public trail/emergency vehicle and/or transit access to the west via the Redding Memorial Park.
- Secondary access via an additional river crossing as has long been proposed by the Redding General Plan.
- Secondary access via modifications to Highway 44 to allow direct access via additional on/off ramps or by converting this segment of Highway 44 from a freeway to an arterial street.
- Secondary access via other means such as water taxis or aerial gondolas.

Park Marina Drive: The excess capacity on Park Marina Drive, and other streets in the area, creates opportunities to enhance multi-modal circulation by allocating existing roadway space to serve other modes. Recent plans envisioned that a "road diet" could reconfigure Park Marina Drive to one lane per direction, with a center turn-lane, bicycle lanes, and an adjacent bicycling/walking path on one side. Such improvements would support citywide goals to provide "low-stress" bicycling and walking routes. In addition, such facilities on Park Marina Drive would indirectly enhance access to the Northern Riverfront. There is a need for a direct walking and bicycling connection between the Northern and Southern Riverfronts.

Shared Parking and Parking Access: The mix of land uses in the study area creates opportunities for adjacent land uses to share parking, thus accommodating typical daily peak parking demand with fewer total parking spaces. In addition: improving access between the Northern Riverfront and Park Marina Drive, and between the Northern Riverfront and portions of downtown Redding just west of the Redding Memorial Park, will increase the access to available parking for special events in the Northern Riverfront.