## 4.12.1 Introduction

This section describes the existing transportation setting and analyzes the potential impacts of the proposed Computational Research and Theory Facility (CRT) Project on transportation and traffic. Information presented in the discussion and analysis below is based on the Lawrence Berkeley National Laboratory (LBNL) 2006 Long-Range Development Plan (LRDP) EIR, and other documents associated with specific LBNL projects.

In response to the Notice of Preparation circulated for this EIR, some commenters expressed concern that roadways in Strawberry Canyon, located near the project site, are already overburdened with traffic and would be more hazardous with the addition of project traffic and large construction trucks from the various projects, especially during an emergency. Other commenters expressed concern regarding the cumulative construction traffic from numerous projects proposed in this portion of the City of Berkeley. The cumulative impacts from construction and operations traffic are evaluated in this section.

## 4.12.2 Environmental Setting

This section describes the existing transportation and traffic conditions in the vicinity of the CRT project, including the roadway system, weekday peak hour intersection operations, parking, transit service, and bicycle and pedestrian circulation.

### Existing Roadway Network

The CRT project would be located in the western part of the LBNL site in Berkeley, California, near the Blackberry Canyon Gate. Access to the proposed project would be provided through the existing LBNL gates. Figure 4.12-1, Study Intersection Locations, Lane Configurations and Traffic Control, shows the LBNL site, the surrounding roadway system, and intersections analyzed as part of this analysis. The regional and local roadways serving the project site, as well as the internal circulation within the site are described below.

#### Regional Roadways

Interstate 80 (I-80) connects the San Francisco Bay Area with the Sacramento region and continues east. Within Berkeley, I-80 is oriented in a north-south direction along the western edge of the City and provides five lanes of travel in each direction. Access from I-80 to the City of Berkeley is provided through interchanges at Ashby Avenue, University Avenue, and Gilman Street. I-80 and the nearby I-80/

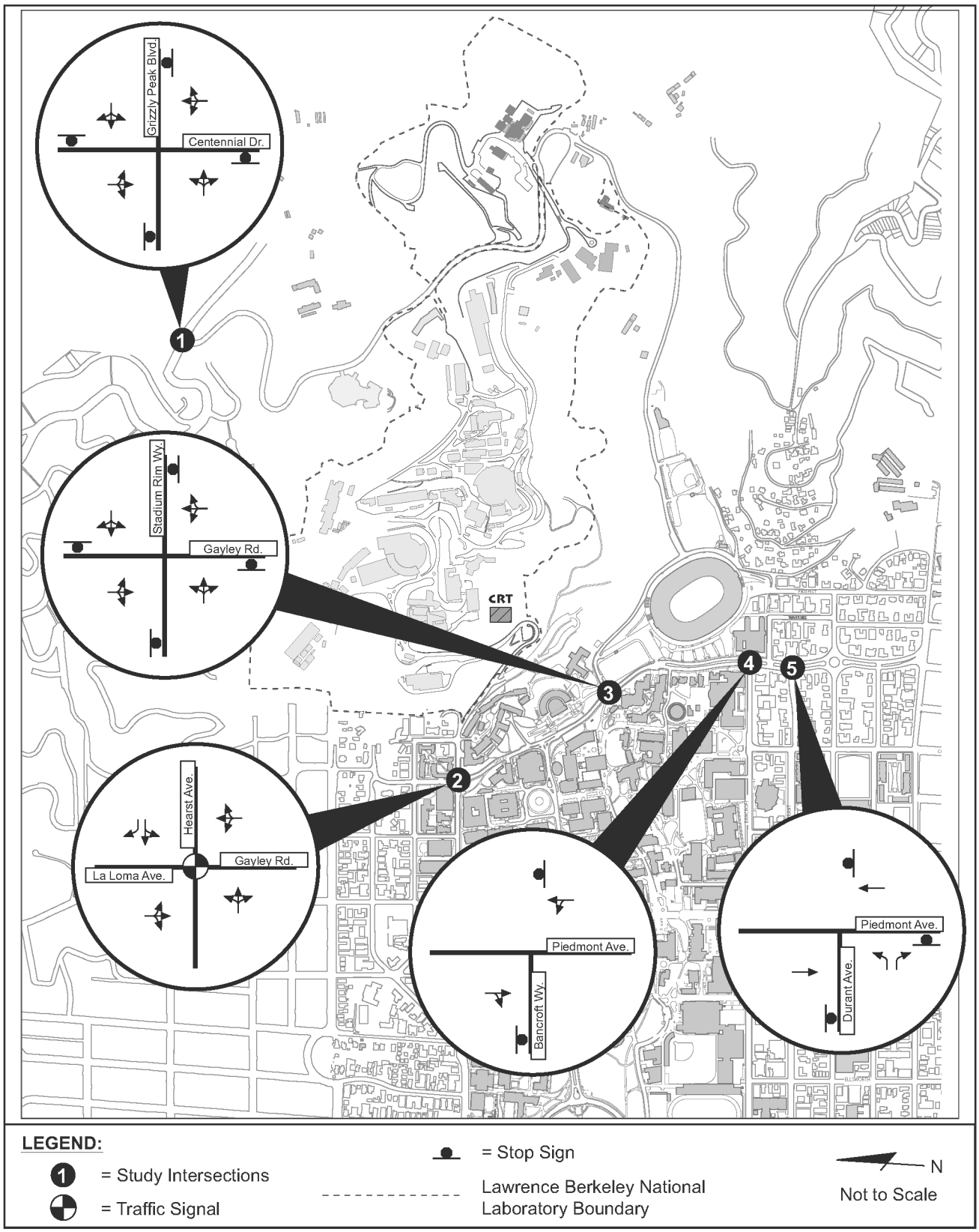
Interstate 580 (I-580) interchange operate at capacity during the peak commute hours. I-80 between Emeryville and Albany is also I-580.

State Route 24 (SR-24) links Interstate 680 (I-680) in Contra Costa County to I-80/I-580 and Interstate 980 (I-980). SR-24 provides four travel lanes in each direction near Berkeley. This is the primary route used by Berkeley-bound travelers from Contra Costa County. The primary access routes from SR-24 to the LBNL area are State Route 13 (SR-13, or Ashby Avenue) to the Belrose-Derby-Warring-Piedmont corridor, and Telegraph Avenue.

State Route 13/Ashby Avenue (SR-13) connects I-580 in east Oakland to I-80, with a partial access interchange at SR-24. In Berkeley, SR-13 is Tunnel Road/Ashby Avenue, a generally east-west two-lane arterial through the City. Ashby Avenue intersects the major north-south roadways in Berkeley, providing several routes toward LBNL and UC Berkeley campus. It is about 1.25 miles south of the Berkeley Lab. During the peak commute hours, on-street parking restrictions on the north side of Ashby Avenue in the morning and the south side in the evening provide an additional travel lane for commuters.

University Avenue provides one of Berkeley's three connections to I-80 to the west (along with Gilman Street and Ashby Avenue). It is an east-west major arterial that extends from the Berkeley Marina and I-80 in the west to the UC Berkeley campus in the east. The divided roadway provides a center median and left-turn pockets at major intersections. Left turns from University Avenue onto cross streets generally are not served by a separate left-turn signal. University Avenue is a four-lane arterial, with parallel parking provided on both sides of the roadway.

Belrose-Derby-Warring-Piedmont Corridor is a heavily traveled route connecting SR-24 with Berkeley's Southside area (i.e., the area just south of the UC Berkeley campus), UC Berkeley, and LBNL. With a single travel lane in each direction, the route is at or near capacity for several hours during the morning and evening commute periods. Using roadway signs and notices in official mailings, the City of Berkeley and UC Berkeley have been encouraging travelers to use other routes, like Telegraph Avenue.




**SOURCE:** Fehr & Peers - August 2007

FIGURE **4.12-1**

Study Intersection Locations, Lane Configurations and Traffic Control

924-02•11/07

Hearst Avenue is a two- to four-lane, east-west street that extends between west Berkeley and LBNL's main entrance at Cyclotron Road, which diverges from Hearst Avenue just east of Gayley Road along the northern boundary of the UC Berkeley campus. Between Gayley Road/La Loma Avenue and LeRoy Avenue, Hearst Avenue provides one travel lane in each direction, with parallel parking on both sides. During the peak commute hours, on-street parking restrictions on the south side of the street in the morning and the north side in the evening provide an additional travel lane. Hearst Avenue is designated as a bicycle lane (Class II) west of Shattuck Avenue and a bicycle route (Class III) east of Shattuck Avenue.

Local Roadways

Bancroft Way is an east-west roadway extending from downtown Berkeley through the Southside area, along the southern boundary of the UC Berkeley campus. The roadway is one-way westbound, with two travel lanes from Piedmont Avenue to Telegraph Avenue and three travel lanes from Telegraph Avenue to the Bancroft Way/Oxford Street intersection.

Durant Avenue is a major east-west roadway extending from downtown Berkeley through the Southside area. East of Shattuck Avenue, the roadway is one-way eastbound with three travel lanes. Durant Avenue serves as a one-way couplet with Bancroft Way for east-west travel on the south side of the UC Berkeley campus.

La Loma Avenue/Gayley Road is a two-lane, north-south street that extends from Hearst Avenue through north Berkeley. South of Hearst Avenue, La Loma Avenue becomes Gayley Road and borders the east side of the UC Berkeley campus. Parking is allowed on both sides of the street north of Hearst Avenue, but is not allowed south of Hearst Avenue until the vicinity of Memorial Stadium, where Gayley Road becomes Piedmont Avenue.

Stadium Rim Way wraps around the east and north sides of Memorial Stadium and connects the west end of Panoramic Way to Gayley Road near the Greek Theater. It provides access from Gayley Road and Prospect Street to the east side of Memorial Stadium and surrounding parking facilities. Stadium Rim Way also intersects with Centennial Drive, indirectly providing access to the Lawrence Hall of Science (LHS), the Botanical Garden, the Strawberry Canyon Recreational Area, and the LBNL gates on Centennial Drive. On-street parking on Stadium Rim Way is controlled by UC Berkeley. Sidewalks and poles separate pedestrian and vehicle traffic. Near the south end of Stadium Rim Way, the roadway narrows to one lane of traffic in both directions south of Canyon Road.

Centennial Drive borders the east and south perimeters of LBNL. It connects Grizzly Peak Boulevard and Stadium Rim Way and provides access to the LBNL hill site through the Strawberry Canyon and

Grizzly Peak gates. Centennial Drive also provides access to LHS, the Botanical Garden, Strawberry Canyon Recreational Area, and Tilden Regional Park. In the vicinity of LBNL, the speed limit is 25 miles per hour. Several sections of the roadway have steep grades and sharp curves, where the speed limit is reduced to 15 miles per hour.

Grizzly Peak Boulevard is a two-lane, two-way roadway located in the hills of Berkeley, connecting Skyline Boulevard in the Sibley Volcanic Regional Preserve in the south, to Spruce Street near the Summit Reservoir in north Berkeley. The narrow and curvy roadway does not provide any pedestrian or bicyclist amenities south of Centennial Drive. The roadway provides access to parking facilities and trails in Tilden Regional Park and to SR-24.

### Internal Circulation

The LBNL hill site is served by an east-west traffic circulation system that generally conforms to the contours of the site's topography. Employees and visitors access the site through three gates. The Blackberry Canyon Gate, on the west of the site, is accessed via Cyclotron Road and connects to Hearst Avenue. The Strawberry Canyon and Grizzly Peak gates, on the east of the site, are accessed via Centennial Drive. The three gates are attended by security personnel during business hours and accessible by a card access system at other times. The site's main vehicle routes are two-way, except for three sections where roadside parking reduces the width, permitting only one-way travel. The one-way portions are confusing for those unfamiliar with the site, and cause additional difficulties and expense for construction projects.

## Traffic Operations Analysis

Intersection operations analysis during typical weekday AM and PM peak hours at the following five intersections were evaluated:

- Centennial Drive/Grizzly Peak Boulevard
- Hearst Avenue/Gayley Road/La Loma Avenue
- Stadium Rim Way/Gayley Road
- Bancroft Way/Piedmont Avenue
- Durant Avenue/Piedmont Avenue

Figure 4.12-1 shows the location of the study intersections and their configuration and control.

### Intersection Operation Analysis Method

Transportation engineers and planners commonly use a grading system called Level of Service (LOS) to measure and describe the operation of a local roadway network. The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of traffic.

LOS varies from LOS A, indicating free flow traffic conditions with little or no delay, to LOS F, representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays. The LOS grading system is applied to the signalized and unsignalized intersection analysis.

Signalized Intersection traffic conditions and resulting LOS are determined using the Highway Capacity Manual (HCM) – Special Report 209 (Transportation Research Board, 2000) method for signalized intersections. This method uses intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the control delay per vehicle. Control delay is defined as total delay attributed to signal operations and includes initial deceleration, queue move-up time, stopped delay, and acceleration delay. The LOS for a signalized intersection is based on the average control delay per vehicle for the intersection measured in seconds. Table 4.12-1, Signalized Intersection Level of Service Criteria, summarizes the LOS criteria for signalized intersections.

Unsignalized Intersections (four-way stop-controlled and side street stop-controlled) are evaluated using the HCM – Special Report 209 (Transportation Research Board, 2000) method for unsignalized intersections. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each stop-controlled movement. This incorporates delay associated with deceleration, stopping, acceleration, and moving up in the queue. However, the method does not account for additional delays caused by pedestrian crossings. For side street stop-controlled intersections, the delay is typically reported for the worst movement from the minor approaches only. Table 4.12-2, Unsignalized Intersection Level of Service Criteria, summarizes the relationship between delay and LOS for unsignalized intersections.

Table 4.12-1
Signalized Intersection Level of Service Criteria

| Level of Service | Description of Traffic Conditions | Average Control Delay (seconds/vehicle) |
|---|---|---|
| A | Operations with very low delay occurring with favorable progression and/or short cycle lengths. | ≤ 10.0 |
| B | Operations with low delay occurring with good progression and/or short cycle lengths. | 10.1–20.0 |
| C | Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear. | 20.1–35.0 |
| D | Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume/capacity ratios. Many vehicles stop and individual cycle failures are noticeable. | 35.1–55.0 |
| E | Operations with high delay values indicating poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences. | 55.1–80.0 |
| F | Operations with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths. | > 80.0 |

Source: Highway Capacity Manual (Transportation Research Board, 2000), Chapter 16 – Signalized Intersections

Table 4.12-2
Unsignalized Intersection Level of Service Criteria

| Level of Service | Description of Traffic Conditions | Average Control Delay (seconds/vehicle) |
|---|---|---|
| A | Little or no conflicting traffic for minor street approach. | ≤ 10 |
| B | Minor street approach begins to notice absence of available gaps. | 10–15 |
| C | Minor street approach begins experiencing delay for available gaps. | 15–25 |
| D | Minor street approach experiences queuing due to a reduction in available gaps. | 25–35 |
| E | Extensive minor street queuing due to insufficient gaps. | 35–50 |
| F | Insufficient gaps of suitable size to allow minor street traffic demand to cross safely through a major traffic stream. | > 50 |

Source: Highway Capacity Manual (Transportation Research Board, 2000), Chapter 17 – Unsignalized Intersections

### Existing Intersection Volumes

The intersection operations analysis presented in this study are based on AM and PM peak period (7:00 to 9:00 AM and 4:00 to 6:00 PM) intersection turning movement volumes collected in 2002 and used in the UC Berkeley 2020 LRDP EIR and LBNL 2006 LRDP EIR. Although more recent count data are available, the 2002 data were used because the 2002 traffic volumes are generally higher than the more recent volumes and thus would result in a more conservative analysis.[1] The reduction in traffic volumes since 2002 can be attributed to several factors including the demolition of the 300-space Underhill parking lot in 2005. However, intersection movements that would not be used by traffic associated with the Underhill parking lot were also lower in 2006. The reduction in traffic volumes can also be attributed to upstream bottlenecks metering traffic entering the study area.

Figure 4.12-2, Existing Peak Hour Traffic Volumes presents the existing AM and PM peak hour intersection volumes at the study intersections.

### Existing Intersection Operations

Table 4.12-3, Existing Conditions – Study Intersection LOS Summary, summarizes existing weekday peak hour intersection LOS analysis results. Detailed calculation work sheets are provided in Appendix 4.12. As shown in the table, four of the five study intersections currently operate at LOS D or better during both AM and PM peak hours.

Based on current observations, the all-way stop-controlled Bancroft Way/Piedmont Avenue intersection operates at LOS F during both AM and PM peak hours. Northbound and southbound vehicle flows at this intersection are impeded by the high pedestrian volumes crossing Piedmont Avenue.

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1 As part of the LBNL 2006 LRDP EIR, traffic data at all study intersections were collected in October 2006. In general, the 2006 total intersection volumes were lower than the 2002 volumes. Thus, the traffic analysis conducted for the LBNL 2006 LRDP EIR was based on the 2002 data because they were higher. The existing conditions traffic analysis presented in this EIR is consistent with the LBNL 2006 LRDP EIR.

Intersection turning movement data at the study intersections were also collected for the UC Berkeley Southeast Campus Integrated Projects (SCIP) EIR in January 2006. Although some movements were slightly higher in 2006, the total AM and PM peak hour intersection volumes were between three and 12 percent lower than the 2002 data.

Peak hour intersection turning movement data were also collected in April 2007 at the Bancroft Way/Piedmont Avenue and Durant Avenue/Bancroft Way intersections. Similar to the 2006 data, the 2007 total intersection volumes were also lower than the 2002 volumes.

Table 4.12-3
Existing Conditions – Study Intersection LOS Summary

| Intersection | Control | AM Peak Hour Delay (Seconds)[1] | AM Peak Hour LOS [1] | PM Peak Hour Delay (Seconds) [1] | PM Peak Hour LOS [1] |
|---|---|---|---|---|---|
| Centennial Drive/ Grizzly Peak Boulevard | All-Way Stop-Controlled | 10.2 | B | 17.7 | C |
| Hearst Avenue/Gayley Road/ La Loma Avenue | Signalized | 22.4 | C | 24.3 | C |
| Stadium Rim Way/ Gayley Road | All-Way Stop-Controlled | 26.2 | D | 34.7 | D |
| Bancroft Way/ Piedmont Avenue [2] | All-Way Stop-Controlled | >60 | F | >60 | F |
| Durant Avenue/ Piedmont Avenue | All-Way Stop-Controlled | 17.4 | C | 17.6 | C |

Source: Fehr & Peers, August 2007.

[1] Signalized and all-way stop-controlled intersection delay and LOS based on average control delay per vehicle, according to the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2000.

[2] Based on the 2000 HCM methodology, the intersection currently operates at LOS D during the AM peak hour and LOS C during the PM peak hour. Based on field observations and measurements, the intersection currently operates at LOS F during both AM and PM peak hours due to the high number of pedestrian crossings, which the 2000 HCM methodology does not account for.

Bold indicated an intersection operating at unacceptable LOS E or LOS F.

## Existing Parking Conditions

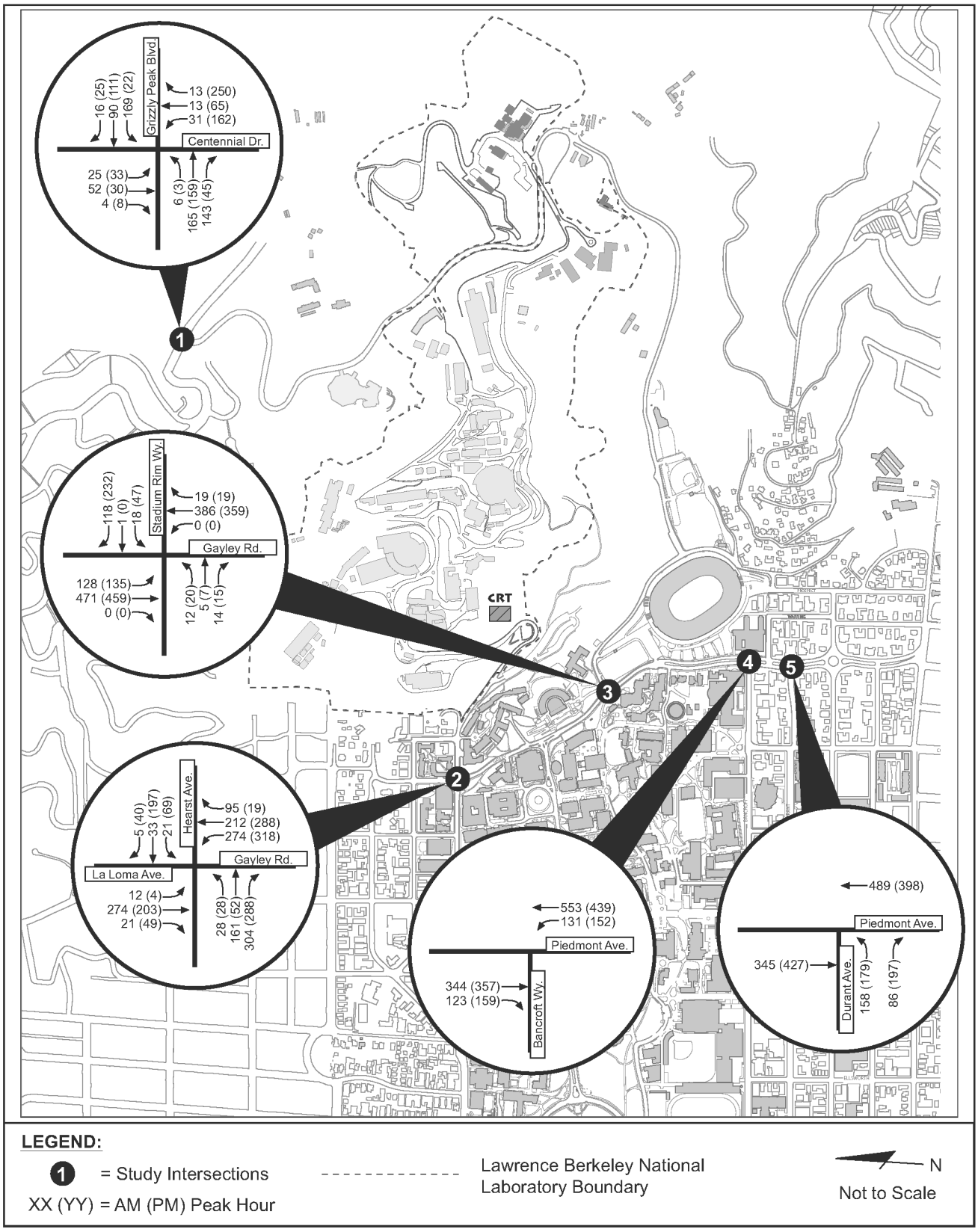
This section describes on- and off-site parking conditions.

### On-Site Parking

Based on a parking inventory conducted in September 2007, about 2,160 parking spaces are provided at LBNL. The parking supply is slightly less than the parking supply of 2,300 spaces reported in the LBNL 2006 LRDP EIR due to construction staging in parts of several facilities.

The parking supply includes marked parking spaces in parking lots, on-street parking spaces, and unmarked informal parking areas. Constrained by the hilly terrain of the site, most parking lots are rather small and serve nearby buildings. Parking at LBNL is controlled by parking permits. Only site employees and regular visitors can obtain parking permits, which are provided at no cost.

Since these parking spaces are scattered through many parking lots of varying sizes, the last few spaces can be difficult to locate. Thus, the practical capacity of the entire site is considered to be 90 percent of the




**SOURCE:** Fehr & Peers - August 2007

FIGURE **4.12-2**

Existing Peak Hour Traffic Volumes

924-02•11/07

parking supply. Based on parking occupancy data collected in September 2007, the peak parking occupancy at the site was 81 percent of the parking supply, which is similar to the data collected in 2003 and used in the LBNL 2006 LRDP EIR. Although some parking lots were occupied at or above their "practical capacity," parking spaces were available at more remote parking lots.

#### Off-Site Parking

UC Berkeley provides parking facilities for its students, staff, and faculty. Although about 350 LBNL employees also work at UC Berkeley campus, few park in UC Berkeley campus facilities. This is likely because LBNL parking permits are free, whereas UC Berkeley charges for parking permits. In addition, most UC Berkeley facilities are usually occupied at or near capacity throughout the day.

There are no on-street parking spaces available on roadways providing access to the LBNL site. On-street parking on the surrounding neighborhoods are controlled by either parking meters and limited to one hour or less in non-residential streets or controlled by residential parking permits and limited to two hours for non-residents in residential streets. As a result, on-street parking is not a practical option for LBNL employees and visitors.

### Existing Transit and Shuttle Services

The LBNL site is served indirectly by Bay Area Rapid Transit (BART), Alameda-Contra Costa Transit (AC Transit), and UC Berkeley Shuttle Service (BEAR Transit), and directly by the LBNL shuttle service. Figure 4.12-3, Transit Routes in Project Vicinity, shows the transit routes in the vicinity of the project site. Each transit service is described below.

#### BART

BART provides regional commuter rail transit in Alameda, Contra Costa, San Francisco, and San Mateo counties. Currently, BART trains operate on weekdays from 4:00 AM to midnight, on Saturdays from 6:00 AM to midnight, and on Sundays from 8:00 AM to midnight. The nearest BART station to the CRT project is the Downtown Berkeley station located one block west of the UC Berkeley campus at the Center Street/Shattuck Avenue intersection (approximately 1.25 miles east of the project site). The LBNL shuttle service provides access between the LBNL site and the Downtown Berkeley BART Station.

The Downtown Berkeley BART station is one of the most highly used stations within the BART system, with average weekday exits and entries for 2007 of approximately 20,200 passengers.

AC Transit

Local bus service in Berkeley is provided by AC Transit. Within the City of Berkeley, at least one AC Transit route provides service within walking distance (0.25 mile) of nearly every resident in the City. Five bus routes provide service to the project area. Figure 4.12-3 illustrates the existing AC Transit routes in the vicinity of the LBNL hill site. Although these routes do not directly serve the LBNL hill site, the LBNL shuttle service provides access to them.

The following bus routes serve the project area:

- Line 7 provides service between the El Cerrito Del Norte and Rockridge BART station and travels along Piedmont Avenue and the Bancroft Way/Durant Avenue couplet in the project area. It operates on 20- to 30-minute headways during the week between approximately 6:30 AM and 9:00 PM. On weekends, Line 7 operates with 60-minute headways between 8:00 AM and 6:00 PM.

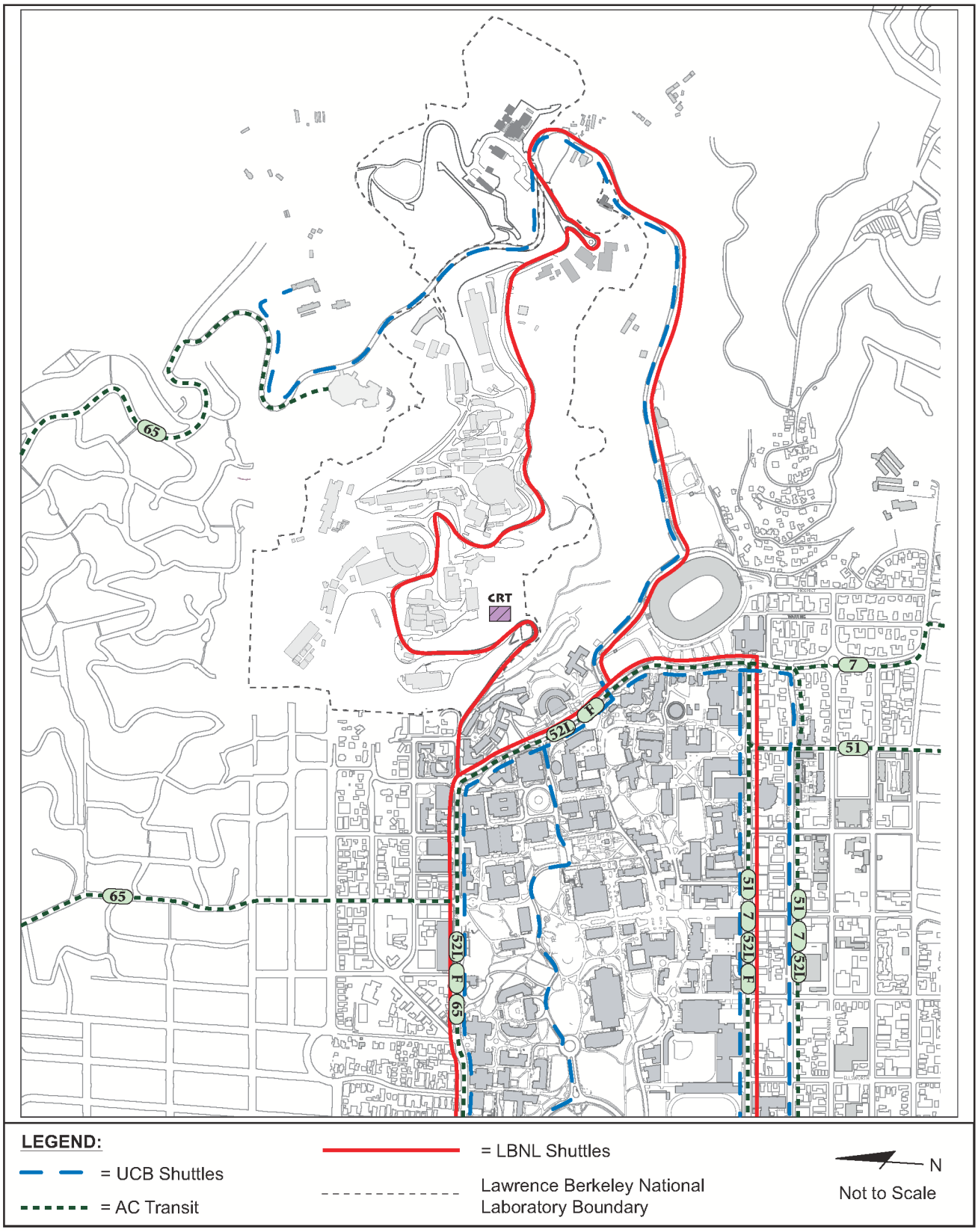
- Line 51 provides service between the Berkeley AMTRAK Station in West Berkeley and Oakland and Alameda and travels along Piedmont Avenue and the Bancroft Way/Durant Avenue couplet in the project area. It operates daily on 8- to 20-minute headways during the day and 60-minute headways through the night as Line 851.

- Line 52L provides service between the University Village in Albany and the UC Berkeley campus and travels along Gayley Road and the Bancroft Way/Durant Avenue couplet near the project site. Line 52L operates on 15- to 30-minute headways on weekdays and on 30-minute headways on weekends between 6:00 AM and midnight.

- Line 65 provides service between the Berkeley BART station and LHS through the North Berkeley Hills neighborhood. Headways for this line are 30 minutes on weekdays from approximately 6:00 AM to 9:00 PM. On weekends, the headways are 60 minutes from approximately 7:30 AM to 7:00 PM.

- The Transbay Line F provides service between the UC Berkeley campus and the Transbay Terminal in San Francisco. It operates along Gayley Road and Bancroft Way in the project area. It has 30- to 60-minute headways from 5:00 AM to 1:00 AM on weekdays and the FS line operates on approximately 30-minute headways on weekdays in the eastbound direction during the PM peak commute and in the westbound direction during the AM peak commute.

Additional AC Transit routes can be accessed in downtown Berkeley and the Southside area through the LBNL shuttles.




**SOURCE:** Fehr & Peers - August 2007

FIGURE **4.12-3**

Transit Routes in Project Vicinity

924-02•11/07

BEAR Transit

BEAR Transit, operated by UC Berkeley, primarily serves the UC Berkeley community, providing service between the UC Berkeley campus, surrounding neighborhoods, and select destinations. In general, the daytime shuttles operate on a fixed route and schedule between 7:30 AM and 7:30 PM. The night shuttles operate on a fixed schedule between 7:30 PM and 3:00 AM, and provide door-to-door service throughout the service area between 3:00 AM and 6:00 AM.

All BEAR Transit shuttle buses, except the Richmond Field Station shuttle line, are free to UC Berkeley students, faculty, staff, post-docs, and visiting scholars, who have valid university identification. Others must pay a fare of $1.00. BEAR Transit Line H serves destinations along Centennial Drive, including the UC Berkeley Botanical Garden and Lawrence Hall of Science.

LBNL Shuttles

LBNL provides a free on- and off-site shuttle service connecting the LBNL hill site to UC Berkeley, BART, AC Transit, and local neighborhoods. Current shuttle routes are described below.

- The Green Route operates internally on the hill site on weekdays from 6:40 AM to 7:00 PM with 15-minute headways.
- The Orange Route operates in a counterclockwise loop between the LBNL hill site and the downtown Berkeley BART Station through Hearst Avenue and Centennial Drive on weekdays with 30-minute headways from 6:30 AM to 9:00 AM and 6:00 PM to 7:00 PM and with 15-minute headways from 9:00 AM to 6:00 PM.
- The Blue Route operates in a clockwise loop between the Downtown Berkeley BART Station, the north side of the UC Berkeley campus, the LBNL hill site, and the Southside area through Hearst Avenue, Centennial Drive, Gayley Road, and Bancroft Way on weekdays with 15-minute headways from 6:00 AM to 5:30 PM and with 30-minute headways from 5:30 PM to 7:30 PM.
- The Rockridge Shuttle operates between the LBNL hill site and the Rockridge BART Station on 1-hour headways from 6:40 AM to 9:40 AM and from 3:40 PM to 6:40 PM.

Although the LBNL shuttles are free, they are restricted to LBNL employees and visitors, and shuttle riders are required to provide valid identification to the driver. Shuttle stops are coordinated with AC Transit bus lines serving downtown Berkeley. The LBNL shuttles are equipped with bicycle racks for the ride up the hill. Shuttles listed above serve the project site via stops on Cyclotron Road near the Blackberry Canyon Gate or on Seaborg Road near Building 70.

### Existing Pedestrian and Bicycle Circulation

Most LBNL employees and visitors either drive or use transit to access the site. The hilly terrain and steep grades make walking or biking to the site rather difficult. Most walking and biking trips to the LBNL site are through the Blackberry Canyon Gate which connects to the City's sidewalks and bicycle facilities through Cyclotron Road and Hearst Avenue. The Strawberry Canyon and Grizzly Peak gates can also be accessed by bicyclists using Centennial Drive and pedestrians using the intermittent paved sidewalks and unpaved paths along Centennial Drive. Many bicyclists also use the LBNL shuttles that are equipped with bike racks for their uphill inbound trip to the site and use their bicycles for the outbound downhill trip.

Within the site, pedestrian and bicycle paths meander and have many discontinuities. Pedestrian pathways primarily connect parking facilities and buildings. Although these paths are used for shorter trips within the site, the on-site shuttle service is typically used for longer trips.

Within the City of Berkeley, non-residential streets provide sidewalks and crosswalks for pedestrians. Currently, bicyclists are allowed on the roadways within the study area. However, the 2005 Berkeley Bicycle Plan Update does not identify any on-street bicycle facilities within the project area. Gayley Road, Piedmont Avenue, and Bancroft Way are identified as future Class 2.5 facilities (shared roadways where full bicycle lanes cannot be implemented but other improvements and amenities can be provided) and Stadium Rim Way and Centennial Drive are identified as future Class 3 facilities (signed bike routes). In addition, the recently published Campus Bicycle Plan recommends Gayley Road and Stadium Rim Way as future Class 2.5 facilities.

## 4.12.3 Regulatory Considerations

### Local Plans and Policies

LBNL is a federal facility operated by the University of California and conducting work within the University's mission on land that is owned or controlled by The Regents. As such, LBNL is generally exempted by the federal and state constitutions from compliance with local land use regulations, including general plans and zoning. However, LBNL seeks to cooperate with local jurisdictions to reduce any physical consequences of potential land use conflicts to the extent feasible. The western part of the LBNL site is within the Berkeley City limits, and the eastern part is within the Oakland City limits. This section summarizes relevant principles, polices and guidelines contained in the LBNL 2006 LRDP, and the general plans of the cities of Berkeley and Oakland.

### 2006 LRDP Principles and Strategies[2]

The 2006 LRDP proposes four fundamental principles that form the basis for the Plan's development strategies. All four principles are applicable to the traffic-related aspect of new development: (1) "Preserve and enhance the environmental qualities of the site as a model of resource conservation and environmental stewardship;" (2) "Build a safe, efficient, cost effective scientific infrastructure capable of long-term support of evolving scientific missions;" (3) "Build a more campus-like research environment;" and (4) "Improve access and connections to enhance scientific and academic collaboration and interaction."

Development strategies provided by the 2006 LRDP are intended to minimize potential environmental impacts that could result from implementation of the 2006 LRDP. Development strategies set forth in the 2006 LRDP applicable to transportation and traffic includes the following:

- Increase development densities within the areas corresponding to the existing clusters of development to preserve open space, enhance operational efficiencies, and access.
- Site and design new facilities in accordance with University of California Policy on Sustainable Practices to reduce energy, water and material consumption and provide improved occupant health, comfort, and productivity.
- Increase use of alternate modes of transit through improvements to the Laboratory's shuttle bus service.
- Promote transportation demand management strategies such as vanpools and employee ride share programs.
- Improve efficiency and security of Laboratory access through improvements to existing gates and the creation of new gates.
- Create a better linkage between parking, shuttle stops, and pedestrian circulation on site.
- Provide separated routes of travel wherever possible for pedestrians and vehicles.
- Promote use of bicycles by providing additional storage racks and shower facilities.
- Eliminate parking from the sides of major roadways, thereby improving safety and allowing one-way roads to be converted to two-way traffic.
- Maintain or reduce the percentage of parking spaces relative to the adjusted daily population.

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2 While this Environmental Impact Report presents a "stand alone" impact analysis that does not rely upon tiering from any programmatic CEQA document, Berkeley Lab does actively follow the 2006 LRDP as a planning guide for Lab development. Accordingly, relevant 2006 LRDP principles, strategies, and design guidelines are identified in this section.

- Consolidate parking into larger lots and/or parking structures, locate these facilities near Laboratory entrances to reduce traffic within the main site.
- Remove parking from areas targeted for outdoor social spaces and service areas.
- Consolidate service functions wherever possible in the Corporation Yard.
- Use pedestrian routes to connect the various developed terraces of the site which host the central and research clusters.
- Improve the pedestrian spaces at the heart of the research clusters and adjacent to research facilities so as to support interaction among Laboratory users.
- Retain and improve walkways as appropriate throughout the open space portions of the site, carefully integrating these pathways to minimize intrusion in the natural environment.
- Improve pedestrian access and safety throughout the Laboratory site by developing new routes and enhancing existing routes.
- Improve wayfinding through a comprehensive and coordinated signage system and through the naming of buildings and research clusters.
- Improve the path providing access to and from the UC Berkeley campus.

LBNL Design Guidelines

The LBNL Design Guidelines were developed in parallel with the 2006 LRDP and provide specific guidelines for site planning, landscape and building design as a means to implement the 2006 LRDP's development principles as each new project is developed. Specific design guidelines are organized by a set of design objectives that essentially correspond to the strategies provided in the 2006 LRDP.

The design guidelines would be applied to the proposed project as part of the 2006 LRDP program. As part of the design review and approval process, the proposed project would be evaluated for adherence to the LRDP Land Use Map, the design guidelines, the Building Heights Map, and other relevant plans and policies. Approvals would be subject to satisfactory compliance with these provisions. Design objectives that are contained within the design guidelines and applicable to the transportation and traffic analysis include the following:

- Stimulate pedestrian activity and interaction in the Commons Spaces.
- Create as high a density and critical mass around commons spaces as possible.
- Segregate public entries and paths from service entries and paths where feasible.
- Where segregation is not possible, and service and public access overlap in accessing buildings, design service courts to intelligently serve both.

- Design Pathway Layouts that support pedestrian flow and encourage casual interaction.
- Design all new streets to accommodate two-way traffic flow and pedestrian access.
- Reduce the amount of impermeable surfaces at the Berkeley Lab.
- Minimize visual and environmental impacts of new parking lots.
- Create parking plazas to accommodate multiple functions where restricted sites do not allow for them to be segregated.
- Site and design parking structures to integrate with the natural surroundings.

City of Berkeley General Plan

About 95 acres, or almost half of the LBNL site, is within the City of Berkeley. The Land Use Element of the Berkeley General Plan contains comprehensive objectives and policies that guide physical development in the City. One objective of the Land Use Element is to "minimize the negative impacts and maximize the benefits of University of California on the citizens of Berkeley."

The Transportation Element of the Berkeley General Plan contains the following policies relevant to the proposed CRT project:

> Transportation Objective 1: Maintain and improve public transportation services throughout the city.
>
> Transportation Objective 2: Reduce automobile use and vehicle miles traveled in Berkeley, and the related impacts, by providing and advocating for transportation alternatives and subsidies that facilitate voluntary decisions to drive less.
>
> Transportation Objective 6: Create a model bicycle- and pedestrian-friendly city where bicycling and walking are safe, attractive, easy, and convenient forms of transportation and recreation for people of all ages and abilities.
>
> Policy T-2 Public Transportation Improvements: Encourage regional and local efforts to maintain and enhance public transportation services and seek additional regional funding for public and alternative transportation improvements.
>
> Action T-2 D: Improve shuttle and transit services by:
>
> 1. Increasing shuttle and transit services from Rockridge and the Rockridge BART station to downtown BART and the UCB campus.

3. Promoting express shuttle services to complement local transit service and ensure that Berkeley residents and commuters have information about shuttle services readily available.

5. Encouraging transportation providers to coordinate and consolidate the installation of new jointly used shelters.

Policy T-10 Trip Reduction: To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as:

2. Participation in the Commuter Check Program.

3. Carpooling and provision of carpool parking and other necessary facilities.

4. Telecommuting programs.

8. Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, carpool, telecommute, reduce the number of cars owned, shop locally, and use alternative modes.

9. Programs to reward Berkeley citizens and neighborhoods that can document reduced car use.

10. Limitations on the supply of long-term commuter parking and elimination of subsidies for commuter parking.

Policy T-13 Major Public Institutions: Work with other agencies and institutions, such as the University of California, the Berkeley Unified School District, Lawrence Berkeley Laboratory, Vista Community College, the Alameda County Court, and neighboring cities to promote Eco-Pass and to pursue other efforts to reduce automobile trips.

Action T-13A: Encourage other agencies and institutions to match or exceed the City of Berkeley's trip reduction and emission reduction programs for their employees.

Action T-13C: Encourage the University of California:

1. To maintain and improve its facilities and programs that support and encourage pedestrians, bicyclists, and transit riders.

2. To provide bicycle facilities, "all hour" bicycle paths, and timely pavement maintenance.

Action T-13H: Encourage the University of California, the Berkeley Unified School District, and other major institutions to cap parking at current levels while seeking to reduce automobile use.

Action T-13I: Encourage institutions to create incentives for their employees and students to live locally.

Action T-13J: Encourage all public and private institutions, including schools, health clubs, recreation centers and other community destinations to organize carpools and shuttles.

Policy T-18 Level of Service: When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists, to determine the transportation impacts of a plan or project. Significant beneficial pedestrian, bicycle, or transit impacts, or significant beneficial impacts on air quality, noise, visual quality, or safety in residential areas may offset or mitigate a significant adverse impact on vehicle Level of Service (LOS) to a level of insignificance. The number of transit riders, pedestrians, and bicyclists potentially affected will be considered when evaluating a degradation of LOS for motorists.

Policy T-28 Emergency Access: Provide for emergency access to all parts of the city and safe evacuation routes.

Policy T-37 University of California and Large Employer Parking: Encourage large employers, such as the University of California and Berkeley Unified School District, to allocate existing employee parking on the basis of a) need for a vehicle on the job, b) number of passengers carried, c) disability, and d) lack of alternative public transportation.

Action T-37A: Encourage the University of California to cap its parking supply at current levels, to postpone any plans to expand its existing (year 2000) parking supply and instead encourage transit use and alternative modes of transportation, and better manage and utilize existing parking.

Policy T-38 Inter-Jurisdictional Coordination: Establish partnerships with adjacent jurisdictions and agencies, such as the University of California and the Berkeley Unified School District, to reduce parking demand and encourage alternative modes of transportation.

Policy T-41 Structured Parking: Encourage consolidation of surface parking lots into structured parking facilities and redevelopment of surface lots with residential or commercial development where allowed by zoning.

Policy T-42 Bicycle Planning: Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley.

Policy T-54 Pathways: Develop and improve the public pedestrian pathway system.

City of Oakland General Plan

The following transportation-related policies in the Oakland General Plan Land Use and Transportation Element are relevant to the CRT project:

Policy T2.5 Linking Transportation and Activities: Link transportation facilities and infrastructure improvements to recreational uses, job centers, commercial nodes, and social services (i.e., hospitals, parks, or community centers).

Policy T3.2 Promoting Strategies to Address Congestion: The City should promote and participate in both local and regional strategies to manage traffic supply and demand where unacceptable levels of service exist or are forecast to exist.

Policy T3.6 Including Bikeways and Pedestrian Walks: The City should include bikeways and pedestrian walks in the planning of new, reconstructed, or realigned streets, wherever possible.

Policy T3.6 Encouraging Transit: The City should encourage and promote use of public transit in Oakland by expediting the movement of and access to transit vehicles on designated "transit streets" as shown on the Transportation Plan.

Policy T4.2 Creating Transportation Incentives: Through cooperation with other agencies, the City should create incentives to encourage travelers to use alternative transportation options.

Policy D3.2 Incorporating Parking Facilities: New parking facilities for cars and bicycles should be incorporated into the design of any project in a manner that encourages and promote safe pedestrian activity.

Policy N1.2 Placing Public Transit Stops: The majority of commercial development should be accessible by public transit. Public transit stops should be placed at strategic locations in Neighborhood Activity Centers and Transit-Oriented Districts to promote browsing and shopping by transit users.

Policies in the Open Space, Conservation, and Recreation (OSCAR) Element of the Oakland General Plan pertaining to transportation relevant to the CRT project include the following:

> Policy CO-12.1: Promote land use patterns and densities which help improve regional air quality conditions by: (a) minimizing dependence on single passenger autos; (b) promoting projects which minimize quick auto starts and stops, such as live-work development, and office development with ground-floor retail space; (c) separating land uses which are sensitive to pollution from the sources of air pollution; and (d) supporting telecommuting, flexible work hours, and behavioral changes which reduce the percentage of people in Oakland who must drive to work on a daily basis.
>
> Policy CO-12.3: Expand existing transportation systems management and transportation demand management strategies which reduce congestion, vehicle idling, and travel in single-passenger autos.

## 4.12.5 Impacts and Mitigation Measures

### Significance Criteria

The impact of the proposed project on transportation and traffic would be considered significant if it would exceed the following Standards of Significance, in accordance with Appendix G of the California Environmental Quality Act (CEQA) Guidelines and the UC CEQA Handbook:

- Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), as follows:
- Cause levels of service at an intersection to degrade below LOS D, based on total intersection delay or on minor street delay for two-way stop-controlled intersections (2000 HCM methodology); or
- Cause levels of service at an intersection to degrade from LOS E to LOS F, based on total intersection delay or on minor street delay for two-way stop-controlled intersections (2000 Highway Capacity Manual methodology); or
- Cause a significant incremental decline in service at an intersection operating, without the addition of project traffic, at LOS E or worse (defined for purposes of analysis as an increase in total traffic volume of 5 percent or more, relative to the No Project volume);[3]

[3] The 5-percent threshold is based on the fact that day-to-day traffic volumes can fluctuate by as much as 10 percent (i.e., ± 5 percent), and therefore a variation of 5 percent is unlikely to be perceptible to the average motorist. This is a commonly used threshold in the City of Berkeley and other jurisdictions.

- Exceed, either individually or cumulatively, a level of service standard established by the County congestion management agency for its biennial monitoring of Congestion Management Plan (CMP)-designated roads or highways, as follows:
  - On CMP-designated roadway segments that are projected to meet the CMP standard in the future without the project, the impact would be significant if the project would cause the segment to exceed the standard and add at least 5 percent to the future peak hour volume, or
  - On CMP-designated roadway segments that are projected to exceed the CMP standard in the future without the project, the impact would be significant if the project would add at least 5 percent to the future peak hour volume.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses;
- Result in inadequate emergency access;
- Result in inadequate parking capacity; or
- Conflict with applicable policies, plans, or programs supporting alternative transportation or generate new transit demand that cannot be served by the expected future transit service, including improvements planned by UC and non-UC transit agencies (BART, AC Transit, LBNL shuttles).

## Issues Not Discussed Further

The CRT facility Initial Study found that the project would not affect the air traffic patterns at any of the regional airports. The project does not include activities or structures that could hinder aviation activity. This issue is not discussed further.

## Impact Assessment Methodology

This section presents the methodology and assumptions used to analyze traffic impacts of the project. A Near-Term conditions analysis, which also accounts for other likely near-term developments in the study area, is presented to determine if the project would have any near-term impacts on the surrounding transportation network. For long term cumulative impacts of the proposed project, see Section 5.0, Cumulative Impacts.

### Project Description

The CRT project, located in the western portion of the LBNL site, would contain about 140,000 gross square feet of space. The project is estimated to increase the Adjusted Daily Population (ADP) by about 300 persons. Although some of these employees are currently at other LBNL buildings and would relocate to the new building, this analysis assumes that the 300 ADP at the CRT site would be new to the main hill site to account for potential backfill of existing spaces and present a conservative analysis.

The CRT project would also construct about four parking spaces to provide disabled access to the building and a few additional spaces for delivery and maintenance vehicles. No other LBNL parking facilities would be constructed and employees and visitors would be accommodated by the existing parking facilities. Access to and from the CRT project would be provided through existing LBNL gates.

Project Trip Generation

The LBNL 2006 LRDP EIR assumed that vehicle trips generated by the growth under the 2006 LRDP would be proportional to the estimated population increase. The LBNL 2006 LRDP also assumed that parking supply would increase in the same proportion. However, vehicle trip generation is also expected to be directly proportional to overall parking supply because the main hill site is somewhat isolated, parking supply in the vicinity of the site is limited, and parking demand at the site is controlled by the number of parking permits issued by LBNL.

Based on information provided in the LBNL 2006 LRDP EIR, LBNL provides one parking space per 1.7 ADP. As stated above, the CRT project would add parking spaces for disabled access only. The CRT project, combined with the Helios project (which would be developed simultaneously with the CRT project) would increase LBNL parking supply by 50 spaces[4] while increasing population by approximately 803 ADP. The CRT and Helios projects would need to provide 461 parking spaces to maintain the existing parking supply ratio.

Considering the practical capacity of the LBNL site, there are currently 190 parking spaces available throughout the LBNL hill site. Combined with the 50 spaces that would be added by the Helios project, 240 parking spaces would be available for the CRT and Helios projects. This is about 52 percent of the 461 parking spaces that would be needed by these two projects. Based on the limited parking supply available, the trip generation rate for the project is estimated to be 52 percent of the trip generation rates used in the LBNL 2006 LRDP EIR. The Trip Generation for Helios and CRT Memorandum, dated September 17, 2007 and included in Appendix 4.12, describes the assumptions and methodology used to estimate vehicle trip generation for the project. This analysis assumes that new vehicle trips would be directly proportional to the parking spaces available for the two projects, and individuals who are not provided parking permits for the available spaces would travel to the site by shuttle buses or other alternate modes of travel. These assumptions are reasonable given the absence of off-street and on-street parking in the vicinity of the LBNL site, the fact that permits are needed to park in UC Berkeley parking facilities, and the distance individuals would have to walk in order to access their work sites at LBNL, were they to park off site. Table 4.12-4, Project Vehicle Trip Generation, presents the resulting estimated trip

4 This does not include the four disabled parking spaces that would be constructed as part of the CRT project because they would not be available to most site employees and visitors.

generation for the CRT project. The project is estimated to generate 220 daily, 24 AM peak hour, and 25 PM peak hour trips.

Table 4.12-4
Project Vehicle Trip Generation

| Scenario | Adjusted Daily Population | Trip Generation | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AM Peak Hour | | | PM Peak Hour | | |
| | | Daily | In | Out | Total | In | Out | Total |
| Existing (2003) | 4,000 | 5,700 | 540 | 70 | 610 | 75 | 585 | 660 |
| LRDP | 1,150[1] | 1,600 | 150 | 20 | 170 | 20 | 160 | 180 |
| CRT | 303 | 220 | 21 | 3 | 24 | 3 | 22 | 25 |
| Percent of LRDP | 27% | 13% | 13% | 13% | 13% | 13% | 13% | 13% |
| CRT and Helios | 803 | 582 | 55 | 7 | 62 | 8 | 58 | 66 |
| Percent of LRDP | 70% | 36% | 36% | 36% | 36% | 36% | 36% | 36% |

Source: Fehr & Peers, 2007 and data presented in section IV.L of the LBNL 2006 LRDP EIR.

[1] The LRDP program has been reduced to 1,000 new ADP in 2025. However, the traffic analysis in the LBNL 2006 LRDP EIR was completed for 1,150 new ADP.

As previously mentioned, the CRT project is expected to be developed simultaneously with the Helios project. As shown in Table 4.12-4, the two projects combined would account for 36 percent of the estimated trip generation for the entire LRDP program.

As required by LRDP MM TRANS-1d, LBNL will enhance the current Transportation Demand Management (TDM) program by expanding existing measures, such as increasing the current shuttle service, and developing new measures. These measures would discourage the use of single-occupant vehicles and encourage the use of other commute modes. Since the number of vehicle trips generated by the CRT project would be limited by the available parking supply, the TDM program would be expanded as needed to reduce parking demand and meet the additional demand for alternative commute modes generated by the CRT project.

Near-Term No Project Conditions

Major projects currently under construction or expected to be completed in the next few years, (through about 2012, would add to the traffic in the study area. The Near-Term projects included in this analysis are described below:

- Underhill Parking Structure, recently completed by UC Berkeley, would provide 690 net new parking spaces in the Southside area.[5]
- Lower Hearst Parking Structure, recently completed by UC Berkeley, would provide 100 net new parking spaces in the Northside area.[6]
- Southeast Campus Integrated Projects (SCIP) would consolidate existing parking spaces and provide 300 additional parking spaces in the southeast area of UC Berkeley campus. About 900 parking spaces would be provided at the Maxwell Family Field Parking Structure located at Stadium Rim Way, just east of Gayley Road.
- Helios Energy Research Facility Project, located on the east end of the LBNL site, would increase LBNL population by 500 persons. An EIR for this project is currently under way.

Other planned LBNL projects such as the User Support Building and Guest House would not result in an increase in the Berkeley Lab's daily population. Thus, they are not expected to add additional traffic to the roadway network.

Other projects, such as the Telegraph Avenue Bus Rapid Transit (BRT) and the Southside Area Plan, are proposed for the project area. The BRT project would provide bus service on dedicated travel lanes on Telegraph Avenue between Berkeley and San Leandro. The EIR for the Telegraph Avenue BRT was released in May 2007. The BRT alignment has not been finalized and the project does not have full funding, nor has it been approved by AC Transit or other jurisdictions that it would travel through, such as the cities of Oakland or Berkeley.

The proposed Southside Area Plan would guide development in the Southside neighborhood. As part of the Southside Area Plan, modifications to the transportation circulation network are also under

5 The Underhill Parking Structure, although operational at the time of EIR preparation, is included in the Near-Term analysis as a new project because at the time traffic counts were conducted that are used in this EIR, the parking structure was smaller with only 310 parking spaces. Following construction, the parking structure now provides approximately 1,000 parking spaces. Since the Existing conditions traffic volumes include traffic associated with the 310 parking spaces that were at the parking structure site in 2002, the net new parking spaces are accounted for in the Near-Term analysis.

6 Although the Lower Hearst Parking Structure was operational at the time of EIR preparation, it is included in the Near-Term analysis as a new project because at the time that traffic counts were conducted that are used in this EIR, the parking structure had 100 fewer spaces. The 100 net new parking spaces in this parking facility are accounted for in the Near-Term analysis.

consideration. These modifications include options such as converting Bancroft Way and Durant Avenue to two-way streets, or restricting vehicular traffic on portions of Telegraph Avenue. The City of Berkeley has not approved the Southside Area Plan or any of the potential modifications to the roadway network. Since neither the BRT project nor the Southside Area Plan has been approved yet, this EIR does not account for potential modifications caused by these proposed but not approved improvements.

Estimated traffic generated by the Near-Term projects was added to the existing conditions volumes to estimate intersection volumes under Near-Term No Project conditions. Figure 4.12-4, Near-Term No Project Peak Hour Traffic Volumes presents the AM and PM peak hour intersection volumes under Near-Term No Project conditions. Table 4.12-5, Near-Term Conditions – Study Intersection LOS Summary summarizes the Near-Term No Project conditions weekday peak hour intersection LOS analysis results. Detailed calculation work sheets are provided in Appendix 4.12.

Table 4.12-5
Near-Term Conditions – Study Intersection LOS Summary

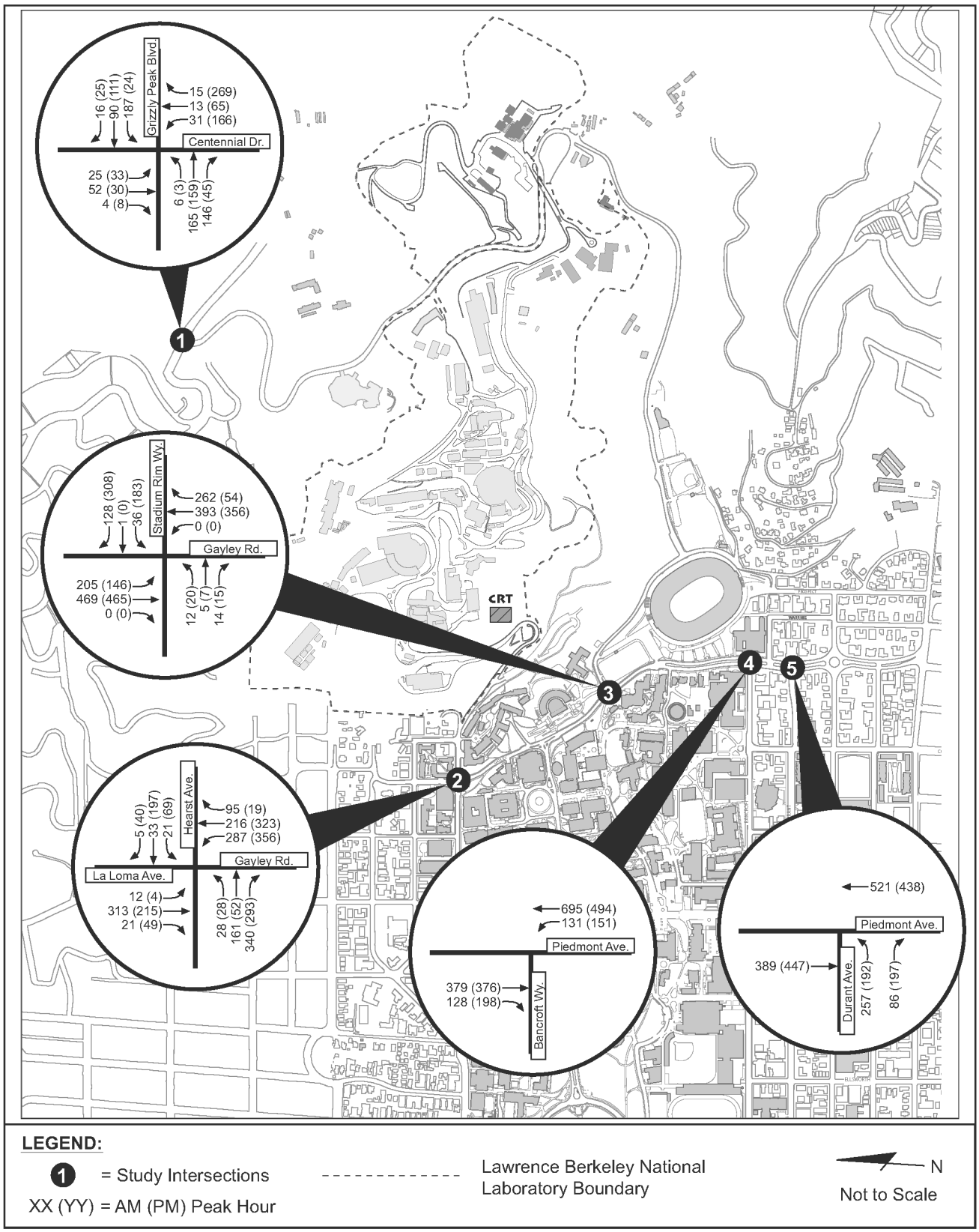
| Intersection | Control | Peak Hour | Near-Term No Project | | Near-Term With Project | |
|---|---|---|---|---|---|---|
| | | | Delay (Seconds)[1] | LOS [1] | Delay (Seconds) [1] | LOS [1] |
| Centennial Drive/ | All-Way | AM | 10.4 | B | 10.4 | B |
| Grizzly Peak Boulevard | Stop-Controlled | PM | 19.7 | C | 19.7 | C |
| Hearst Avenue/Gayley | Signalized | AM | 28.0 | C | 29.5 | C |
| Road/La Loma Avenue | | PM | 41.1 | D | 41.0 | D |
| Stadium Rim Way/ | All-Way | AM | >60 | F | >60 | F |
| Gayley Road | Stop-Controlled | PM | >60 | F | >60 | F |
| Bancroft Way/ | All-Way | AM | >60 | F | >60 | F |
| Piedmont Avenue[2] | Stop-Controlled | PM | >60 | F | >60 | F |
| Durant Avenue/ | All-Way | AM | 26.3 | D | 27.2 | D |
| Piedmont Avenue | Stop-Controlled | PM | 20.6 | C | 20.9 | C |

Source: Fehr & Peers, August 2007.

[1] Signalized and all-way stop-controlled intersection delay and LOS based on average control delay per vehicle for the intersection, and side-street stop-controlled intersection delay and LOS based on average control delay per vehicle for the worst approach, according to the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2000.

[2] Based on the 2000 HCM methodology, the intersection would operate at LOS F during the AM peak hour and LOS D during the PM peak hour under Near-Term No Project and Near-Term With Project conditions. Based on field observations and measurements, the intersection currently operates at LOS F during both AM and PM peak hours due to the high number of pedestrian crossings, which the 2000 HCM methodology does not take into account. Thus, the intersection would continue to operate at LOS F during both AM and PM peak hours under Near-Term No Project and Near-Term With Project conditions.

Bold indicates an intersection operating at unacceptable LOS E or LOS F.




**SOURCE:** Fehr & Peers - August 2007

FIGURE **4.12-4**

Near-Term No Project Peak Hour Traffic Volumes

924-02•11/07

As shown in the table, three of the study intersections that currently operate at LOS D or better would continue to operate at LOS D or better during both AM and PM peak hours. The all-way stop-controlled Stadium Rim Way/Gayley Road intersection would degrade from LOS D under Existing conditions to LOS F under Near-Term No Project conditions during both AM and PM peak hours. The all-way stop-controlled Bancroft Way-Piedmont Avenue intersection would continue to operate at LOS F during both AM and PM peak hours, primarily due to the high pedestrian volume.[7]

## Mitigation Measures included in the Proposed Project

The following mitigation measures, adopted as part of the 2006 LRDP, are required by the 2006 LRDP for the proposed project and are thus included as part of the proposed project. The analysis presented below evaluates environmental impacts that would result from project implementation following the application of these mitigation measures. These mitigation measures that are included in the project would be monitored pursuant to the Mitigation Monitoring and Reporting Plan that will be adopted for the proposed project.

LRDP MM TRANS-1a: LBNL shall work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection, when a signal warrant analysis shows that the signal is needed. The intersection would meet 1-hour signal warrants for peak-hour volume and peak-hour delay under 2025 conditions with implementation of the LBNL 2006 LRDP. LBNL shall contribute funding on a fairshare basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s). See also MM TRANS-1c, development and implementation of a new Transportation Demand Management Program.

LRDP MM TRANS-1b: LBNL shall work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed. LBNL shall contribute funding, on a fairshare

7 As required by the UC Berkeley LRDP EIR Mitigation Measures TRANS-6a and Trans-7, full signal warrant analysis was completed at the Durant Avenue/Piedmont Avenue and Bancroft Way/Piedmont Avenue intersections based on data collected in April 2007. The study results were submitted to the City of Berkeley in Summer of 2007.

basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for a periodic (annual or biennial) signal warrant check to allow the City to determine when a signal is warranted, and for installation of the signal. Should the City determine that alternative mitigation strategies may reduce or avoid the significant impact, the Lab shall work with the City and UC Berkeley to identify and implement such alternative feasible measure(s). See also MM TRANS-1c, development and implementation of a new Transportation Demand Management Program.

LRDP MM TRANS-1c: LBNL shall fund and conduct a study to evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at the intersection of Hearst Avenue at Gayley Road/La Loma Avenue. This intersection is currently signalized, and physical geometric limitations constrain improvements within its current right-of-way. All four corners of this intersection are occupied by existing UC Berkeley facilities, including Foothill Student Housing, Cory Hall, and outdoor tennis courts, as well as the Founders' Rock. The LOS analyses herein used conservative assumptions so as to not underestimate potential project impacts. For example, even though the approach widths at this intersection allow drivers to maneuver past other vehicles as they near the intersection, the absence of pavement striping to delineate separate lanes dictated that the analysis conservatively assume all vehicle movements on each approach are made on a single lane. Similarly, without the certainty that standard lane widths (and adequate storage lengths) could be provided, possible improvement measures were not relied on to judge that significant impacts would be mitigated to less than significant levels. Judging the success of possible mitigation measures with a conservative standard is reasonable, but in consultation with City of Berkeley staff, the Lab will conduct a further study to re-evaluate whether there may be feasible mitigation (with design standards acceptable to the City) at this intersection. That additional study will be conducted by the Lab as part of the TDM program set forth below as MM TRANS-1d. If such mitigation is determined by Berkeley Lab to be feasible, then Berkeley Lab shall contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, for the installation of the improvements.

LRDP MM TRANS-1d: LBNL shall develop and implement a new TDM Program to replace its existing TDM program. This enhanced TDM Program has been drafted in consultation with the City of Berkeley, and is proposed to be adopted by the Lab following The Regents' consideration of the 2006 LRDP. The proposed TDM Program includes several implementation phases tied to the addition of parking to LBNL. The final provisions of the TDM Program may be revised as it is finally adopted but will include a TDM coordinator and transportation committee, an annual inventory of parking spaces and a gate count, a study of more aggressive TDM measures, investigation of a possible parking fee, investigation of sharing services with UC Berkeley and an alternative fuels program. The TDM program shall also include funding of a study to reevaluate the feasibility of mitigation at the Hearst and Gayley/La Loma intersection. The new draft proposed TDM Program also includes a requirement that LBNL conduct an additional traffic study to reevaluate traffic impacts on the earliest to occur of 10 years following the certification of this EIR or the time at which the Lab formally proposes a project that will bring total development of parking spaces pursuant to the 2006 LRDP to or above 375 additional parking spaces.

LRDP MM TRANS-3: LBNL shall develop and maintain a transportation plan designed to ensure that the current balance of transportation modes is maintained. This plan shall include (1) maintaining the same (or lesser) ratio of parking permits and parking spaces to ADP, and (2) ensuring that levels of shuttle bus service and provision of bike racks on shuttle buses are sufficient to accommodate projected demand.

LRDP BP TRANS-6a: Early in construction period planning, LNBL shall meet with the contractor for each construction project to describe and establish best practices for reducing construction period impacts on circulation and parking in the vicinity of the project site. The Lab will work with the City of Berkeley Transportation and Public Works Departments to review the truck routes and the Construction Traffic Management Plans, as appropriate. Where construction traffic could interact with traffic from construction traffic from UC Berkeley, UC Berkeley staff would be invited to participate in these discussions between LBNL and the City.

LRDP BP TRANS-6b: For each construction project, LBNL shall require the prime contractor to prepare a Construction Traffic Management Plan that will include, but will not necessarily be limited to, the following elements:

- Proposed truck routes to be used, consistent with the City truck route map.
- Construction hours, including limits on the number of truck trips during the AM and PM peak traffic periods (7:00 to 9:00 AM and 4:00 to 6:00 PM), if conditions demonstrate the need.
- A parking management plan for ensuring that construction worker parking results in minimal disruption to surrounding uses.

LRDP BP TRANS-6c: LNBL shall manage project schedules to minimize the overlap of excavation or other heavy truck activity periods that have the potential to combine impacts on traffic loads and street system capacity, to the extent feasible.

LRDP MM TRANS-8: LBNL shall implement LRDP MM TRANS-1a (work with UC Berkeley and the City of Berkeley to design and install a signal at the Gayley Road/Stadium Rim Way intersection; LBNL would contribute funding on a fair share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal) and LRDP MM TRANS-1b (work with the City of Berkeley to design and install a signal at the Durant Avenue/Piedmont Avenue intersection, when a signal warrant analysis shows that the signal is needed; LBNL would contribute funding on a fair-share basis, to be determined in consultation with UC Berkeley and the City of Berkeley, to install the signal and for monitoring to determine when a signal is warranted).

## Project Impacts and Mitigation Measures

Potential project impacts on transportation and traffic are discussed in this section. The traffic study prepared for the LBNL 2006 LRDP EIR found no significant impacts on the CMP roadway system. Since the CRT project would generate fewer vehicle trips than those analyzed under the 2006 LRDP program and would not modify the regional roadway system, it would not exceed the LOS standards established for the CMP roadway system; further evaluation of this impact is not required.

CRT Impact TRANS-1: The proposed CRT project would not cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system under the Near-Term conditions. (Less than Significant)

The estimated vehicle trips generated by the CRT project as described in the previous section were added to the Near-Term No Project AM and PM peak hour intersection volumes. The resulting Near-Term With Project conditions intersection volumes are shown on Figure 4.12-5, Near-Term With Project Peak Hour Traffic Volumes.

Table 4.12-5 summarizes the Near-Term With Project conditions weekday peak hour intersection LOS analysis results. Detailed calculation work sheets are provided in Appendix 4.12. As shown in the table, the five study intersections would continue to operate at the same LOS as in the Near-Term No Project conditions.

The Stadium Rim Way/Gayley Road and Bancroft Way/Gayley Road intersections would continue to operate at LOS F during both AM and PM peak hours. However, the proposed CRT project would increase intersection volumes by less than 5 percent at these two intersections. Thus, the project would not cause a significant impact at these two intersections.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact TRANS-2: The proposed CRT project would result in increases in transit ridership. (Less than Significant)

As previously discussed, the CRT project would generate proportionally fewer vehicle trips than estimated in the LBNL 2006 LRDP EIR due to the limited parking supply. Thus, some employees and visitors to the site are expected to shift to transit modes (i.e., AC Transit, BART, LBNL shuttle) to commute to and from LBNL.

One of the principles of the LBNL 2006 LRDP is to encourage a higher transit mode share. LRDP MM TRANS-1d would implement a TDM program which includes specific measures and strategies to encourage and accommodate higher transit use. Thus, the incremental increase in transit demand generated by the CRT project is consistent with the LRDP principle to encourage higher transit use and the expanded TDM program is expected to encourage and accommodate the higher transit use.

The CRT project would be located near existing LBNL shuttle stops on Cyclotron Road near the Blackberry Canyon Gate, and on Seaborg Road near Building 70. The shuttle service would connect the CRT site with UC Berkeley and downtown Berkeley. It is expected that shuttle ridership and travel times would be monitored as part of the TDM program and, if necessary, shuttle service would be modified to meet the expected demand. This would be a less than significant impact.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact TRANS-3: The proposed CRT project would result in increased parking demand that may exceed the available parking supply. (Less than Significant)

The LBNL 2006 LRDP anticipated that parking supply would increase at the same rate as population increase. Currently, LBNL provides one parking space per 1.7 ADP. Thus, the proposed 300-ADP CRT

project would require 174 parking spaces. However, the proposed CRT project would not increase the parking supply. Therefore, all parking demand generated by the CRT project would be accommodated by existing parking lots.

Considering the practical parking capacity of LBNL, the site currently has about 190 parking spaces available. Combined with the 50 parking spaces at the Helios parking lot, about 240 parking spaces would be available for use by both CRT and Helios projects. The expected supply is less than the estimated increase in parking demand due to the CRT project, and would be even lower if parking demand of the Helios project is also factored in. The proposed TDM program (LRDP MM TRANS-1d) is intended to enhance alternative travel modes to LBNL and reduce parking demand for the site.

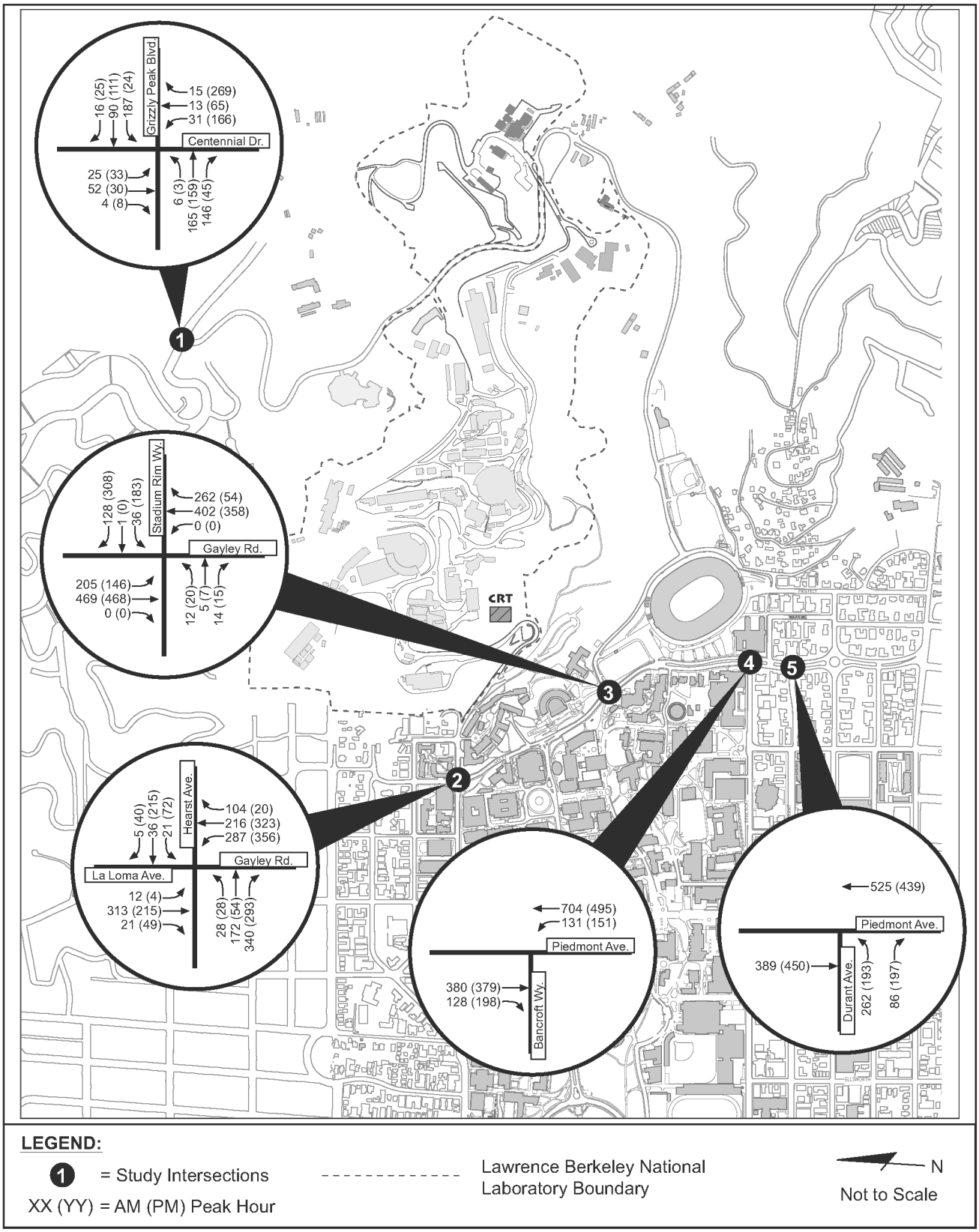
LBNL will Implement LRDP MM TRANS-1d to address potential parking shortfalls with the proposed CRT project. Specifically, the Berkeley Lab will monitor parking demand and, if peak parking demand approaches practical parking capacity, it will limit the number of parking permits issued and explore charging a fee for parking. The impact would be less than significant.

Mitigation Measure: No project-level mitigation measure required.

CRT Impact TRANS-4: The proposed CRT project would potentially result in increased hazards to pedestrians or bicyclists or conflicts with adopted policies, plans, or programs promoting walking or bicycling. (Potentially Significant, Less than significant with Mitigation)

The proposed CRT project would provide only four disabled access parking spaces, which is fewer parking spaces than planned for in the LBNL 2006 LRDP. Thus, more employees and visitors would be encouraged to take transit, bicycle or walk to the site.

Pedestrian paths and walkways would connect the proposed CRT project with the rest of the LBNL site. New stairs would connect the CRT project to Cyclotron Road just west of Blackberry Canyon Gate, providing pedestrian access to the City's sidewalk network via Cyclotron Road and Hearst Avenue.




**SOURCE:** Fehr & Peers - August 2007

FIGURE **4.12-5**

Near-Term With Project Peak Hour Traffic Volumes

924-02•11/07

The project would not cause degradation of or disruption to existing pedestrian or bicycle facilities, and the relatively small increase in vehicle traffic would not create a significant long-term conflict with pedestrian/bicycle users.

The proposed CRT project would not result in increased hazards to pedestrians or bicyclists or conflicts with most adopted policies, plans, or programs promoting walking or bicycling. The latest project site plan identifies shower and locker facilities, but it does not identify any bicycle parking facilities. Therefore, the project's impact related to conflicts with adopted policies, plans, or programs promoting walking or bicycling would be potentially significant.

CRT MM TRANS-4: Final design of the CRT building shall provide a minimum of 32 bicycle parking spaces to further encourage bicycling and walking to the site.

CRT Impact TRANS-5: The construction of the proposed CRT project would temporarily and intermittently result in impacts on vehicles, pedestrians, or bicyclists, and parking. (Less than significant)

Construction of the CRT project is expected to start in Spring 2008 and be completed by Summer 2010. Construction could result in temporary impacts from truck traffic, material staging, construction worker commute trips, and parking. LBNL Best Practices 6a through 6c (which are continuing best practices that have been adopted by the Berkeley Lab in conjunction with the approval of the 2006 LRDP) require the contractor to meet with LBNL and prepare a Construction Traffic Management Plan (CTMP) to lessen the impacts of construction on traffic and parking. The CTMP must propose truck routes, limit truck traffic during peak commute period (7:00 to 9:00 AM and 4:00 to 6:00 PM), and prepare a parking management plan for construction workers. A CTMP would be prepared and implemented during project construction.

It is estimated that most of the fill material excavated or needed at the CRT site would be accommodated within the LBNL site. However, up to 7,000 cubic yard (CY) of fill material maybe imported from outside of the LBNL site in the early stages of construction. Assuming that each truck has a 12 CY capacity, the delivery of fill material for CRT project would result in up to 1,166 one-way truck trips (583 inbound full trucks and 583 outbound empty trucks), using City streets. The fill stage of the construction, expected to last about three months, would generate up to 20 one-way truck trips per day using City streets. Following completion of site grading activities, the construction of the CRT project is expected to require about 10 major truck deliveries per day, resulting in 20 one-way truck trips that would use City streets. All construction trucks are expected to travel to and from the site via the Blackberry Canyon Gate on Cyclotron Road. Thus, about 20 trucks would use City streets on a typical day during all stages of

construction. Furthermore, the proposed project will implement LRDP BP TRANS-6a, 6b, and 6c to minimize construction traffic impacts on City streets. LBNL BP TRANS -6a requires the Berkeley Lab to work with the City of Berkeley to review truck routes and CTMP. LBNL BP 6b limits truck traffic during the peak commute periods (7:00 to 9:00 AM and 4:00 to 6:00 PM) and requires the use of designated truck routes. Pursuant to LRDP BP TRANS-6c, the Berkeley Lab will manage project schedules to minimize overlap of heavy truck activity periods of its ongoing projects. The project's impact related to construction truck traffic would be less than significant. To further minimize impacts related to construction activities, the following mitigation measure will also be implemented.

CRT MM TRANS-5: LBNL shall include the following in the CTMP prepared for the proposed project:

- For trucks hauling fill material internal to the LBNL site, trucks should use internal truck routes within the LBNL site to minimize disruption to vehicle, bicycle, and pedestrian circulation and parking.
- Consider stacked parking within the LBNL site or off-site parking for construction workers to minimize parking demand.

## 4.12.5 References

AC Transit's website, August. 2007.

Bay Area Rapid Transit District. 2007.

City of Berkeley. Berkeley Bicycle Plan Update. February 2005.

Lawrence Berkeley National Laboratory. 2006 Long Range Development Plan Draft Environmental Impact Report, SCH No. 200102046. January 2007.

Lawrence Berkeley National Laboratory. 2006 Long Range Development Plan Final Environmental Impact Report, SCH No. 200102046. Prepared by ESA. July 2007.

LBNL Shuttle website. August 2007.

Transportation Research Board. 2000. Highway Capacity Manual – Special Report 209.

UC Berkeley Public Safety and Transportation website. August 2007.

University of California, Campus Bicycle Plan. August 2006.