AA3.14.14 SUPPLEMENTAL APPENDIX MATERIALS

APPENDIX Z

NOTICE RELATED MATERIALS

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NOTICE OF AVAILABILITY OF DRAFT ADDITIONAL ANALYSIS TO THE SDSU 2007 CAMPUS MASTER PLAN FINAL EIR

Notice of Availability. California State University/San Diego State University ("CSU/SDSU") has prepared a Draft Additional Analysis ("DAA") to the SDSU 2007 Campus Master Plan Final Environmental Impact Report (EIR) (SCH No. 2007021020) for public review and comment.

As background, in November 2007, the CSU Board of Trustees approved the SDSU 2007 Campus Master Plan Revision, which authorized: (i) an enrollment increase of 10,000 full-time equivalent (FTE) students from 25,000 to 35,000; and (ii) the near-term and future development of campus infrastructure to facilitate the enrollment growth ("project"). Following the Trustees' approval, the City of San Diego, San Diego Association of Governments (SANDAG), Metropolitan Transit System (MTS), and the Del Cerro Action Council challenged the adequacy of the EIR prepared for the project. The lawsuits raised multiple issues, and the litigation proceeded from Superior Court, to the Court of Appeal, to the California Supreme Court. Ultimately, the courts ruled the EIR was inadequate in three limited respects: (i) the traffic mitigation measures requiring the payment of funds to implement recommended road improvements were inadequate because SDSU's payment was required only if the legislature appropriated the funds; (ii) the analysis of the project's impacts on transit facilities was inadequate; and (iii) a mitigation measure requiring preparation of a transportation demand management (TDM) plan was inadequate as it improperly deferred implementation of the plan. Based on the court's ruling, CSU/SDSU was directed to "take any and all further action that may be necessary to bring SDSU into compliance with CEQA."

In response to the court's order, SDSU has prepared the DAA to revise those portions of the 2007 SDSU Campus Master Plan EIR found inadequate by the court.

Project Location. The SDSU campus is located along the Interstate 8 freeway, between the Waring Road and Lake Murray Boulevard interchanges. The campus is bisected on its north-south axis by College Avenue, and generally bound by Interstate 8 and Del Cerro Boulevard/Adobe Falls Drive to the north, and Montezuma Road to the south.

Project Description. As previously noted, the SDSU 2007 Campus Master Plan authorized an enrollment increase of 10,000 FTE students, along with the near-term and future development of campus facilities to accommodate the growth. These facilities are: Adobe Falls Faculty/Staff Housing; Alvarado Campus classroom and research facilities; Student Housing; Alvarado Hotel; a renovated Student Union; and, a Campus Conference Center.

To comply with the court's ruling, the DAA presents a revised EIR Section 3.14, Transportation/Circulation and Parking. The section includes revised traffic mitigation measures that remove the prior condition making their implementation and/or funding contingent upon legislative appropriation. Additionally, the DAA includes a revised, quantitative analysis of the transit-related impacts associated with the project, and a mitigation measure requiring implementation of specific TDM strategies. These three discrete areas are the only areas of the 2007 Campus Master Plan EIR the courts found inadequate and, therefore, the only three areas CSU/SDSU is required to address in the DAA.

Summary of Significant Environmental Impacts. Project implementation would result in significant impacts to off-campus intersections, street segments, freeway ramp meters, and freeway mainline segments. Where feasible mitigation is available, such mitigation is identified and its implementation would reduce the corresponding impacts to less than significant. Mitigation includes a requirement that SDSU implement certain identified TDM strategies to reduce vehicle trips to and from campus, including increased rideshare opportunities, bicycle and pedestrian related improvements, and strategies designed to increase transit ridership. However, in numerous instances, mitigation is not feasible for various reasons, including physical constraints and/or the absence of a funding plan or program to implement the necessary improvements. Therefore, impacts related to certain off-campus roadway facilities would be significant and unavoidable. Impacts relating to transit would be less than significant.

Public Review Period/Comment Period. The DAA will be circulated for a 45-day public review period commencing January 12, 2018 and concluding February 25, 2018. As the lead agency, CSU/SDSU requests that reviewers limit their comments to those subjects ruled inadequate by the court and the corresponding analyses presented in the DAA.

Following preparation of responses to comments, a Final Additional Analysis will be prepared that will include the written responses to comments and other responsive documentation. The Draft Additional Analysis, Final Additional Analysis, and 2007 Campus Master Plan Final EIR then will be presented to The Board of Trustees of The California State University for certification under CEQA and re-approval of the 2007 Campus Master Plan consistent with the court's order.

Written comments on the DAA must be received by mail, email, or facsimile no later than 5:00 P.M. on February 25, 2018. Please direct all comments to:

Laura Shinn, Director
Department of Facilities Planning, Design and Construction
Administration Building, Room 130
San Diego State University
5500 Campanile Drive
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E-mail: lshinn@mail.sdsu.edu

This notice will be filed with the San Diego County Clerk's office for a period of not less than 45 days, and will be published in a newspaper of general circulation.

Reviewing Locations. The Draft Additional Analysis, along with the 2007 Campus Master Plan Final EIR, may be accessed online through the SDSU website at http://bfa.sdsu.edu/campus/facilities/planning/. Copies of the DAA are available for review at the following locations: (1) Love Library (on the main SDSU campus, 5500 Campanile Drive, San Diego, California 92182); (2) College-Rolando Public Library, City of San Diego Public Library, 300 Park Boulevard (6600 Montezuma Road, San Diego, California 92115-2828); and (3) Office of Facilities Planning, Design and Construction (SDSU Campus, Administration Building, Suite 130, 5500 Campanile Drive, San Diego, California 92182).

Hazardous Substances. The general mailing address of the SDSU Campus is 5500 Campanile Drive. This address is listed on several hazardous substances databases/lists enumerated under Section 65962.5. However, none of the physical improvements to the SDSU Campus proposed by the project are identified on any regulatory database compiled pursuant to Government Code Section 65962.5.

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4918 New Ranch Rd
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5251 HEWLETT DR
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12496 SAN BRUNO CV
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5542 DROVER DR
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Radomski Klein Heffernan Trust 05-07-15
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5531 DROVER DR
San Diego, CA 92115

Bertram/Butler Family Trust 11-09-04
5351 SAXON ST
San Diego, CA 92115

Basko Family Trust 10-02-06
5475 REDDING RD
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Goldhammer Living Trust 03-13-07
5016 COLLEGE GARDENS CT
San Diego, CA 92115

Griep Debra A Irrevocable Trust 06-03-05
5215 COLLEGE GARDENS CT
San Diego, CA 92115

Williamson Franklin Separate Trust 06-27-03
2730 STARBIRD DR
Costa Mesa, CA 92626

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5177 REMINGTON RD
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5174 BIXEL DR
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5112 WALSH WAY
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Allgire Richard W&Mary A Family Trust 04-05-06
3363 WILDFLOWER VALLEY DR
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Fernandez Family Trust 04-12-03
5143 BIXEL DR
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5242 COLLEGE GARDENS CT
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Munson Susan Trust 04-21-10
5423 DROVER DR
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5482 DROVER DR
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Filner/Jenkins Trust 04-05-95
5358 SAXON ST
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5229 COLLEGE GARDENS CT
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5241 STONE CT
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Goodwin Family Trust 06-11-90
5244 STONE CT
San Diego, CA 92115

Wilson William&Lola Trust 01-31-90
25155 HEREFORD DR
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Simpson Family Trust 10-27-06
9601 CANDY LN
La Mesa, CA 91941

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Chu Family Trust 01-22-15
5464 REDDING RD
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5175 BIXEL DR
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5151 COLLEGE GARDENS CT
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5453 DROVER DR
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Hatthew W Hohlfeld
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Smith Revocable Family Trust 01-08-02
3006 VIA DONITO
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Piserchio Robert&Connie Trust 05-09-02
5257 STONE CT
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Foster Family Trust 04-25-00
5173 WALSH WAY
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Chase Greg&Diane Revocable Trust 02-21-11
5840 SEVERIN DR
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Kay Family 2000 Trust 04-19-00
5396 DROVER DR
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Green Family Trust 09-04-01
5182 COLLEGE GARDENS CT
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5111 MANHASSET DR
San Diego, CA 92115

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5117 REMINGTON RD
San Diego, CA 92115

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5551 DROVER DR
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5129 REMINGTON RD
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5110 COLLEGE GARDENS CT
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Berkowitz&Monigold Trust 08-05-08
5151 BIXEL DR
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Trompas Trust B 05-29-87
10064 GRANDVIEW DR
La Mesa, CA 91941

Katz Revocable Trust 09-03-13
5483 DROVER DR
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5233 STONE CT
San Diego, CA 92115

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Gitterman Living Trust 11-29-89
5066 COLLEGE GARDENS CT
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5104 REMINGTON RD
San Diego , CA 92115

Kent N Fisher
5452 DROVER DR
San Diego , CA 92115

English Trust 04-03-92 C/O DAVID PONSFORD
5705 TULANE ST
San Diego, CA 92122

Hagan Family Trust 07-31-95
5387 SAXON ST
San Diego, CA 92115

Corum&Prentice Family Trust 02-16-10 C/O GANT A CORUM
244 HILL PL
Costa Mesa , CA 92627

Lightman Family Trust 07-09-02
5256 COLLEGE GARDENS CT
San Diego, CA 92115

Ray & Suzanna Schumacher
6160 Arno Drive
San Diego, CA 92120

Roger D Berry
5234 STONE CT
San Diego, CA 92115

Rowley Family 1992 Trust 10-19-92
5111 BIXEL DR
San Diego, CA 92115

Megan & Charles B Way Linaugh
5410 REDDING RD
San Diego, CA 92115

Gregory Hopps
5230 MANHASSET DR
San Diego , CA 92115

Raymond Backus
5389 REDDING RD
San Diego , CA 92115

Delarosa Family Trust 06-07-96
5332 REDDING RD
San Diego, CA 92115

Michael J & Kerry S Tabler
5428 REDDING RD
San Diego, CA 92115

Moroney Inter Vivos Trust 05-19-94 C/O KAREN A NIEMELA
8962 SOVEREIGN RD
San Diego, CA 92123

Hargareten/Terrell Trust 04-16-15
5269 COLLEGE GARDENS CT
San Diego, CA 92115

Grawunder Johanna Trust 03-09-11
53 RODGERS ST
San Francisco , CA 94103

Whalen Marital Trust 07-01-05 Stewart Family Living Trust
864 GRAND AVE #504
San Diego , CA 92109

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San Diego , CA 92115

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San Diego , CA 92115

Raymond L & Alma X Gilliland
5172 DORMAN DR
San Diego , CA 92115

Claudia Barron-Sanchez
5202 COLLEGE GARDENS CT
San Diego , CA 92115

Robert & Mary S Schroeder
471 WOODLAND HILLS DR
Escondido, CA 92029

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6172 MARY LANE DR
San Diego, CA 92115

Sidhu Family Trust 11-15-04
4635 ALLENDE AVE
Oceanside , CA 92057

Lanig Property L L C
610 N GRANADOS AVE
Solana Beach, CA 92075

William F Stryker
5369 SAXON ST
San Diego, CA 92115

Dresselhaus Family Trust 10-06-00
P O BOX 710743
San Diego, CA 92171

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5357 REDDING RD
San Diego, CA 92115

Mcgann Patricia A 2012 Trust 05-17-12
5152 REMINGTON RD
San Diego, CA 92115

Jacobsen Living Trust 04-10-02
5164 REMINGTON RD
San Diego, CA 92115

Borris Laurence&Beryl Trust 03-23-06
5112 MANHASSET DR
San Diego, CA 92115

John B Knadle
5366 PENNY PL
San Diego, CA 92115

Vicente & Stacy K Cano
5162 DORMAN DR
San Diego, CA 92115

Jeffrey L & Hantman Clea Motch
5101 COLLEGE GARDENS CT
San Diego, CA 92115

Hall Family Trust A 03-20-87
5522 DROVER DR
San Diego, CA 92115

Richi Wang
5381 SAXON ST
San Diego, CA 92115

Benjamin L & Mary K Adams
5185 BIXEL DR
San Diego, CA 92115

Drexler Family 2003 Trust 04-23-03
5138 WALSH WAY
San Diego, CA 92115

Palmer Fred E&Mona G Revocable Living 2014 Trust
5161 DORMAN DR
San Diego, CA 92115

Atrash Francis J&Delalle R Family Trust 02-17-99
5183 WALSH WAY
San Diego, CA 92115

Joseph & Kerri Dunne
5225 STONE CT
San Diego, CA 92115

Herbert M & Luanne J Gross
5133 COLLEGE GARDENS CT
San Diego, CA 92115

Aguado Edward&Barbara J Trs
5433 REDDING RD
San Diego, CA 92115

Jay Family 1987 Trust 03-04-87
5861 RIDGEMOOR DR
San Diego, CA 92120

Michael R & Anne M Sappington
5433 DROVER DR
San Diego, CA 92115

Jonathan A Steer
5325 PENNY PL
San Diego, CA 92115

Cummings Kirsten Trust 05-07-93
5377 REDDING RD
San Diego, CA 92115

Schwaebe Margaret N Tr
5521 DROVER DR
San Diego, CA 92115

Anderson Survivors Family Trust 05-12-92
5422 DROVER DR
San Diego, CA 92115

Beatty Family Trust 08-23-13
5144 MANHASSET DR
San Diego, CA 92115

Charles Maze
4677 El Cerrito Drive
San Diego, CA 92115

Victor V Fuentes
3535 MORENA BLVD
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Naiman Leonard H&Corinne G Revocable Trust 10-13-93
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San Diego, CA 92115

Milber Family Trust 08-07-10
650 KIRKHAM ST
San Francisco, CA 94122

Cornthwaite/Dumas Trust 05-27-99
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San Diego, CA 92115

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Fort Collins, CO 80526

Jones Sidney J Revocable Living Trust 06-14-07
5167 BIXEL DR
San Diego, CA 92115

Cooper Family Trust 01-03-00
5319 SAXON ST
San Diego, CA 92115

Maynard Family Trust 09-28-95
5473 DROVER DR
San Diego, CA 92115

Mccully/Kavanaugh Family Trust 05-06-16
5412 DROVER DR
San Diego, CA 92115

Rusher Family Trust 04-19-00
5138 BIXEL DR
San Diego, CA 92115

Prestwood Margie Ray Trust 04-22-99
5532 DROVER DR
San Diego, CA 92115

Glen R & Rebekah A Campbell
5345 PENNY PL
San Diego, CA 92115

Goodman Family Trust 10-13-03
5388 REDDING RD
San Diego, CA 92115

Querin Joanne M Tr QUERIN JOANNE M TR
5056 COLLEGE GARDENS CT
San Diego, CA 92115

Shipman Cynthia J Living Trust 12-15-03
5561 DROVER DR
San Diego, CA 92115

Pasquale P & Olga I Piro
5457 REDDING RD
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Lanen William N&Donna M Trust 12-05-11
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PROOF OF SERVICE

I declare that I am employed with the law firm of Gatzke Dillon & Ballance LLP, whose address is 2762 Gateway Road, Carlsbad, California 92009. I am not a party to the within cause, and I am over the age of eighteen years.

I further declare that on January 11, 2018, I served a copy of the following on the persons in the attached service list:

**NOTICE OF AVAILABILITY
OF DRAFT ADDITIONAL ANALYSIS
TO THE SDSU 2007 CAMPUS MASTER PLAN FINAL EIR**

☒ **BY U.S. MAIL [Code Civ. Proc sec. 1013(a)]** by placing a true copy thereof enclosed in a sealed envelope with postage thereon fully prepaid, addressed as follows, for collection and mailing at Gatzke Dillon & Ballance LLP, 2762 Gateway Road, Carlsbad, CA 92009 in accordance with Gatzke Dillon & Ballance LLP's ordinary business practices.

I am readily familiar with Gatzke Dillon & Ballance LLP's practice for collection and processing of correspondence for mailing with the United States Postal Service, and know that in the ordinary course of Gatzke Dillon & Ballance LLP's business practice the document(s) described above will be deposited with the United States Postal Service for collection and mailing on the same date that it (they) is (are) placed at Gatzke Dillon & Ballance LLP with postage thereon fully pre-paid.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed at Carlsbad, California, on January 11, 2018.

Jamie Carr

APPENDIX AA
TRANSPORTATION ANALYSIS RELATED MATERIALS

REVISED TRANSPORTATION IMPACT ANALYSIS PAGES

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Law &
Greenspan
engineers

Providing Mobility Solutions for 50 Years 1966-2016

TRANSPORTATION IMPACT ANALYSIS

SDSU MASTER PLAN UPDATE

San Diego, California

~~January 9~~April 30, 2018

LLG Ref. 3-16-2604

Linscott, Law & Greenspan, Engineers

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Suite 100
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Project's impacts relative to transit (trolley and buses) was conducted. The following summarizes the Project's significant impacts under both the Near-Term and Horizon Year analyses:

Near-Term (Year 2022) Significant Impacts[2]

The Project would result in significant impacts under the Near-Term scenario at the following intersections:

- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- ~~I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)~~

The Project would result in significant impacts under the Near-Term scenario at the following street segments:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- ~~Alvarado Road: Reservoir Drive to 70th Street (LOS E)~~
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- ~~College Avenue: Montezuma Road to Cresita Drive (LOS F)~~

Mitigation measures for these impacts are discussed in detail in *Section 1~~2~~3.1*. The Near-term mitigation measures for intersections and street segments are shown below. No significant Near-Term impacts to the freeway ramp meters or mainline segments were identified.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps

> The improvement necessary to mitigate the Project's significant impact at the College Avenue / I-8 Eastbound Ramp is to widen the northbound College Avenue approach to the on-ramp to provide an additional lane on College Avenue between Canyon Crest Drive and the I-8 EB on-ramp.
>
> Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,~~211~~056[3] or its equivalent[4], SDSU shall commence and to the extent feasible complete construction by the identified

[2] The impacts below refer to the Modified Project (i.e. elimination of the Alvarado Hotel. See *Section 12.0*).

[3] For 2017/2018, the FTE for capacity and master planning purposes is 24,555. (See ***Appendix T***.) This number serves as the baseline FTE. The total FTE trigger is then calculated as follows: baseline FTE (i.e. 24,555) + FTE trigger shown in *Table 1~~3~~4–1*, Mitigation Trigger Analysis. *For e.g.: Impact A-1*: 24,555 baseline FTE + ~~656~~501 FTE increase = 25,~~211~~056 total FTE. Similar methodology was followed for all other significantly impacted locations. See *Table 14–1* and related text (immediately following Table 13–5) for additional information).

[4] The phrase "or its equivalent" as used in this and other mitigation measures refers to the fact that the near-term construction of the ~~Alvarado Hotel, in combination with construction of a portion of the~~ Adobe Falls Faculty/Staff Housing~~,~~ could trigger the identified significant impact prior to FTE enrollment actually reaching the designated

trigger of the widening of the northbound College Avenue approach to the College Avenue / I-8 Eastbound Ramp to provide an additional (third) northbound lane between Canyon Crest Drive and the I-8 EB on-ramp, to the reasonable satisfaction of the City of San Diego City Engineer and Caltrans. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfact~~ory~~ion ~~to~~of Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

A-2 College Avenue / Canyon Crest Drive

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Canyon Crest Drive intersection is to widen the northbound College Avenue approach to the intersection to provide an additional lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,~~251~~265 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the widening of the northbound College Avenue approach to the College Avenue / Canyon Crest Drive intersection to provide an additional (third) northbound through lane, to the reasonable satisfaction of the City of San Diego City Engineer. ~~The improvements shall be completed prior to the impact occurring.~~ To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

A–3. College Avenue / Zura Way

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Zura Way intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the College Avenue / Zura Way intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,~~608~~586 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the installation of a traffic signal at the College Avenue / Zura Way intersection, to the reasonable satisfaction of the City of San Diego City Engineer. ~~The improvements shall be~~

~~trigger~~number, in this case, 25,~~211~~056. Accordingly, Table 1~~3~~4-1, Mitigation Trigger Analysis, of this Draft Additional Analysis, identifies the number of FTE equivalent ~~hotel rooms and~~ faculty/staff housing that would trigger the identified impact requiring mitigation.

~~completed prior to the impact occurring.~~ To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

A–4. College Avenue / Montezuma Road

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Montezuma Road intersection is to re-stripe the eastbound Montezuma Road approach to the intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue, and also to install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,~~912~~998 or its equivalent, SDSU shall re-stripe the eastbound Montezuma Road approach to the College Avenue / Montezuma Road intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and also shall install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal, to the reasonable satisfact~~ory~~ion ~~to~~of the City of San Diego City Engineer. ~~The improvements shall be completed prior to the impact occurring.~~ To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

~~A–5. I-8 Westbound Ramp / Parkway Drive~~

~~The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.~~

~~Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,795 or its equivalent, SDSU shall install a traffic signal at the I-8 Westbound Ramp / Parkway Drive intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and City of La Mesa for review and approval. Following Caltrans and City of La Mesa approval, SDSU shall install the traffic signal or a roundabout consistent with the approved plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.~~

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from East Campus Drive to Reservoir Drive is to widen and re-stripe Alvarado Road to add a two-way center left-turn lane or left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway. This improvement would require the removal of on-street parking on a portion of the segment, which is noted in the College Area Community Plan. However, ~~T~~the removal of on-street parking may not be approved by the City of San Diego~~feasible, however,~~ since alternative parking spaces may not be available, although SDSU would be able to retain the on-street parking on a portion of Alvarado Road by widening the segment that fronts SDSU property between Alvarado Court and approximately 250 feet west of the Alvarado Medical Center driveway.

Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching ~~24,910~~25,286 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer and provided the City approves removal of the existing on-street parking on the section not adjacent to SDSU property, commence and to the extent feasible complete construction by the identified trigger of the re-striping~~e~~ of and widening, where feasible, Alvarado Road between E. Campus Drive and Reservoir Drive to add a two-way center left-turn lane or add left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway, to the reasonable satisfaction of the City of San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements. Additionally~~However~~, if the removal of on-street parking where necessary is not feasible, the improvements are infeasible~~cannot be fully implemented~~ due to right-of-way limitations and the impact would remain significant and unavoidable.

~~B–2. Alvarado Road: Reservoir Drive to 70th Street~~

~~The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd.~~

~~This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the removal may not be feasible since alternative parking spaces may not be available. Assuming the removal of on-street parking where~~

~~necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 25,465 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe where feasible Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable.~~

B–~~3~~2. College Avenue: I-8 Eastbound Ramp to Zura Way

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Zura Way to the I-8 Eastbound Ramp is to widen this segment of College Avenue to provide an additional (third) northbound travel lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,~~862~~804 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the widening of northbound College Avenue from Zura Way to the I-8 Eastbound Ramp to provide an additional (third) northbound travel lane. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved ~~and constructed~~ in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

~~B–4. College Avenue: Montezuma Road to Cresita Drive~~

~~The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to widen College Avenue and construct a raised median.However, this mitigation is infeasible in the near term because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way on College Avenue between Montezuma Road and Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the road widening and installation of a raised median is infeasible and, as a result, this impact is considered significant and unavoidable.~~

~~As an alternate strategy, SDSU could widen the sidewalks on the segment of College Avenue between Montezuma Road and Cresita Drive to facilitate increased pedestrian travel, and/or restripe the road to provide for bicycle lanes, although this latter improvement would require removal of the limited existing curbside parking. Neither bicycle lanes nor widened sidewalks would reduce the identified vehicular level of service impact to less than significant.~~

Horizon Year (Year 2035) Significant Impacts

The Project would result in significant impacts under the Horizon Year scenario at the following intersections:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the PM peak hour)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / I-8 EB Ramps (~~LOS E during the AM peak hour,~~ LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)
- Montezuma Road / Collwood Boulevard (LOS E during the PM peak hour)

The Project would result in significant impacts under the Horizon Year scenario at the following street segments:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)

The Project would result in significant impacts under the Horizon Year scenario at the following freeway ramp meters:

- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

The Project would result in significant impacts under the Horizon Year scenario at the following freeway mainline segments:

- I-8 between Fairmount Avenue and Waring Road, *LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–PM (EB)*

- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

Mitigation measures for each of the identified significant impacts are shown below.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N.

The improvement necessary to mitigate the Project's significant cumulative impact at the Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio North intersection is to widen the eastbound approach to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue at this intersection.

Improvements to the interchange are included in the *FY 2015 Navajo Public Facilities Financing Plan, Project T-12B* (see *Appendix Z*). However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (0.9%)~~, nor is there a plan or program in place to construct the necessary improvements at this intersection~~. Therefore, the identified improvements are infeasible as they are not capable of being accomplished in a successful manner within a reasonable period of time and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 27,806 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signals located at the following intersections: Fairmount Avenue/I-8 Eastbound Off Ramp; Fairmount Avenue / Camino Del Rio North / I-8 Westbound Off Ramp; and Fairmount Avenue / Mission Gorge Road. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant. *Appendix BB* contains more information on Adaptive Signal Controls.

C–2. 55th Street / Montezuma Road

The improvements necessary to mitigate the Project's significant cumulative impact at the 55th Street / Montezuma Road intersection are to modify the traffic signal and restripe the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~10.9~~10.6%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project onlyand,. tTo that end, ~~shall prepare design plans and submit such plans to the City of San Diego for review and approval~~ prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,~~762~~346 or its equivalent~~. Following City approval~~, SDSU shall ~~obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to~~ restrip~~inge~~ the 55th Street southbound approach to the 55th Street / Montezuma Road intersection to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane, and also shall implement the associated~~coordinating with the City regarding the~~ signal modification to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–3. Campanile Drive / Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Campanile Drive / Montezuma Road intersection is to restripe the Montezuma Road westbound approach at the intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~12.1~~10.3%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements~~.~~ in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,~~670~~274 or its equivalent, SDSU shall re-stripe the Montezuma Road westbound approach to the Campanile Drive / Montezuma Road intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive, and implement the associated signal modifications to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval~~,~~. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–4. College Avenue / I-8 Eastbound Ramp

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / I-8 Eastbound Ramp intersection (provide a third northbound lane on College Avenue between Canyon Crest Drive and I-8 [A-1]) would also mitigate the Project's significant cumulative impact and no further mitigation is necessary.

C–5. College Avenue / Canyon Crest Drive

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Canyon Crest Drive intersection (widen the intersection to provide an additional (third) northbound lane [A-2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –6. College Avenue / Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Zura Way intersection (install a traffic signal [A-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –7. College Avenue / Montezuma Road

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Montezuma Road intersection (restripe the eastbound approach to include an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and install a right-turn overlap phase [A-4]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –8. Alvarado Court / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Alvarado Court / Alvarado Road intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the Alvarado Court / Alvarado Road intersection.

~~However,~~Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~59.8~~59.1%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, ~~T~~therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 27,285 or its equivalent, SDSU shall install a traffic signal at the Alvarado Court/Alvarado Road intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.~~the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.~~

C –9. 70th Street / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the 70th Street / Alvarado Road intersection is to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the intersection traffic signal.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~10.2~~9.6%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. ~~and, t~~To that end, ~~shall prepare design plans and submit such plans to the City of San Diego for review and approval~~ prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 29,~~359~~086~~ or its equivalent. Following City approval~~, SDSU shall ~~obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to coordinating with the City to~~ install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the 70th Street/Alvarado Road intersection traffic signal~~.~~ to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C –10. Interstate 8 Westbound Ramps / Parkway Drive

~~The improvements to be implemented as mitigation for the Project's direct impact at the I-8 Westbound Ramps / Parkway Drive intersection (install a traffic signal or a roundabout) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.~~ The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (14.2%), SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,671 or its equivalent, SDSU shall either construct or provide full funding to the City of La Mesa for the installation of either a traffic signal or a roundabout at the I-8 Westbound Ramp / Parkway Drive intersection, dependent upon the results of an ICE analysis. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and the City of La Mesa for review and approval. Following Caltrans and La Mesa approval, SDSU shall install the traffic signal or roundabout consistent with the approved plans. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

C –11. Montezuma Road / Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact at the Montezuma Road / Collwood Boulevard intersection is to modify the traffic signal at the intersection to provide a right-turn overlap phase on the northbound approach.

Since, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~9.7~~9.3%), nor is there a plan or program in place to construct the necessary improvements at this intersection. SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 30,~~386~~050~~,~~ or its equivalent, SDSU shall modify the traffic signal at the Montezuma Road / Collwood Boulevard intersection to provide a right-turn overlap phase on the northbound approach to the reasonable satisfaction of the San Diego City Engineer. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer~~satisfactory to the City Engineer~~.

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from E. Campus Drive to Reservoir Drive (widen and restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in Mitigation Measure B-1, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –2. Alvarado Road: Reservoir Drive to 70th Street

~~The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from Reservoir Drive to 70th Street (restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.~~

~~However, as previously explained in B-2, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.~~ The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the City of San Diego may not approve the removal since alternative parking spaces may not be available.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (20.0%), SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 26,534 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer and provided the City approves removal of the existing on-street parking, re-stripe Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartments and retail driveways along Alvarado Road. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements. Additionally, if the removal of on-street parking where necessary is not approved by the City, the improvements are infeasible due to right-of-way limitations and the impact would remain significant and unavoidable.

D –3. College Avenue: Del Cerro Boulevard to I-8 WB off-Ramp

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Del Cerro Boulevard to Interstate-8 WB off-ramp is to restripe or, alternatively if the City of San Diego requires, widen northbound College Avenue to provide an additional lane.

~~However,~~Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~32.1~~30.8%), nor is there a plan or program in place to construct the necessary improvements at this segment, in the event the City approves the addition of a northbound lane via re-striping, which SDSU's traffic engineer has determined is feasible and would fully mitigate the impact, SDSU has agreed to fully fund and implement the re-striping in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent

(FTE) enrollment reaching 26,671 or its equivalent, and contingent upon City approval, SDSU shall re-stripe northbound College Avenue between Del Cerro Boulevard and the I-8 WB off-ramp to provide an additional lane. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer~~. Furthermore, the addition of a lane to this segment of College Avenue would conflict with the Navajo Community Plan designation~~. In the event the City does not approve the re-striping and requires instead that College Avenue be widened at this location, the road widening would require the acquisition of additional right-of-way (see *Appendix AA* for Mitigation Infeasibility memo) that is owned by multiple individual third parties. Therefore, under this latter scenario, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –4. College Avenue: I-8 Eastbound Ramps to Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the segment of College Avenue from the I-8 Eastbound Ramps to Zura Way (widen College Avenue to provide an additional (third) northbound lane [B-~~3~~2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

D –5. College Avenue: Zura Way to Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Zura Way to Montezuma Road is to widen the four-lane portion of College Avenue to provide an additional travel lane.

However, implementation of this~~the necessary~~ improvement is infeasible because the right-of-way necessary to add a fifth lane is not available due to the proximity of buildings fronting College Avenue along this segment ~~at this location~~, and the potential future availability of right of way (see *Appendix AA* for Mitigation Infeasibility memo) on the east side of College Avenue as part of the area's redevelopment is speculative. Additionally, ~~W~~while the College Area Community Plan ~~shows~~ depicts College Avenue as ~~6-~~six lanes between Zura Way and Montezuma Road, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~34.5~~31.5%), nor is there a plan or program in place to construct the necessary improvements at this segment. Therefore, the addition of a fifth lane is infeasible and, as a result, this impact is considered significant and unavoidable.

D –6. College Avenue: Montezuma Road to Cresita Drive

~~The improvements identified to mitigate the Project's direct impact to the segment of College Avenue from Montezuma Road to Cresita Drive (widen College Avenue to construct a raised median) would, if implemented, also mitigate the Project's significant cumulative impact at this location. However, as previously explained in B-4, the improvements identified to mitigate~~

~~the direct impacts at this location are infeasible and, therefore, the cumulative impact mitigation also is infeasible and, as a result, cumulative impacts at this location are considered significant and unavoidable.~~ The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to construct a raised median either by widening College Avenue or removing the existing on-street parking. However, widening College Avenue at this location is not feasible because it would require the acquisition of additional right-of-way that is owned by multiple individual third parties. As to the removal of on street parking, the City of San Diego has informed SDSU that only portions of the parking could be removed.

To that end, if the removal of on-street parking on the segment of College Avenue between Montezuma Road and Cresita Drive is approved by the City of San Diego, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,670 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer, construct the recommended median. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. However, if the removal of on-street parking is not approved by the City, this mitigation is infeasible because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way (see *Appendix AA* for Mitigation Infeasibility memo) on College Avenue between Montezuma Road and Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the installation of a raised median would be infeasible and, as a result, this impact is considered significant and unavoidable.

D –7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Fairmount Avenue to Collwood Boulevard is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvement is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography (see *Appendix AA* for Mitigation Infeasibility memo); and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~8.2~~7.8%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,283 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signal located at the Montezuma Road / Collwood Boulevard intersection. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant.

D –8. Montezuma Road: Collwood Boulevard to 55th Street

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Collwood Boulevard to 55th Street is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvements is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography (see *Appendix AA* for Mitigation Infeasibility memo); and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~9.1~~8.7%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,032 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signals located at the intersections of Montezuma Road and Yerba Santa Drive, 54th Street, and 55th Street. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant.

D –9. Montezuma Road: 55th Street to College Avenue

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from 55th Street to College Avenue is to install a raised median along this segment of Montezuma Road.

~~However~~Since, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~21.9~~21.2%), nor is there a plan or program in place to construct the necessary improvements at this location~~.~~, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,998 or its equivalent, SDSU shall install a raised median on the segment of Montezuma Road between 55th Street and College Avenue, to the reasonable satisfaction of the City of San Diego City Engineer. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer~~. Therefore, the identified~~

~~improvement is infeasible and, as a result, this impact is considered significant and unavoidable~~.

Ramp Meter

E–1. Northbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Northbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Northbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

E–2. Southbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Southbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Southbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (~~5.4~~4.1%) to the eastbound segment of Interstate-8 between Fairmount Avenue and Waring

Road is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at either the I-8 / Fairmount Avenue or I-8 / Waring Road interchange and, relatedly, on the segment of I-8 between Fairmount Avenue and Waring Road. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (~~6.2~~4.8%) to the eastbound segment of Interstate-8 between Waring Road and College Avenue is to provide additional capacity on I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between Waring Road and College Avenue. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–3/F-4. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (~~4.1~~3.8%) and westbound (~~3.7~~3.3%) segments of Interstate-8 between College Avenue and Lake Murray Boulevard is to provide additional capacity on I-8 eastbound and westbound mainlines. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between College Avenue and Lake Murray Boulevard. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–5/F-6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (~~10.4~~9.8%) and westbound (~~9.4~~8.7%) segments of Interstate-8 between Lake Murray Boulevard and Fletcher Parkway is to provide additional capacity on the I-8 eastbound and westbound mainlines. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / Fletcher Parkway or I-8 / Lake Murray Boulevard interchange and, relatedly, on the segment of I-8 between Lake Murray Boulevard and Fletcher Parkway. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

As to transit, a detailed transit analysis was conducted to determine if adequate capacity would exist in the transit system (i.e. trolley and bus) to absorb the additional riders that would be generated as a result of the Project. Based on the design passenger capacity of the trolley and buses serving the SDSU Transit Center, the analysis determined that sufficient capacity would be available to accommodate the forecasted increase in transit riders. Therefore, the proposed project would not result in significant impacts related to transit.

An assessment relative to pedestrian and bicycle facilities also was conducted and is presented in *Section ~~15.0~~16.0*.

In addition, the analysis presented in this report includes a mitigation measure requiring that SDSU implement certain identified Transportation Demand Management (TDM) strategies to reduce single occupant vehicle trips to and from campus. These strategies include designation of a TDM Coordinator, providing increased rideshare opportunities, bicycle and pedestrian related improvements, and strategies designed to increase transit ridership. The TDM mitigation measure is presented in *Section ~~16.0~~17.0*.

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SDSU MASTER PLAN UPDATE

San Diego, California
~~January 9~~April 30, 2018

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has been retained to provide additional traffic engineering consulting services associated with the San Diego State University (SDSU) 2007 Campus Master Plan (the Project). Following litigation brought in 2007 to challenge the environmental impact report (EIR) prepared for the Master Plan, the court found that the transportation related analysis conducted in connection with the 2007 Campus Master Plan was inadequate in certain limited respects. This traffic study is prepared in response to the court's ruling and revises those portions of the 2007 analysis found inadequate by the court. Specifically, all applicable mitigation measures have been revised to remove the prior condition making their implementation and/or funding contingent upon legislative appropriation, and the analysis of transit-related impacts (i.e., impacts to trolley and bus service) and a mitigation measure requiring preparation of a Transportation Demand Management (TDM) program have both been revised consistent with the court's ruling. While not required by the court, the study presented here is based on an "update" to the 2007 study, with updated traffic information based on 2016 traffic counts, an updated list of cumulative projects, and updated transit data. Consistent with the court's ruling, the study analyzes the same project, including trip generation, as analyzed in the 2007 study.

The project vicinity map is shown in ***Figure 1–1***. A more detailed project area map is shown in ***Figure 1–2***.

The analysis presented in this report addresses the following subject areas:

- Project Description
- Existing Conditions
- Analysis Approach and Methodology
- Significance Criteria
- Cumulative Projects
- Existing Conditions Analysis
- Project Trip Generation/ Distribution/ Assignment
- Existing + Total Project Analysis
- Near-Term (Year 2022) Analysis
- Horizon Year (Year 2035) Analysis
- Transit Analysis
- Modified Project Analyses
- Significance of Impacts and Mitigation Measures

- Mitigation Trigger Analysis
- Additional Intersection Analysis
- Pedestrian and Bicycle Facilities Assessment
- Transportation Demand Management (TDM) Mitigation Measure
- California State University (CSU) Significance Criteria
- Queue Analysis

Remington Road is an east-west roadway and is classified as a 2-lane Collector in the College Area Community Plan. Remington Road is currently constructed as a two-lane undivided roadway west of 55th Street. Bike lanes are provided on both sides of the roadway. On-street parking is generally prohibited. Currently no transit facilities exist on Remington Road. The posted speed limit is 25 mph.

Reservoir Drive is a north-south roadway and is classified as a 2-lane Collector in the College Area Community Plan. Reservoir Drive is currently constructed as a two-lane undivided roadway between Alvarado Road and Montezuma Road. Bike lanes are not provided along Reservoir Drive. On-street parking is generally allowed. There is a bus stop at Montezuma Road and a Green Line Trolley stop at Alvarado Road. The posted speed limit is 30 mph.

Zura Way is an unclassified roadway in the College Area Community Plan, and is currently constructed as a two-lane undivided roadway east of College Avenue and north of Montezuma Road. Zura Way connects College Avenue and Montezuma Road with East Campus Drive, parking structures 3 and 4, as well as surface lots 2B, 2, and 2A (formerly Lots E, F, and G). Bike lanes are not provided and on-street parking is prohibited. Currently no transit facilities exist on Zura Way. The posted speed limit is 15 mph.

55th Street is a north-south roadway and is classified as a 2-lane Collector north of Hardy Avenue and a 4-lane Collector between Hardy Avenue and Montezuma Road in the College Area Community Plan. 55th Street is currently constructed as a four-lane undivided roadway north of Montezuma Road, and as a two-lane undivided roadway north of Canyon Crest Drive. Bike lanes are provided south of Remington Road. On-street parking is prohibited except north of Canyon Crest Drive. There is a bus stop at Montezuma Road. The posted speed limit is 25 mph.

Section ~~14.0~~15.0 includes existing condition descriptions of Collwood Boulevard and Yerba Santa Drive.

3.2 Existing Transit Conditions

Transit service is provided to the area via the SDSU Transit Center, which serves seven (7) bus routes and the Green Line Trolley operated by MTS. Bus Routes 11, 14, 115, 215, 856, 936, and 955 are all serviced by the SDSU Transit Center and various other stops within the project area. A short description of the trolley and bus service is provided below.

3.2.1 *MTS Trolley Green Line*

The MTS Trolley Green Line connects Downtown San Diego to Santee. A total of 27 stops currently exist along the Green Line with a dedicated SDSU Transit Center stop serving the campus. The general trolley hours of operation are from 3:53 AM until 12:30 AM. The trolley headways are typically 15 minutes on weekdays between 6:15 AM and 8:15 PM with headways increasing to 30 minutes during the off-peak times. A more detailed description of trolley conditions and operations is provided in ***Section 11.1.***

3.2.2 *MTS Bus Service*

Route 11 connects SDSU with Paradise Hills via Downtown; Route 14 connects SDSU with Lake Murray Village to the east and Grantville Trolley Station to the west; Route 115 connects SDSU with the El Cajon Transit Center; Route 215 is a Rapid connection serving SDSU and Downtown; Route 856 connects SDSU with Rancho San Diego and Cuyamaca College on weekdays; Route 936 connects SDSU with Lemon Grove Depot; Route 955 connects SDSU with the 8th Street Transit Center in National City. A more detailed description of bus conditions and operations is discussed in *Section 11.1*.

3.3 Existing Traffic Volumes

Existing AM and PM peak hour traffic volumes, as well as average daily traffic counts (ADTs),) were conducted in April 2016 while SDSU and all local schools were in session.

Table 3–1 summarizes the ADTs based on the traffic counts. ***Figure 3–2*** shows the AM and PM peak hour turning movement volumes and daily traffic volumes. ***Appendix A*** contains the manual existing traffic volume count sheets. A traffic count validation was also conducted to compare the TIA counts with Year 2017 counts. The traffic count validation is included in *Appendix A*.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT[a]
Alvarado Road	
E. Campus Drive to Reservoir Drive	8,800
Reservoir Drive to 70th Street	7,040
College Avenue	
Del Cerro Boulevard to I-8 WB off-ramp	31,330
I-8 EB Ramps to Zura Way	35,850
Zura Way to Montezuma Road	29,790
Montezuma Road to Cresita Drive	27,490
Montezuma Road	
Fairmount Avenue to Collwood Boulevard	52,330
Collwood Boulevard to 55th Street	28,950
55th Street to College Avenue	32,570
College Avenue to E. Campus Drive	21,500
E. Campus Drive to Reservoir Drive	18,960
Fairmount Avenue	
Montezuma Road to I-8	91,350

Footnotes:

a. Average Daily Traffic Volumes, April 19, 2016 (Tuesday).

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year	ADT
City of San Diego Redevelopment Agency						
Crossroads Redevelopment Area						
1a–1c	Crossroads Redevelopment Project	Three non-contiguous subareas within the following boundaries: (a) El Cajon Boulevard and University Avenue from 54th Street to the City of La Mesa, (b) the east side of 54th Street and north of College Grove Drive, and (c) Redwood and Thorn Streets, Martin Luther King Freeway, and 54th Street	Redevelopment project consisting of a variety of programmatic, residential, commercial, and public facilities with approximately 2,421 dwelling units ("DUs") proposed to be built over a 1,032-acre redevelopment area.	Approved	2032 (10% assumed in the Near-Term)	19,920
2	Chollas Triangle Redevelopment Project	South side of 5400 University Avenue	Pedestrian-oriented mixed-use project (possibly 500–600 DUs) on 36-acre site.	In planning process	Unknown (10% assumed in the Near-Term)	4,800
College Community Redevelopment Area						
3	Villa Paseo Apartments	5541 Linda Paseo	Construct a four-story, eight unit apartment building with street level parking.	Under Construction	2017	64
4	Delta Upsilon - CUP/PDP	5545 Hardy Ave	Demolish an existing residence for the construction of a 3-story, 15,343 sq ft, 16 bedrooms fraternity building with a deviation to lot coverage regulations.	Under construction	2017*	56
5	Montezuma PDP / CUP / SDP	6213 Montezuma Road	Construct new Student Housing/Dormitory structure with 128 rooms over 3 levels of underground parking garage, totaling 7,220 square feet.	Under Review	Unknown*	374

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year	ADT
6	6195 Montezuma Road	6195 Montezuma Road	Demolish two existing single-family DUs and construct a four-story structure with two levels of underground parking. Construct 40 DUs (22 four-bedroom DUs, 2 three-bedroom DUs, and 16 two-bedroom DUs), 84 on-site parking spaces, and associated improvements.	Vacant Lot in 2017	Through 2025	304
7	Capstone	5030 College Avenue	Construct 94 residential apartment units (374 beds)	Under Construction	2017*	570
City of San Diego						
8	Centrepoint–Grantville (East & West)	Block bounded by Vandever Avenue, Fairmount Avenue, Twain Avenue, Mission Gorge Road	12-acre site for mixed-use development of 588 multi-family DUs and 135,228 SF of office, retail, and restaurant space.	Successor Impacts approved ministerially	Unknown* (10% assumed in the Near-Term)	10,180
9	Grantville Trolley Station Transit Oriented Development (“TOD”)	4510 Alvarado Canyon Road	Approximately 900 beds	Application in with the City	Unknown	–
10	Marburn Corp TM	5551 College Avenue	Subdivision of one existing vacant parcel into 24 single family residential lots and four HOA lots within environmentally sensitive lands located at the northeast corner of Interstate 8 and College Ave.	Approved	Unknown*	240
11	Grantville Veterans	4380 Alvarado Canyon Rd	Conversion of an existing motel to an 85 unit multi-family apartment building for permanent Veteran's Housing and Administrative Office.	Application in with the City	Unknown*	680

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year	ADT
12	Alvarado Lot 27/28 - SDP	5665 Toyon Road and 5660 Toyon Road	Create two single family residence on Lot 27 totaling 5,553 square feet and Lot 28 totaling 5,553 square feet.	Application in with the City	Unknown*	20
13	Aztec Budget Inn Redevelopment	6050 El Cajon Blvd	Construct up to 65 for-sale residential units, including 7 affordable, and 3,000 square-feet of retail space	Proposed	Unknown*	640
San Diego State University						
14	College of Business Administration Building	Southeastern portion of SDSU, between College Avenue and East Campus Drive (existing Lot F)	170,000 SF College of Business building in Lot F.	Proposed	Unknown	–
15	Performing Arts Building	Adjacent to the existing Music Building in the central portion of campus	New five-story, 50,000 SF building to house a 400-seat black box performing arts theatre, dance studios, drama rehearsal space, and support space.	Proposed	Unknown	–
16	Softball Stadium Pressbox Addition	South of Remington Road, adjacent to Tony Gwynn Stadium	Construct press box at softball stadium.	On hold (possible future project)	Unknown	–
17	Children's Center Landscape Upgrade	East side of campus, east of College Avenue, north of Zura Way (north of South E Lot)	Landscape improvements.	In design	Unknown*	
18	Engineering and Interdisciplinary Sciences Building	South of Engineering Building	85,000 GSF of teaching and research lab, centers, offices, collaboration and meeting space.	Under construction	2018*	–
19	Open Air Theater Concourse Improvements	South of Love Library	Replace temporary restrooms and concession stands with permanent code-compliant structures. No seating increase.	Completed	2017*	–

TABLE 6–1
CUMULATIVE PROJECTS SUMMARY

C.P. #	Project Title	Project Location	Project Description	Status	Buildout Year	ADT
20	SDSU Student Housing	Next to the existing Chapultepec Residence Hall on the northwest corner of the Remington Road/55th Street intersection, on the west side of the San Diego State University (SDSU) campus.	The proposed Project consists of single-, double-, and triple-occupancy student housing that can accommodate up to a total of 850 beds.	Under Construction	2019*	1,117
City of La Mesa						
21	Jessie Avenue	4888 Jessie Avenue	47 townhomes and two commercial units.	Approved	Unknown*	376
22	Parks Avenue Townhomes	Parks Avenue and El Cajon Boulevard	10 townhomes and one live/work unit.	Approved	Unknown*	80
23	Comanche Apartments	Comanche Drive and El Cajon Boulevard	19 townhomes with a small commercial component	Under Review	Unknown*	152
24	Montebello North	5017 Thorne Drive	General Plan Amendment and rezone for multiple unit residential structure (mixed-use urban density at 24 to 40 units per acre)	Under Review	Unknown	378
25	Lowell Street	North end of Lowell Street	Five-unit planned residential development.	Under Review	Unknown*	40

End of List

General Notes:

* indicates Near-Term (Year 2022) cumulative projects.

7.3 Existing Freeway Ramp Meter Operations

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under existing conditions. As shown in ***Table 7–3***, the following freeway ramp meter presently incurs a delay exceeding 15 minutes

- SB Fairmount Avenue to EB I-8 (PM peak hour)

TABLE 7–3
EXISTING RAMP METER OPERATIONS

Location/Scenario	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane[b]	Queue per Lane[c]
SB Fairmount Ave to EB I-8	PM	390	246	144	**35**	3,600
NB College Avenue to WB I-8	AM	306	*Restrictive*: 318	0	0	0
			Observed: 296	10	2	250
SB College Avenue to WB I-8	AM	336	*Restrictive*: 336	0	0	0
			Observed: 300	36	7	888
NB College Avenue to EB I-8	PM	350	*Restrictive*: 570	0	0	0
			Observed: 330	20	4	500

Footnotes:
a. While meter rates were obtained from Caltrans (see *Appendix D*), the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. **Bold** indicates meter delays exceeding 15 minutes.
~~1.~~2. Peak hour demand is shown in vehicles per hour per lane.

7.4 Residential Street Segment Operations

The 2007 Master Plan traffic study analyzed several residential neighborhood street segments in the vicinity of the proposed Adobe Falls faculty/staff housing. The 2007 analysis found that the residential streets could accommodate the additional project traffic. To determine whether this conclusion remained valid, a traffic count was conducted in April 2016 ~~on Del Cerro Boulevard between Capri Drive and College Avenue~~at the College Avenue / Del Cerro Boulevard intersection, the entrance to the Del Cerro community from College Avenue~~where the Adobe Falls faculty/staff housing would be built~~.

Based on a count comparison between the 2007 and 2016 traffic counts, the 2016 volume on Del Cerro Boulevard was lower by 30% than the 2007 counts. ***Appendix F*** shows this calculation. Therefore, since the background traffic volumes have decreased since 2007, the available capacity actually has increased since that time. Therefore, the conclusion that the Adobe Falls area residential streets can accommodate the Project traffic without resulting in significant impacts still applies.

9.0 Analysis of Near-Term (Year 2022) Scenarios

The scenarios analyzed below are an assessment of the impact of the project traffic volumes in relation to the existing and near-term (Year 2022) without project conditions. This section includes the analysis results and discussions of the intersection, street segment, ramp meter, and freeway mainline operations. The significance of impacts is discussed in ***Section ~~12.0~~13.0***.

9.1 Existing + Total Project Analysis

The Existing + Total Project traffic analysis is an assessment of the impact of the total project (i.e. the project at buildout) in relation to the existing conditions. Since the project in this case is a long-term project that will not reach build out for many years, the "Existing + Total Project" analysis is hypothetical in that it is not an accurate scenario upon which to assess significant impacts. This is because the Existing + Total Project scenario does not take into account future increases in background, or cumulative, traffic and, as a result, the analysis under this scenario potentially understates impacts by assuming more capacity than actually would be available; in contrast, both the Near-Term (Year 2022) and Horizon Year (Year 2035) analyses do take background traffic into account. Therefore, the Existing + Total Project analysis is provided in this case for informational purposes only; the impacts of the proposed project are assessed under the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios, which both account for future increases in background traffic and infrastructure improvements, as applicable. ***Figure 9–1*** depicts the Existing + Total Project traffic volumes.

9.1.1 *Intersection Analysis*

Intersection capacity analyses were conducted for the study intersections under Existing + Total Project conditions. ***Table 9–1*** reports the intersection operations during the peak hour conditions. The following intersections would operate at LOS E or F under the Existing + Project conditions:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the PM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Appendix H contains the intersection analysis worksheets for the Existing + Total Project scenario.

9.1.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Existing + Total Project conditions. As shown in ***Table 9–43***, the following freeway ramp meters are calculated to incur a delay exceeding 15 minutes:

- SB Fairmount Avenue to EB I-8 (PM peak hour)

TABLE 9–43
EXISTING + TOTAL PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane[b]	Queue per Lane[c]
SB Fairmount Ave to EB I-8						
Existing	PM	390	246	144	35	3600
Existing + Total Project	PM	392	246	146	36	3650
Project Increase	PM	2	NA	2	1	50
NB College Avenue to WB I-8						
Existing	AM	306	296	10	2	250
Existing + Total Project	AM	327	296	31	6	775
Project Increase	AM	21	NA	21	4	525
SB College Avenue to WB I-8						
Existing	AM	336	300	36	7	888
Existing + Total Project	AM	342	300	42	8	1050
Project Increase	AM	6	NA	6	1	162
NB College Avenue to EB I-8						
Existing	PM	350	330	20	4	500
Existing + Total Project	PM	419	330	89	16	2225
Project Increase	PM	69	NA	69	12	1725

Footnotes:
a. While meter rates were obtained from Caltrans, the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. **Bold** typeface indicates meter delays exceeding 15 minutes.
2. NA = Not Applicable.
~~2.~~3. Peak hour demand is shown in vehicles per hour per lane.

9.1.4 *Freeway Mainline Operations*

Freeway segments were analyzed under Existing + Total Project conditions. *Appendix G* contains the detailed calculations sheets. ***Tables 9–~~3~~4a*** and ***9–~~3~~4b*** report the Existing + Total Project freeway segment operations. As shown on the tables, the following segments would operate at LOS E or F under the Existing + Project conditions:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

TABLE 9–~~3~~4A
EXISTING + TOTAL PROJECT FREEWAY SEGMENT OPERATIONS—AM PEAK HOUR

Freeway and Segment	Existing + Total Project ADT	Direction &Number of Lanes		Capacity[a]	Existing		Existing + Total Project	
					V/C[b]	LOS[c]	V/C	LOS
I-8								
Fairmount Avenue to Waring Road	238,910	EB Mainlines	5M	10,000	0.371	B	0.383	B
		WB Mainlines	6M	12,000	**0.991**	**E**	**0.994**	**E**
Waring Road to College Avenue	227,910	EB Mainlines	5M	10,000	0.354	B	0.366	B
		WB Mainlines	5M	10,000	**1.134**	**F(0)**	**1.137**	**F(0)**
College Avenue to Lake Murray Boulevard	200,030	EB Mainlines	4M+ 1A	9,200	0.530	B	0.532	B
		WB Mainlines	5M	10,000	**1.036**	**F(0)**	**1.042**	**F(0)**
Lake Murray Boulevard to Fletcher Parkway	200,950	EB Mainlines	4M+ 1A	9,200	0.530	B	0.533	B
		WB Mainlines	4M	8,000	**1.295**	**F(1)**	**1.311**	**F(1)**

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00

LOS	V/C
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

General Notes:

1. See *Appendix G* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

Table 9–~~3~~4B

Existing + Total Project Freeway Segment Operations—PM Peak Hour

Freeway and Segment	Existing + Total Project ADT	Direction &Number of Lanes		Capacity[a]	Existing		Existing + Total Project	
					V/C[b]	LOS[c]	V/C	LOS
I-8								
Fairmount Avenue to Waring Road	238,910	EB Mainlines	5M	10,000	**1.111**	**F(0)**	**1.119**	**F(0)**
		WB Mainlines	6M	12,000	0.637	C	0.648	C
Waring Road to College Avenue	227,910	EB Mainlines	5M	10,000	**1.059**	**F(0)**	**1.068**	**F(0)**
		WB Mainlines	5M	10,000	0.729	C	0.742	C
College Avenue to Lake Murray Boulevard	200,030	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**	**1.100**	**F(0)**
		WB Mainlines	5M	10,000	0.636	C	0.640	C
Lake Murray Boulevard to Fletcher Parkway	200,950	EB Mainlines	4M+ 1A	9,200	**1.092**	**F(0)**	**1.107**	**F(0)**
		WB Mainlines	4M	8,000	0.795	C	0.804	D

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).

b. Volume to Capacity.

c. Level of Service.

LOS	V/C
A	<0.41
B	0.62
C	0.80
D	0.92
E	1.00

LOS	V/C
F(0)	1.25
F(1)	1.35
F(2)	1.45
F(3)	>1.46

General Notes:

1. See *Appendix G* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Based on the City of San Diego's significance criteria, **significant direct impacts** are identified at the following intersections as the project traffic contribution exceeds the allowable threshold:

- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)
- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the PM peak hour)

Mitigation measures for this impact are discussed in detail in ***Section ~~12.1~~13.1*.**

Appendix J contains the intersection analysis worksheets for the Near-Term (Year 2022) + Project scenario.

9.2.2 *Segment Operations*

Near-Term (Year 2022) without Project street segment analyses were conducted for roadways in the study area. ***Table 9–6*** reports the Near-Term (Year 2022) without Project street segment operations on a daily basis. Under Near-Term (Year 2022) without Project, the following street segments would operate at LOS E or F:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Near-Term (Year 2022) with Project street segment analyses were conducted for roadways in the study area. *Table 9–6* reports the Near-Term (Year 2022) with Project street segment operations on a daily basis. As shown on the table, the following street segments would operate at LOS E or F under the Near-Term (Year 2022) with Project scenario:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)
- Fairmount Avenue: Montezuma Road to I-8 (LOS F)

Based on the City of San Diego's significance criteria, **significant direct impacts** are identified on the following street segments as the project traffic contribution exceeds the allowable thresholds:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)

Mitigation measures for these impacts are discussed in detail in *Section ~~12.1~~13.1*.

9.2.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Near-Term (Year 2022) without and with Project conditions. As shown in ***Table 9–~~8~~7***, the following freeway ramp meter is calculated to incur a delay exceeding 15 minutes under Near-Term (Year 2022) without and with Project scenarios:

- SB Fairmount Avenue to EB I-8 (PM peak hour)

Based on the City of San Diego's significance criteria, ***no* significant direct impact** is identified on the above ramp meter as the project contribution to this ramp meter does not exceed the allowable thresholds.

TABLE 9–~~8~~7

NEAR-TERM (YEAR 2022) + PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane[b]	Queue per Lane[c]
SB Fairmount Ave to EB I-8						
Near-Term (Year 2022)	PM	419	246	173	42	4325
Near-Term (Year 2022) + Project	PM	419	246	173	42	4325
Project Increase	PM	0	NA	0	0	0
NB College Avenue to WB I-8						
Near-Term (Year 2022)	AM	356	296	60	12	1500
Near-Term (Year 2022) + Project	AM	367	296	71	14	1775
Project Increase	AM	11	NA	11	2	275
SB College Avenue to WB I-8						
Near-Term (Year 2022)	AM	356	300	56	11	1388
Near-Term (Year 2022) + Project	AM	358	300	58	12	1438
Project Increase	AM	2	NA	2	1	50
NB College Avenue to EB I-8						
Near-Term (Year 2022)	PM	398	330	68	12	1700
Near-Term (Year 2022) + Project	PM	412	330	82	15	2050
Project Increase	PM	14	NA	14	3	350

Footnotes:

a. While meter rates were obtained from Caltrans, the rates were reduced to reflect existing ramp meter observations.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:

1. Bold & shading represents a potential significant impact.
2. NA = Not Applicable.
~~2.~~3. Peak hour demand is shown in vehicles per hour per lane.

9.2.4 *Freeway Mainline Operations*

Freeway segments were analyzed under Near-Term (Year 2022) without Project conditions. ***Appendix K*** contains the detailed calculations sheets. ***Tables 9–~~7~~8a*** and ***9–~~7~~8b*** report the Near-Term (Year 2022) without Project freeway segment operations. The following segments were calculated to continue to operate at LOS E or F under the Near-Term (Year 2022) without Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

Freeway segments were analyzed under Near-Term (Year 2022) + Project conditions. *Appendix K* contains the detailed calculations sheets. *Tables 9–~~7~~8a and 9–~~7~~8b* report the Near-Term (Year 2022) + Project freeway segment operations. The following segments were calculated to operate at LOS E or F under the Near-Term (Year 2022) with Project scenario:

I-8

- I-8 between Fairmount Avenue and Waring Road, *LOS E–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(0)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(1)–AM (WB) and LOS F(0)–PM (EB)*

Based on the City of San Diego's significance criteria, there are ***no* significant direct impacts** identified on the above freeway segments as the project contribution to these segments does not exceed the allowable thresholds.

Table 9–~~7~~8A
Near-Term (Year 2022) + Project Freeway Segment Operations—AM Peak Hour

Freeway and Segment	Near-Term (Year 2022) + Project ADT	Direction &Number of Lanes		Capacity[a]	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	239,880	EB Mainlines	5M	10,000	0.381	B	0.383	B	0.002	No
		WB Mainlines	6M	12,000	**0.998**	**E**	**0.999**	**E**	0.001	No
Waring Road to College Avenue	227,330	EB Mainlines	5M	10,000	0.361	B	0.364	B	0.003	No
		WB Mainlines	5M	10,000	**1.144**	**F(0)**	**1.146**	**F(0)**	0.002	No
College Avenue to Lake Murray Boulevard	200,380	EB Mainlines	4M+ 1A	9,200	0.540	B	0.541	B	0.001	No
		WB Mainlines	5M	10,000	**1.039**	**F(0)**	**1.041**	**F(0)**	0.002	No
Lake Murray Boulevard to Fletcher Parkway	200,520	EB Mainlines	4M+ 1A	9,200	0.534	B	0.536	B	0.002	No
		WB Mainlines	4M	8,000	**1.298**	**F(1)**	**1.301**	**F(1)**	0.003	No

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).
b. Volume to Capacity.
c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix K* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

TABLE 9–~~7~~8B
NEAR-TERM (YEAR 2022) + PROJECT FREEWAY SEGMENT OPERATIONS—PM PEAK HOUR

Freeway and Segment	Near-Term (Year 2022) + Project ADT	Direction & Number of Lanes		Capacity[a]	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	239,880	EB Mainlines	5M	10,000	**1.128**	**F(0)**	**1.131**	**F(0)**	0.003	No
		WB Mainlines	6M	12,000	0.646	C	0.648	C	0.002	No
Waring Road to College Avenue	227,330	EB Mainlines	5M	10,000	**1.070**	**F(0)**	**1.073**	**F(0)**	0.003	No
		WB Mainlines	5M	10,000	0.742	C	0.744	C	0.002	No
College Avenue to Lake Murray Boulevard	200,380	EB Mainlines	4M+ 1A	9,200	**1.106**	**F(0)**	**1.107**	**F(0)**	0.001	No
		WB Mainlines	5M	10,000	0.648	C	0.650	C	0.002	No
Lake Murray Boulevard to Fletcher Parkway	200,520	EB Mainlines	4M+ 1A	9,200	**1.098**	**F(0)**	**1.100**	**F(0)**	0.002	No
		WB Mainlines	4M	8,000	0.805	D	0.807	D	0.002	No

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).
b. Volume to Capacity.
c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. See *Appendix K* for calculation sheets.
2. **Bold** typeface indicates segments operating at LOS E or F.

10.0 HORIZON YEAR (YEAR 2035) ANALYSIS

A Horizon Year (Year 2035) with and without project analysis was conducted to assess the potential impact of total project traffic volumes in relation to the Horizon Year (Year 2035) conditions. This section includes the analysis results and discussions of the intersection, street segment, ramp meter and freeway mainline operations.

10.1 Volumes Development

The forecast volumes for this project were calculated using the SANDAG Series 12 model. ***Appendix K1*** contains screenshots of the Year 2035 Series 12 model forecast volumes. No roadway network improvements were assumed as a part of the Horizon Year (Year 2035) analysis.

Figure ~~12–2~~10–1 depicts the Horizon Year (Year 2035) Without Project traffic volumes. ***Figure ~~12–3~~10–2*** depicts the Horizon Year (Year 2035) With Project traffic volumes for the study area.

10.1.1 *Intersection Analysis*

Intersection capacity analyses were conducted for the study area intersections under Horizon Year (Year 2035) without Project conditions. ***Table 10–1*** reports the intersection operations during the peak hour conditions. As shown on the table, under the Horizon Year (Year 2035) without Project scenario, the following intersections would operate at LOS E or F:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the AM and PM peak hours)
- Fairmount Avenue / I-8 EB Off Ramp (LOS F during the AM and PM peak hours)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / Del Cerro Boulevard (LOS E during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- 70th Street / Alvarado Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)

Appendix L contains the intersection analysis worksheets for the Horizon Year (Year 2035) scenario.

Intersection capacity analyses were conducted for the study area intersections under Horizon Year (Year 2035) with Project conditions. *Table 10–1* reports the intersection operations during the peak

Based on the City of San Diego's significance criteria, **significant impacts** are identified at the following intersections as the project traffic contribution exceeds the allowable threshold:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the PM peak hour)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS E during the AM peak hour, LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)

Mitigation measures for these impacts are discussed in detail in ***Section ~~12.2~~13.2*****.**

Appendix M contains the intersection analysis worksheets for the Horizon Year (Year 2035) + Project scenario.

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following street segments as the project traffic contribution exceeds the allowable thresholds:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)
- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)

Mitigation measures for these impacts are discussed in detail in *Section ~~12.2~~13.2*.

10.1.3 *Ramp Meter Analysis*

Freeway entrance ramps that currently have ramp meters installed and in operation were analyzed under Horizon Year (Year 2035) without and with Project conditions. As shown in ***Table 10–3***, the following freeway ramp meters would incur a delay exceeding 15 minutes under Horizon Year (Year 2035) without and with Project conditions:

- SB Fairmount Avenue to EB I-8 (PM peak hour)
- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following ramp meters as the project contribution to this ramp meter exceeds the allowable thresholds:

- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

Mitigation measures for these impacts are discussed in detail in *Section ~~12.2~~13.2*.

TABLE 10–3
HORIZON YEAR (YEAR 2035) + PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane[b]	Queue per Lane[c]
SB Fairmount Ave to EB I-8						
Horizon Year (Year 2035)	PM	489	246	243	59	6075
Horizon Year (Year 2035) + Project	PM	491	246	245	60	6125
Project Increase	PM	2	NA	2	1	50
NB College Avenue to WB I-8						
Horizon Year (Year 2035)	AM	419	318	101	19	2525
Horizon Year (Year 2035) + Project	AM	440	318	122	23	3050
Project Increase	AM	21	NA	21	4	525
SB College Avenue to WB I-8						
Horizon Year (Year 2035)	AM	428	336	92	16	2288
Horizon Year (Year 2035) + Project	AM	434	336	98	18	2450
Project Increase	AM	6	NA	6	2	162
NB College Avenue to EB I-8						
Horizon Year (Year 2035)	PM	445	570	0	0	0
Horizon Year (Year 2035) + Project	PM	514	570	0	0	0
Project Increase	PM	69	NA	0	0	0

Footnotes:
a. Meter Rates were obtained from Caltrans.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.

General Notes:
1. Bold & shading represents a potential significant impact.
2. NA = Not Applicable.
~~2.~~3. Peak hour demand is shown in vehicles per hour per lane.

Based on the City of San Diego's significance criteria, **significant impacts** are identified on the following freeway segments as the project contribution to these freeway mainline segments exceeds the allowable thresholds:

- I-8 between Fairmount Avenue and Waring Road, *LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

Mitigation measures for these impacts are discussed in detail in *Section ~~12.2~~13.2*.

Based on the design passenger capacity of the trolley and buses serving the SDSU Transit Center, sufficient capacity is available to accommodate the forecasted increase in transit riders from the project. Therefore, the proposed project would not result in significant impacts related to transit.

12.0 MODIFIED PROJECT ANALYSES

This chapter analyzes the changes in traffic operations and related impacts that would result from elimination of the 120-room Alvarado Hotel from the proposed 2007 Master Plan project. All other project components, which include an increase of 10,000 Full-Time Equivalent students (FTE) and the development of various other campus-related facilities, are unchanged from those originally proposed.

12.1 Methodology

Because the removal of the Alvarado Hotel from the project would reduce vehicle traffic (i.e., vehicle trips) generated by the project, the removal potentially would result in the elimination of previously identified significant impacts. As a result, the focus of this analysis are the intersections and segments identified in the preceding section that are significantly impacted in order to determine whether the project modification would result in changes to those previously identified impacts.

12.2 Modified Project Trip Generation

Table 12–1 shows the Near-Term (Year 2022) project trip generation with elimination of the hotel. As shown in *Table 12–1*, the elimination of the hotel removes 1,200 average daily trips (ADT) from the project trip generation, with 72 of these trips removed during the AM peak hour and 96 trips removed during the PM peak hour. The net Near-Term (Year 2022) project trip generation is 1,331 ADT with 78 trips during the AM peak hour and 104 trips during the PM peak hour.

Table 12–2 shows the Horizon Year (Year 2035) trip generation with elimination of the Hotel. As shown in *Table 12–2*, with the elimination of the hotel and its 1,200 ADT, the net Horizon Year (Year 2035) project traffic trip generation is 9,910 ADT with 606 trips during the AM peak hour and 827 trips during the PM peak hour.

12.3 Near-Term (Year 2022) Analysis

The following section presents the Near-Term (Year 2022) analysis under the modified project scenario.

12.3.1 *Intersection*

Table 12–3 reports the results of the intersection analysis. Based on the City of San Diego's significance criteria, **under the modified project scenario the following significant intersection impact (1) would be eliminated**:

- I-8 WB Ramps / Parkway Drive

However, the following **significant impacts** would remain at the following intersections even with elimination of the 120-room Alvarado Hotel:

- College Avenue / I-8 EB Ramps (LOS E during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS E during the PM peak hour)

- College Avenue / Zura Way (LOS F during the PM peak hour)
- College Avenue / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)

Appendix Y contains the intersection analysis worksheets for the Near-Term (Year 2022) + Project scenario.

12.3.2 *Street Segment*

Table 12–4 reports the results of the street segment analysis. Based on the City of San Diego's significance criteria, **under the modified project scenario the following two (2) significant street segment impacts would be eliminated**:

- Alvarado Road: Reservoir Drive to 70th Street
- College Avenue: Montezuma Road to Cresita Drive

However, the following **significant impacts** would remain on the following street segments even with elimination of the 120-room Alvarado Hotel:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)

12.3.3 *Ramp Meter and Freeway Segment*

No significant impacts were identified on the ramp meters and freeway segments in the Near-Term (Year 2022) scenario under the Proposed Project. Therefore, based on the reduced traffic that would be generated by the project, it is reasonable to expect that under the modified project scenario, no significant ramp meter or freeway segment impacts would be identified.

12.4 Horizon Year (Year 2035) Analysis

The following section presents the Horizon Year (Year 2035) analysis under the modified project scenario.

12.4.1 *Intersection*

Table 12–5 reports the results of the intersection analysis. Based on the City of San Diego's significance criteria, **under the modified project scenario no significant impacts would be eliminated.** Therefore, **significant impacts** would remain at the following intersections even with elimination of the 120-room Alvarado Hotel:

- Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N. (LOS F during the PM peak hour)
- 55th Street / Montezuma Road (LOS E during the AM peak hour, LOS F during the PM peak hour)
- Campanile Drive / Montezuma Road (LOS F during the AM peak hour)
- College Avenue / I-8 EB Ramps (LOS F during the PM peak hour)
- College Avenue / Canyon Crest Drive (LOS F during the AM and PM peak hours)
- College Avenue / Zura Way (LOS F during the AM and PM peak hours)
- College Avenue / Montezuma Road (LOS F during the AM and PM peak hours)
- Alvarado Court / Alvarado Road (LOS F during the PM peak hour)
- 70th Street / Alvarado Road (LOS F during the PM peak hour)
- I-8 WB Ramps / Parkway Drive (LOS F during the AM and PM peak hours)
- Montezuma Road / Collwood Boulevard (LOS E during the PM peak hour)

Appendix Y contains the intersection analysis worksheets for the Horizon Year (Year 2035) + Project scenario.

12.4.2 *Street Segment*

Table 12–6 reports the results of the street segment analysis. Based on the City of San Diego's significance criteria, under the modified project **no significant impacts would be eliminated.** Therefore, **significant impacts** would remain on the following street segments even with elimination of the 120-room Alvarado Hotel:

- Alvarado Road: E. Campus Drive to Reservoir Drive (LOS F)
- Alvarado Road: Reservoir Drive to 70th Street (LOS F)
- College Avenue: Del Cerro Boulevard to I-8 WB off-ramp (LOS E)
- College Avenue: I-8 EB Ramps to Zura Way (LOS F)
- College Avenue: Zura Way to Montezuma Road (LOS E)
- College Avenue: Montezuma Road to Cresita Drive (LOS F)

- Montezuma Road: Fairmount Avenue to Collwood Boulevard (LOS F)
- Montezuma Road: Collwood Boulevard to 55th Street (LOS F)
- Montezuma Road: 55th Street to College Avenue (LOS F)

12.4.3 *Ramp Meter*

Table 12–7 reports the results of the ramp meter analysis. Based on the City of San Diego's significance criteria, **under the modified project scenario no significant impacts would be eliminated.** Therefore, **significant impacts** would remain at the following ramp meters even with elimination of the 120-room Alvarado Hotel:

- NB College Avenue to WB I-8 (AM peak hour)
- SB College Avenue to WB I-8 (AM peak hour)

12.4.4 *Freeway Segment*

Tables 12–8a and ***12–8b*** report the results of the freeway segment analysis. Based on the City of San Diego's significance criteria, **under the modified project scenario no significant impacts would be eliminated.** Therefore, **significant impacts** would remain on the following freeway segments even with elimination of the 120-room Alvarado Hotel:

- I-8 between Fairmount Avenue and Waring Road, *LOS F(1)–PM (EB)*
- I-8 between Waring Road and College Avenue, *LOS F(0)–PM (EB)*
- I-8 between College Avenue and Lake Murray boulevard, *LOS F(0)–AM (WB) and LOS F(1)–PM (EB)*
- I-8 between Lake Murray Boulevard and Fletcher Parkway, *LOS F(3)–AM (WB) and LOS F(0)–PM (EB)*

12.5 Overall Impact Summary

Table 12–9 summarizes and compares the significant impacts under both the project and modified project scenarios. As shown, elimination of the Alvarado Hotel would reduce the number of significant impacts under the Near-Term (2022) scenario, but would not change the number of significant impacts under the Horizon Year (2035) scenario.

TABLE 12–1A
NEAR-TERM PROJECT TRIP GENERATION (YEAR 2022)

Trip Generation Project Components	Size		Daily Trip Ends (ADT[a]) Rate	Daily Trip Ends (ADT[a]) Volume	AM Peak Hour % of ADT	AM In:Out Split	AM Volume In	AM Volume Out	PM Peak Hour % of ADT	PM In:Out Split	PM Volume In	PM Volume Out
SDSU Student Headcount Increase												
Non-Resident Student Headcount Increase [b]	1,466	Students	2.47 /Student [c]	3,621	5%	90:10	163	18	7%	30:70	76	177
Resident Student Headcount Increase	628	Students	0.64 /Student [d]	402	5%	90:10	18	2	7%	30:70	8	20
Subtotal	*2,094*	*Students*	–	*4,023*			*181*	*20*			*84*	*197*
Adobe Falls Faculty/Staff Housing												
Upper Village Town homes	48	DU	8 /DU [e]	384	8%	20:80	6	25	10%	70:30	27	11
Total			**—**	**4,407**	**—**	**—**	**187**	**45**	**—**	**—**	**111**	**208**

Footnotes:

a. Average Daily Traffic
b. Near-Term (Year 2022) student headcount increase calculated as 2,094 students (35,535 minus 33,441 equals 2,094 students). It should be noted that 70% of the student headcount increase are assumed to consist of non-resident students, and 30% of the student headcount increase will consist of resident students.
c. SDSU rates are based on actual counts taken in November 2006. This rate includes SDSU faculty, staff, vendors, visitors, and students.
d. The resident student rate is based on the Community College Redevelopment EIR that assumed 4.4 trips per student dwelling unit (with a reduction of 2.8 trips per DU based on students with new commute but would instead relocate and occupy the on-campus housing).
e. Rates were taken from the City of San Diego Trip Generation Manual, May 2003.

General Notes:

1. DU = Dwelling Units

TABLE 12–1B
SHIFT FROM DRIVING TO TROLLEY (NEAR-TERM)

SDSU boardings Increase (Near-Term)	2,460 students [a]
79% boardings are not transfers	1,943 students [b]
Vehicle Occupancy Rate	1,620 students [c]
95 % of shift to trolley is from private vehicle	1,538 students [d]
Total ADT diverted from private vehicle to trolley	3,076 (5 % during AM peak = 154 trips and 7 % during PM peak = 215 trips)

Footnotes:

a. Source: SANDAG Trolley Boarding Data
b. Source: SANDAG
c. Accounts for fact that not all drivers that shift from trolley were driving alone, some carpool (5% assumed).
d. Accounts for fact that some future users of trolley would shift from other transit opportunities, and not from personal vehicles

TABLE 12–1C
NET INCREASE IN TRAFFIC (NEAR-TERM)

1. Proposed project trips (without any increased trolley usage) = 4,407 ADT
2. Future Shift from driving to trolley = 3,076 ADT
3. Net increase in traffic = 1,331 ADT (78 AM peak hour trips and 104 PM peak hour trips)

Table 12–2A
Horizon Year Project Trip Generation (Year 2035)

Trip Generation Project Components	Size		Daily Trip Ends (ADT[a]) Rate	Daily Trip Ends (ADT[a]) Volume	AM Peak Hour % of ADT	AM In:Out Split	AM Volume In	AM Volume Out	PM Peak Hour % of ADT	PM In:Out Split	PM Volume In	PM Volume Out
SDSU Student Headcount Increase												
Non-Resident Student Headcount Increase [b]	7,401	Students	2.47 /Student [c]	18,280	5%	90:10	823	91	7%	30:70	384	896
Resident Student Headcount Increase	3,984	Students	0.64 /Student [d]	2,550	5%	90:10	115	13	7%	30:70	54	125
Subtotal	*11,385*	*Students*	*–*	*20,830*			*938*	*104*			*438*	*1,021*
Adobe Falls Faculty/Staff Housing												
Upper Village Town homes	48	DU	8 /DU [e]	384	8%	20:80	6	25	10%	70:30	27	11
Lower Village Townhomes	124	DU	8 /DU [e]	992	8%	20:80	16	63	10%	70:30	66	28
Total			**—**	**22,206**	**—**	**—**	**960**	**192**	**—**	**—**	**531**	**1,060**

Footnotes:

a Average Daily Traffic

b Horizon Year (Year 2035) student headcount increase calculated as 11,385 students (44,826 minus 33,441 equals 11,385 students). It should be noted that 65% of the student headcount increase are assumed to consist of non-resident students, and 35% of the student headcount increase will consist of resident students.

c SDSU rates are based on actual counts taken in November 2006. This rate includes SDSU faculty, staff, vendors, visitors, and students.

d The resident student rate is based on the Community College Redevelopment EIR that assumed 4.4 trips per student dwelling unit (with a reduction of 2.8 trips per DU based on students with new commute but would instead relocate and occupy the on-campus housing).

e Rates were taken from the City of San Diego Trip Generation Manual, May 2003.

General Notes:

1. DU = Dwelling Units

Table 12–2B
Shift from Driving To Trolley (Horizon Year)

SDSU boardings Increase (Horizon Year)	8,732 students [a]
79% boardings are not transfers	6,898 students [b]
Vehicle Occupancy Rate	5,748 students [c]
95 % of shift to trolley is from private vehicle	5,460 students [d]
Total ADT diverted from private vehicle to trolley	10,920 (5 % during AM peak = 546 trips and 7 % during PM peak = 764 trips)

Footnotes:

a. Source: SANDAG Trolley Boarding Data

b. Source: SANDAG

c. Accounts for fact that not all drivers that shift from trolley were driving alone, some carpool (5% assumed).

d. Accounts for fact that some future users of trolley would shift from other transit opportunities, and not from personal vehicles

Table 12–2C
Net Increase in Traffic (Horizon Year)

1. Proposed project trips (without any increased trolley usage) = 22,206 ADT
2. Future Shift from driving to trolley = 10,920 ADT
3. Net increase in traffic = 9,910 ADT (606 AM peak hour trips and 827 PM peak hour trips)

Table 12–3
Near-Term (Year 2022) Intersection Operations

Intersection	Control Type	Peak Hour	Near-Term (Year 2022) Delay[a]	Near-Term (Year 2022) LOS[b]	Near-Term (Year 2022)+ Project Delay	Near-Term (Year 2022)+ Project LOS	Δ[c]	Significant Impact?
8. College Avenue / I-8 EB Ramps	Signal	PM	**74.3**	**E**	**76.6**	**E**	**2.3**	**Yes**
9. College Avenue / Canyon Crest Drive	Signal	PM	**56.1**	**E**	**58.9**	**E**	**2.8**	**Yes**
10. College Avenue / Zura Way	MSSC[d]	PM	**178.9**	**F**	**189.7**	**F**	**10.8**	**Yes**
11. College Avenue / Montezuma Road	Signal	AM PM	**65.4** **91.0**	**E** **F**	**70.1** **107.7**	**E** **F**	**4.7** **16.7**	**Yes** **Yes**
16. I-8 WB Ramps / Parkway Drive	AWSC[e]	PM	**59.2**	**F**	**60.2**	**F**	**1.0**	**No**

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue are not allowed.
e. AWSC – All-Way Stop Controlled intersection.

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.
2. Only impacted facilities analyzed.

SIGNALIZED Delay	SIGNALIZED LOS	UNSIGNALIZED Delay	UNSIGNALIZED LOS
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 12–4
NEAR-TERM (YEAR 2022) + PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Near-Term (Year 2022)			Near-Term (Year 2022) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Alvarado Road		-	-	-	-	-	-	-		
E. Campus Dr to Reservoir Dr	2-lane Collector *(fronting property)*	8,000	**9,340**	**F**	**1.168**	**9,490**	**F**	**1.186**	**0.018**	**Yes**
Reservoir Dr to 70th St	2-lane Collector *(fronting property)*	8,000	**7,490**	**E**	**0.936**	**7,640**	**E**	**0.955**	**0.019**	**No**
College Avenue	-									
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**40,470**	**F**	**1.012**	**41,210**	**F**	**1.030**	**0.018**	**Yes**
Montezuma Rd to Cresita Drive	4-lane Collector	30,000	**30,670**	**F**	**1.022**	**30,820**	**F**	**1.027**	**0.005**	**No**

Footnotes:

a. Capacities based on City of San Diego's Roadway Classification & LOS table.
b. Level of Service.
c. Volume to Capacity ratio.

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.
2. Only impacted facilities analyzed.

TABLE 12–5
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) Delay[a]	Horizon Year (Year 2035) LOS[b]	Horizon Year (Year 2035)+ Project Delay	Horizon Year (Year 2035)+ Project LOS	Δ[c]	Significant Impact?
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	PM	**241.7 [g]**	**F**	**243.8 [g,h]**	**F**	**2.1**	**Yes**
4. 55th Street / Montezuma Road	Signal	AM PM	**59.0** **107.8**	**E** **F**	**65.5** **110.4**	**E** **F**	**6.5** **2.6**	**Yes** **Yes**
5. Campanile Drive / Montezuma Road	Signal	AM	**93.4**	**F**	**99.8**	**F**	**6.4**	**Yes**
8. College Avenue / I-8 EB Ramps	Signal	AM PM	45.3 **140.0**	D **F**	53.0 **178.0**	D **F**	7.7 **38.0**	No **Yes**
9. College Avenue / Canyon Crest Drive	Signal	AM PM	**81.6** **102.9**	**F** **F**	**89.1** **177.4 [g]**	**F** **F**	**7.5** **74.5**	**Yes** **Yes**
10. College Avenue / Zura Way	MSSC[d]	AM PM	**50.9** **393.8 [g]**	**F** **F**	**108.4** **514.5 [g]**	**F** **F**	**57.5** **120.7**	**Yes** **Yes**
11. College Avenue / Montezuma Road	Signal	AM PM	**107.3** **135.6**	**F** **F**	**120.5** **153.1**	**F** **F**	**13.2** **17.5**	**Yes** **Yes**
12. Alvarado Court / Alvarado Road	MSSC[e]	PM	18.3	C	**69.7**	**F**	**51.4**	**Yes**
15. 70th Street / Alvarado Road	Signal	PM	**94.9**	**F**	**98.1**	**F**	**3.2**	**Yes**
16. I-8 WB Ramps / Parkway Drive	AWSC[f]	AM PM	**65.6** **128.6**	**F** **F**	**92.3** **144.3**	**F** **F**	**26.7** **15.7**	**Yes** **Yes**

TABLE 12–5
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035)		Horizon Year (Year 2035)+ Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
18. Montezuma Road / Collwood Boulevard	Signal	PM	**55.0**	**E**	**59.2**	**E**	**4.2**	**Yes**

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.
d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. No outbound left-turn from Zura Way are allowed.
e. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.
f. AWSC – All-Way Stop Controlled intersection.
g. Delays over 180 seconds shown as exceeding calculable delay.
h. No changes in delay from the original project as there are no trips from the Alvarado Hotel at this location.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

General Notes:

1. **Bold** typeface indicates intersections operating at LOS E or F.
2. Only impacted facilities analyzed.

Table 12–6
Horizon Year (Year 2035) + Project Segment Operations

Segment	Functional Classification	LOS E Capacity [a]	Horizon Year (Year 2035)			Horizon Year (Year 2035) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Alvarado Road		-	-	-	-	-	-	-		
E. Campus Dr to Reservoir Dr	2-lane Collector *(fronting property)*	8,000	**11,340**	**F**	**1.418**	**14,780**	**F**	**1.848**	**0.430**	**Yes**
Reservoir Dr to 70th St	2-lane Collector *(fronting property)*	8,000	**14,830**	**F**	**1.854**	**16,780**	**F**	**2.098**	**0.244**	**Yes**
College Avenue	-									
Del Cerro Blvd to I-8 WB off-ramp	4-lane Major Arterial	40,000	**35,930**	**E**	**0.898**	**37,980**	**E**	**0.950**	**0.052**	**Yes**
I-8 EB Ramps to Zura Way	4-lane Major Arterial	40,000	**61,100**	**F**	**1.528**	**66,950**	**F**	**1.674**	**0.146**	**Yes**
Zura Way to Montezuma Rd	4-lane Major Arterial	40,000	**35,180**	**E**	**0.880**	**37,660**	**E**	**0.942**	**0.062**	**Yes**
Montezuma Rd to Cresita Drive	4-lane Collector	30,000	**32,130**	**F**	**1.071**	**33,660**	**F**	**1.122**	**0.051**	**Yes**
Montezuma Road	-									
Fairmount Ave to Collwood Blvd	4-lane Major Arterial	40,000	**66,740**	**F**	**1.669**	**67,960**	**F**	**1.699**	**0.030**	**Yes**
Collwood Blvd to 55th St	4-lane Major Arterial	40,000	**41,810**	**F**	**1.045**	**43,030**	**F**	**1.076**	**0.031**	**Yes**
55th St to College Ave	4-lane Collector	30,000	**38,210**	**F**	**1.274**	**39,730**	**F**	**1.324**	**0.050**	**Yes**

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table.
b. Level of Service.
c. Volume to Capacity ratio.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E or F.
2. Only impacted facilities analyzed.

TABLE 12–7
HORIZON YEAR (YEAR 2035) + PROJECT RAMP METER OPERATIONS

Location/Condition	Peak Hour	Peak Hour Demand	Ramp Meter Rate (Flow)[a]	Excess Demand	Delay per Lane[b]	Queue per Lane[c]
NB College Avenue to WB I-8						
Horizon Year (Year 2035)	AM	419	318	101	19	2525
Horizon Year (Year 2035) + Project	AM	430	318	112	21	2800
Project Increase	AM	11	NA	11	**2**	275
SB College Avenue to WB I-8[d]						
Horizon Year (Year 2035)	AM	428	336	92	16	2288
Horizon Year (Year 2035) + Project	AM	434	336	98	18	2450
Project Increase	AM	6	NA	6	**2**	162

Footnotes:

a. Meter Rates were obtained from Caltrans.
b. Delay expressed in minutes per lane.
c. Queue expressed in feet per lane.
d. No changes in delay as there are no trips from the Alvarado Hotel.

General Notes:

1. Bold & shading represents a potential significant impact.
2. NA = Not Applicable.
3. Only impacted facilities analyzed.

Table 12–8A
Horizon Year (Year 2035) + Project Freeway Segment Operations—AM Peak Hour

Freeway and Segment	Horizon Year (Year 2035) + Project ADT	Direction & Number of Lanes		Capacity[a]	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
College Avenue to Lake Murray Boulevard	232,000	WB Mainlines	5M	10,000	**1.207**	**F(0)**	**1.213**	**F(0)**	**0.006**	**Yes**
Lake Murray Boulevard to Fletcher Parkway	224,030	WB Mainlines	4M	8,000	**1.449**	**F(2)**	**1.464**	**F(3)**	**0.015**	**Yes**

Table 12–8B
Horizon Year (Year 2035) + Project Freeway Segment Operations—PM Peak Hour

Freeway and Segment	Horizon Year (Year 2035) + Project ADT	Direction & Number of Lanes		Capacity[a]	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		V/C Delta	Significant
					V/C[b]	LOS[c]	V/C	LOS		
I-8										
Fairmount Avenue to Waring Road	268,300	EB Mainlines	5M	10,000	**1.255**	**F(1)**	**1.261**	**F(1)**	**0.006**	**Yes**
Waring Road to College Avenue	252,970	EB Mainlines	5M	10,000	**1.183**	**F(0)**	**1.189**	**F(0)**	**0.006**	**Yes**
College Avenue to Lake Murray Boulevard	232,000	EB Mainlines	4M+ 1A	9,200	**1.272**	**F(1)**	**1.279**	**F(1)**	**0.007**	**Yes**
Lake Murray Boulevard to Fletcher Parkway	224,030	EB Mainlines	4M+ 1A	9,200	**1.221**	**F(0)**	**1.235**	**F(0)**	**0.014**	**Yes**

Footnotes:

a. Capacity calculated at 2,000 vehicles / hour per mainline lane, 1,200 vehicles / hour per HOV lane and 1,200 vehicles / hour per aux lane (M: Mainline, HOV: High Occupancy Vehicle, A: Auxiliary Lane). *Example:* 4M+2A=4 Mainlines + 2 Auxiliary Lanes).
b. Volume to Capacity.
c. Level of Service.

LOS	V/C	LOS	V/C
A	<0.41	F(0)	1.25
B	0.62	F(1)	1.35
C	0.80	F(2)	1.45
D	0.92	F(3)	>1.46
E	1.00		

General Notes:

1. **Bold** typeface indicates segments operating at LOS E or F.
2. Only impacted facilities analyzed.

TABLE 12–9
SIGNIFICANT IMPACTS COMPARISON

Facility	**Proposed Project**	**Modified Project**	**Location**
Near-Term (Year 2022)			
Intersections	5	4	▪ I-8 WB Ramps / Parkway Drive
Street Segments	4	2	▪ Alvarado Road: Reservoir Drive to 70th Street ▪ College Avenue: Montezuma Road to Cresita Drive
Ramp Meter	None	None	None
Freeway Segment	None	None	None
Horizon Year (Year 2035)			
Intersections	11	11	No Change
Street Segments	9	9	No Change
Ramp Meter	2	2	No Change
Freeway Segment	6	6	No Change

~~12.0~~13.0 SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Based on the City of San Diego's significance criteria, the currently proposed SDSU 2007 Campus Master Plan would result in significant impacts at several study area intersections, street segments, ramp meters, and mainline freeway segments in the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios.

~~12.1~~13.1 Near-Term (Year 2022)

~~12.1.1~~13.1.1 *Significant Impacts – Direct*

The following is a list of the significant direct impacts resulting from the project under the Near-Term (Year 2022) scenario.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps (PM peak hour)

A-2 College Avenue / Canyon Crest Drive (PM peak hour)

A–3. College Avenue / Zura Way (PM peak hour)

A–4. College Avenue / Montezuma Road (AM and PM peak hours)

~~A–5. I-8 WB Ramps / Parkway Drive (PM peak hour)~~

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

~~B–2. Alvarado Road: Reservoir Drive to 70th Street~~

B–~~3~~2. College Avenue: I-8 Eastbound Ramps to Zura Way

~~B–4. College Avenue: Montezuma Road to Cresita Drive~~

Ramp Meter

None

Freeway Mainline

None

~~12.1.2~~13.1.2 *Mitigation Measures*

The improvements listed below would mitigate the project's significant impacts identified under the Near-Term (Year 2022) scenario. ***Figure 13–1*** graphically shows the Near-Term (Year 2022) + Project impacts and mitigation measures.

Intersections

A–1. College Avenue / I-8 Eastbound Ramps

The improvement necessary to mitigate the Project's significant impact at the College Avenue / I-8 Eastbound Ramp is to widen the northbound College Avenue approach to the on-ramp to provide an additional lane on College Avenue between Canyon Crest Drive and the I-8 EB on-ramp.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,~~211~~056[7] or its equivalent[8], SDSU shall commence and to the extent feasible complete construction by the identified trigger of the widening of the northbound College Avenue approach to the College Avenue / I-8 Eastbound Ramp to provide an additional (third) northbound lane between Canyon Crest Drive and the I-8 EB on-ramp, to the reasonable satisfaction of the City of San Diego City Engineer and Caltrans. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfact~~ory~~ion ~~to~~of Caltrans and the City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

A-2 College Avenue / Canyon Crest Drive

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Canyon Crest Drive intersection is to widen the northbound College Avenue approach to the intersection to provide an additional lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25, ~~251~~265 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the widening of the northbound College Avenue approach to the College Avenue / Canyon Crest Drive intersection to provide an additional (third) northbound through lane, to the reasonable satisfaction of the City of San Diego City Engineer. ~~The improvements shall be~~

[7] For 2017/2018, the FTE for capacity and master planning purposes is 24,555. (See *Appendix T*.) This number serves as the baseline FTE. The total FTE trigger is then calculated as follows: baseline FTE (i.e. 24,555) + FTE trigger shown in *Table 1~~3~~4–1*, Mitigation Trigger Analysis. *For e.g.: Impact A-1*: 24,555 baseline FTE + ~~656~~501 FTE increase = 25,~~211~~056 total FTE. Similar methodology was followed for all other significantly impacted locations. See *Table 14–1* and related text (immediately following Table 13–5) for additional information.

[8] The phrase "or its equivalent" as used in this and other mitigation measures refers to the fact that the near-term construction of the ~~Alvarado Hotel, in combination with construction of a portion of the~~ Adobe Falls Faculty/Staff Housing~~,~~ could trigger the identified significant impact prior to FTE enrollment actually reaching the designated ~~trigger~~number, in this case 25,~~211~~056. Accordingly, Table 1~~3~~4-1, Mitigation Trigger Analysis, of this Draft Additional Analysis, identifies the number of FTE equivalent ~~hotel rooms and~~ faculty/staff housing that would trigger the identified impact requiring mitigation.

~~completed prior to the impact occurring.~~ To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

A–3. College Avenue / Zura Way

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Zura Way intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the College Avenue / Zura Way intersection.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,~~608~~586 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the installation of a traffic signal at the College Avenue / Zura Way intersection, to the reasonable satisfaction of the City of San Diego City Engineer. ~~The improvements shall be completed prior to the impact occurring.~~To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

A–4. College Avenue / Montezuma Road

The improvement necessary to mitigate the Project's significant impact at the College Avenue / Montezuma Road intersection is to re-stripe the eastbound Montezuma Road approach to the intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue, and also to install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 25,~~912~~998 or its equivalent, SDSU shall re-stripe the eastbound Montezuma Road approach to the College Avenue / Montezuma Road intersection to provide an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and also shall install an overlap phase for the eastbound right-turn to southbound College Avenue at the intersection traffic signal, to the reasonable satisfact~~ory~~ion ~~to~~of the City of San Diego City Engineer. ~~The improvements shall be completed prior to the impact occurring.~~To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

~~A–5. I-8 Westbound Ramp / Parkway Drive~~

~~The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the~~

~~intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.~~

~~Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,795 or its equivalent, SDSU shall install a traffic signal at the I-8 Westbound Ramp / Parkway Drive intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and City of La Mesa for review and approval. Following Caltrans and City of La Mesa approval, SDSU shall install the traffic signal or a roundabout consistent with the approved plans. In the event the proposed improvements are not approved and constructed in a timely manner, the impact would remain temporarily significant and unavoidable.~~

Street Segments

B–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from East Campus Drive to Reservoir Drive is to widen and re-stripe Alvarado Road to add a two-way center left-turn lane or left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway. This improvement would require the removal of on-street parking on a portion of the segment, which is noted in the College Area Community Plan. However, ~~T~~the removal of on-street parking may not be approved by the City of San Diego~~feasible, however,~~ since alternative parking spaces may not be available, although SDSU would be able to retain the on-street parking on a portion of Alvarado Road by widening the segment that fronts SDSU property between Alvarado Court and approximately 250 feet west of the Alvarado Medical Center driveway.

~~The removal of on-street parking may not be feasible, however, since alternative parking spaces may not be available, although SDSU would be able to retain the on-street parking on a portion of Alvarado Road by widening the segment that fronts SDSU property between Alvarado Court and approximately 250 feet west of the Alvarado Medical Center driveway. Assuming the removal of on-street parking where necessary is feasible, p~~Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching ~~24,910~~25,286 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer and provided the City approves removal of the existing on-street parking on the section not adjacent to SDSU property, commence and to the extent feasible complete construction by the identified trigger of the re-striping~~e~~ and widening, where feasible, Alvarado Road between E. Campus Drive and Reservoir Drive to add a two-way center left-turn lane or add left turn pockets at the Alvarado Road intersections at Alvarado Court and the Villa Alvarado Apartments driveway, to the reasonable satisfaction of the City of San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements. Additionally, ~~However~~ if the removal of on-street parking where necessary is not feasible, the improvements are infeasible~~cannot be fully implemented~~ due to right-of-way limitations and the impact would remain significant and unavoidable.

~~However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable. .~~

~~B–2. Alvarado Road: Reservoir Drive to 70th Street~~

~~The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd.~~

~~This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the removal may not be feasible since alternative parking spaces may not be available. Assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 25,465 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego Engineer, re-stripe where feasible Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. However, if the removal of on-street parking where necessary is not feasible, the improvements cannot be fully implemented due to right-of-way limitations and the impact would remain significant and unavoidable.~~

B–~~3~~2. College Avenue: I-8 Eastbound Ramp to Zura Way

The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Zura Way to the I-8 Eastbound Ramp is to widen this segment of College Avenue to provide an additional (third) northbound travel lane.

Prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 24,~~862~~804 or its equivalent, SDSU shall commence and to the extent feasible complete construction by the identified trigger of the widening of northbound College Avenue from Zura Way to the I-8 Eastbound Ramp to provide an additional (third) northbound travel lane. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego and Caltrans for review and approval. Following City and Caltrans approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to Caltrans and the

City Engineer prior to constructing the subject improvements consistent with the approved City and Caltrans plans. In the event the proposed improvements are not approved ~~and constructed~~ in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

~~B-4. College Avenue: Montezuma Road to Cresita Drive~~

~~The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to widen College Avenue and construct a raised median. However, this mitigation is infeasible in the near term because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way on College Avenue between Montezuma Road and Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the road widening and installation of a raised median is infeasible and, as a result, this impact is considered significant and unavoidable.~~

~~As an alternate strategy, SDSU could widen the sidewalks on the segment of College Avenue between Montezuma Road and Cresita Drive to facilitate increased pedestrian travel, and/or restripe the road to provide for bicycle lanes, although this latter improvement would require removal of the limited existing curbside parking. Neither bicycle lanes nor widened sidewalks would reduce the identified vehicular level of service impact to less than significant.~~

~~12.1.3~~13.1.3 *Post Mitigation Operations*

Tables 1~~2~~3–1 and ***1~~2~~3–2*** report the results of intersection and street segment mitigation analysis for the Near-Term (Year 2022) + Project conditions. As shown in the tables, if implemented, the proposed mitigation measures would reduce the project impacts to a level of less than significant. However, as previously explained, implementation of certain improvements is not feasible and, therefore, impacts at these locations are considered significant and unavoidable.

Appendix P contains the post mitigation analysis worksheets.

~~12.1.4~~13.1.4 *Conceptual Improvement Sketches*

Appendix Q includes a conceptual sketch of each of the proposed improvements.

TABLE 1~~2~~3–1

NEAR-TERM (YEAR 2022) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022) without Project		Near-Term (Year 2022) + Project			Near-Term (Year 2022) + Project With Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	Δ[c]	Delay	LOS	
8. College Avenue / I-8 EB Ramps	Signal	PM	74.3	E	~~79.3~~ 76.6	E	~~5.0~~ 2.3	~~37.0~~ 35.7	D	Construct an additional (third) northbound lane on College Avenue between the I-8 EB on-ramp and Canyon Crest Drive (feasible).
9. College Avenue / Canyon Crest Drive	Signal	PM	56.1	E	~~70.2~~ 58.9	E	~~14.1~~ 2.8	~~43.5~~ 39.5	D	Construct an additional (third) northbound through lane (feasible).
10. College Avenue / Zura Way	MSSC[d]	PM	178.9	F	~~199.5~~ 189.7	F	~~20.6~~ 10.8	~~31.4~~ 30.8	C	Install a traffic signal (feasible).
11. College Avenue / Montezuma Rd	Signal	AM	65.4	E	~~71.1~~ 70.1	E	~~5.7~~ 4.7	~~51.7~~ 51.4	D	Restripe to provide a second eastbound left-turn lane on Montezuma Road to northbound College Avenue; and install an overlap phase on the eastbound right-turn to southbound College Avenue (feasible).
		PM	91.0	F	~~109.2~~ 107.7	F	~~18.2~~ 16.7	~~63.4~~ 62.9	E	

TABLE 1~~2~~3–1
NEAR-TERM (YEAR 2022) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022) without Project		Near-Term (Year 2022) + Project			Near-Term (Year 2022) + Project With Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	Δ[c]	Delay	LOS	
~~16. I-8 WB Ramps / Parkway Dr~~	~~AWSC[e]~~	~~PM~~	~~59.2~~	~~F~~	~~62.1~~	~~F~~	**~~2.9~~**	~~13.8~~	~~B~~	~~Install a traffic signal (feasible).~~

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. Δ denotes the project-induced delay increase.

d. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue ~~are~~ would not be allowed.

~~e. AWSC – All Way Stop Controlled intersection.~~

General Notes:

1. Bold represents a significant impact

SIGNALIZED DELAY/LOS THRESHOLDS Delay	LOS	UNSIGNALIZED DELAY/LOS THRESHOLDS Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 1~~2~~3–2

NEAR-TERM (YEAR 2022) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Near-Term (Year 2022) without Project			Near-Term (Year 2022) with Project				Mitigated LOS E Capacity [a]	Near-Term (Year 2022) + Project With Mitigation			Mitigation
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Alvarado Road													
E. Campus Dr to Reservoir Dr	8,000	9,340	F	1.168	~~9,610~~ 9,490	F	~~1.201~~ 1.186	**~~0.033~~ 0.018**	15,000	~~9,610~~ 9,490	C	~~0.641~~ 0.633	Widen/restripe Alvarado Road to include a two-way left-turn lane or left turn pockets at the Alvarado Rd intersections at Alvarado Court and the Villa Alvarado Apartments driveway -(feasible/infeasible).
~~Reservoir Dr to 70th Street~~	~~8,000~~	~~7,490~~	~~E~~	~~0.936~~	~~7,760~~	~~E~~	~~0.970~~	**~~0.034~~**	~~15,000~~	~~7,760~~	~~C~~	~~0.517~~	~~Restripe Alvarado Road to include a two-way left-turn lane or left turn pockets at the major apartment and retail driveways along Alvarado Rd (infeasible/feasible).~~
College Avenue													
I-8 EB Ramps to Zura Way	40,000	40,470	F	1.012	~~41,930~~ 41,210	F	~~1.048~~ 1.030	**~~0.036~~ 0.018**	~~50,000~~ 45,000	~~41,930~~ 41,210	~~D~~ E	~~0.839~~ 0.916	Widen to provide an additional (third) northbound lane (feasible).

TABLE 1~~2~~3–2
NEAR-TERM (YEAR 2022) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Near-Term (Year 2022) without Project			Near-Term (Year 2022) with Project				Mitigated LOS E Capacity [a]	Near-Term (Year 2022) + Project With Mitigation			Mitigation
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
~~Montezuma Rd to Cresita Drive~~	~~30,000~~	~~30,670~~	~~F~~	~~1.022~~	~~31,000~~	~~F~~	~~1.033~~	~~0.011~~	~~40,000~~	~~31,000~~	~~D~~	~~0.775~~	~~Widen to provide a raised median or provide bike lanes by removing parking (infeasible)~~

Footnotes
a. Capacities based on City of San Diego's Roadway Classification & LOS table.
b. Average Daily Traffic
c. Volume to Capacity ratio

General Notes:
1. Bold and shading represents a potential significant impact

~~12.2~~13.2 Horizon Year (Year 2035)

~~12.2.1~~13.2.1 *Significant Impacts – Cumulative*

The following is a list of the significant cumulative impacts that would result with implementation of the proposed project under the Horizon Year (Year 2035) scenario.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N. (PM peak hour)

C–2. 55th Street / Montezuma Road (PM peak hour)

C–3. Campanile Drive / Montezuma Road (AM peak hour)

C–4. College Avenue / I-8 Eastbound Ramps (AM and PM peak hours)

C–5. College Avenue / Canyon Crest Drive (AM and PM peak hours)

C–6. College Avenue / Zura Way (AM and PM peak hours)

C–7. College Avenue / Montezuma Road (AM and PM peak hours)

C–8. Alvarado Court / Alvarado Road (PM peak hour)

C–9. 70th Street / Alvarado Road (PM peak hour)

C–10. I-8 WB Ramps / Parkway Drive (AM and PM peak hours)

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

D–2. Alvarado Road: Reservoir Drive to 70th Street

D–3. College Avenue: Del Cerro Boulevard to I-8 Westbound off-ramp

D–4. College Avenue: I-8 Eastbound Ramps to Zura Way

D–5. College Avenue: Zura Way to Montezuma Road

D–6. College Avenue: Montezuma Road to Cresita Drive

D–7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

D–8. Montezuma Road: Collwood Boulevard to 55th Street

D–9. Montezuma Road: 55th Street to College Avenue

Ramp Meter

E–1. Northbound College Avenue to Westbound I-8

E–2. Southbound College Avenue to Westbound I-8

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

F–3. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound)

F–4. Interstate 8: College Avenue to Lake Murray Boulevard (westbound)

F–5. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound)

F–6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (westbound)

~~12.2.2~~13.2.2 *Mitigation Measures*

The improvements listed below would mitigate the Project's significant impacts identified under the Horizon Year (Year 2035) scenario. ***Figure 13–2*** graphically shows the Near-Term (Year 2022) + Project impacts and mitigation measures.

Intersections

C–1. Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio N.

The improvement necessary to mitigate the Project's significant cumulative impact at the Fairmount Avenue / I-8 Westbound Off Ramp / Camino Del Rio North intersection is to widen the eastbound approach to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue at this intersection.

Improvements to the interchange are included in the *FY 2015 Navajo Public Facilities Financing Plan, Project T-12B* (see ***Appendix Z***). However, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (0.9%)~~, nor is there a plan or program in place to construct the necessary improvements at this intersection~~. Therefore, the identified improvements are infeasible as they are not capable of being accomplished in a successful manner within a reasonable period of time and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 27,806 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signals located at the following intersections: Fairmount Avenue / I-8 Eastbound Off Ramp; Fairmount Avenue / Camino Del Rio North / I-

Westbound Off Ramp; and Fairmount Avenue / Mission Gorge Road. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant. ***Appendix BB*** contains more information on Adaptive Signal Controls.

C–2. 55th Street / Montezuma Road

The improvements necessary to mitigate the Project's significant cumulative impact at the 55th Street / Montezuma Road intersection are to modify the traffic signal and restripe the 55th Street southbound approach to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~10.9~~10.6%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only~~and,~~. ~~t~~To that end, ~~shall prepare design plans and submit such plans to the City of San Diego for review and approval~~ prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,~~762~~346 or its equivalent~~. Following City approval~~, SDSU shall ~~obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to~~ restrip~~ing~~e the 55th Street southbound approach to the 55th Street / Montezuma Road intersection to include: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane, and also shall implement the associated~~coordinating with the City regarding the~~ signal modification to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–3. Campanile Drive / Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Campanile Drive / Montezuma Road intersection is to restripe the Montezuma Road westbound approach at the intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~12.1~~10.3%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements~~.~~ in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,~~670~~274 or its equivalent, SDSU shall re-stripe the Montezuma Road westbound approach to the Campanile Drive / Montezuma Road intersection to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive, and implement the associated signal modifications to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval~~,~~. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C–4. College Avenue / I-8 Eastbound Ramp

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / I-8 Eastbound Ramp intersection (provide a third northbound lane on College Avenue between Canyon Crest Drive and I-8 [A-1]) would also mitigate the Project's significant cumulative impact and no further mitigation is necessary.

C–5. College Avenue / Canyon Crest Drive

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Canyon Crest Drive intersection (widen the intersection to provide an additional (third) northbound lane [A-2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –6. College Avenue / Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Zura Way intersection (install a traffic signal [A-3]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –7. College Avenue / Montezuma Road

The improvements to be implemented as mitigation for the Project's direct impact to the College Avenue / Montezuma Road intersection (restripe the eastbound approach to include an additional (second) eastbound left-turn lane on Montezuma Road to northbound College Avenue and install a right-turn overlap phase [A-4]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

C –8. Alvarado Court / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the Alvarado Court / Alvarado Road intersection is to install a traffic signal at the intersection. A signal warrant analysis is included in *Appendix P*, which concludes that a signal is warranted at the Alvarado Court / Alvarado Road intersection.

~~However,~~Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~59.8~~59.1%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and,~~.~~ ~~T~~therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 27,285 or its equivalent, SDSU shall install a traffic signal at the Alvarado Court/Alvarado Road intersection. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.~~the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.~~

C –9. 70th Street / Alvarado Road

The improvement necessary to mitigate the Project's significant cumulative impact at the 70th Street / Alvarado Road intersection is to install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the intersection traffic signal.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~10.2~~9.6%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. ~~and, t~~To that end, ~~shall prepare design plans and submit such plans to the City of San Diego for review and approval~~ prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 29,~~359~~086~~ or its equivalent. Following City approval~~, SDSU shall ~~obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer prior to coordinating with the City to~~ install an overlap phase on the northbound right-turn to eastbound Alvarado Road at the 70th Street/Alvarado Road intersection traffic signal~~.~~ to the reasonable satisfaction of the San Diego City Engineer. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval. Following City approval, SDSU shall obtain any necessary construction permits and provide bond assurances satisfactory to the City Engineer.

C –10. Interstate 8 Westbound Ramps / Parkway Drive

~~The improvements to be implemented as mitigation for the Project's direct impact at the I-8 Westbound Ramps / Parkway Drive intersection (install a traffic signal or a roundabout) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.~~ The improvement necessary to mitigate the Project's significant impacts at the I-8 Westbound Ramp / Parkway Drive intersection is to install either a traffic signal or a roundabout at the intersection, dependent upon the results of an Intersection Control Evaluation (ICE) analysis. The improvement ultimately decided upon shall be determined based on input provided by Caltrans and the City of La Mesa (the local jurisdiction), and also shall account for any queuing that could affect adjacent intersections, including the 70th Street/Parkway Drive intersection.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (14.2%), SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,671 or its equivalent, SDSU shall either construct or provide full funding to the City of La Mesa for the installation of either a traffic signal or a roundabout at the I-8 Westbound Ramp / Parkway Drive intersection, dependent upon the results of an ICE analysis. To implement the improvements, SDSU shall prepare design plans and submit such plans to Caltrans and the City of La Mesa for review and approval. Following Caltrans and La Mesa approval, SDSU shall install the traffic signal or roundabout consistent with the approved plans. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements.

C –11. Montezuma Road / Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact at the Montezuma Road / Collwood Boulevard intersection is to modify the traffic signal at the intersection to provide a right-turn overlap phase on the northbound approach.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (9.3%), nor is there a plan or program in place to construct the necessary improvements at this intersection, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 30,050 or its equivalent, SDSU shall modify the traffic signal at the Montezuma Road / Collwood Boulevard intersection to provide a right-turn overlap phase on the northbound approach to the reasonable satisfaction of the San Diego City Engineer. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.

Street Segments

D–1. Alvarado Road: E. Campus Drive to Reservoir Drive

The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from E. Campus Drive to Reservoir Drive (widen and restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.

However, as previously explained in Mitigation Measure B-1, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.

D –2. Alvarado Road: Reservoir Drive to 70th Street

~~The improvements identified to mitigate the Project's direct impact to the segment of Alvarado Road from Reservoir Drive to 70th Street (restripe Alvarado Road to construct a two-way center left-turn lane or add left-turn pockets) would, if implemented, also mitigate the Project's significant cumulative impact at this location.~~

~~However, as previously explained in B-2, the improvements identified to mitigate the direct impacts at this location may be infeasible. If that is the case, cumulative impacts at this location would be considered significant and unavoidable.~~ The improvement necessary to mitigate the Project's significant impact on the segment of Alvarado Road from Reservoir Drive to 70th Street is to restripe this segment of Alvarado Road to add a two-way center left-turn lane or add left turn pockets at the major apartment and retail driveways along Alvarado Road. This improvement would require the removal of on-street parking, which is noted in the College Area Community Plan, although the City of San Diego may not approve the removal since alternative parking spaces may not be available.

Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (20.0%), SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, assuming the removal of on-street parking where necessary is feasible, prior to Full-Time Equivalent (FTE) enrollment reaching 26,534 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer and provided the City approves removal of the existing on-street parking, re-stripe Alvarado Road between Reservoir Drive and 70th Street to add a two-way center left-turn lane or add left turn pockets at the major apartments and retail driveways along Alvarado Road. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. In the event the proposed improvements are not approved in a timely manner, the impact would remain temporarily significant and unavoidable until approval and construction of the improvements. Additionally, if the removal of on-street parking where necessary is not approved by the City, the improvements are infeasible due to right-of-way limitations and the impact would remain significant and unavoidable.

D –3. College Avenue: Del Cerro Boulevard to I-8 WB off-Ramp

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Del Cerro Boulevard to Interstate-8 WB off-ramp is to restripe or, alternatively if the City of San Diego requires, widen northbound College Avenue to provide an additional lane.

~~However,~~Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~32.1~~30.8%), nor is there a plan or program in place to construct the necessary improvements at this segment, in the event the City approves the addition of a northbound lane via re-striping, which SDSU's traffic engineer has determined is feasible and would fully mitigate the impact, SDSU has agreed to fully fund and implement the re-striping in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,671 or its equivalent, and contingent upon City approval, SDSU shall re-stripe northbound College Avenue between Del Cerro Boulevard and the I-8 WB off-ramp to provide an additional lane. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer~~. Furthermore, the addition of a lane to this segment of College Avenue would conflict with the Navajo Community Plan designation~~. In the event the City does not approve the re-striping and requires instead that College Avenue be widened at this location, the road widening would require the acquisition of additional right-of-way (see *Appendix AA* for Mitigation Infeasibility memo) that is owned by multiple individual third parties. Therefore, under this latter scenario, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

D –4. College Avenue: I-8 Eastbound Ramps to Zura Way

The improvements to be implemented as mitigation for the Project's direct impact to the segment of College Avenue from the I-8 Eastbound Ramps to Zura Way (widen College Avenue to provide an additional (third) northbound lane [B-~~3~~2]) would also mitigate the Project's significant cumulative impact at this location and no further mitigation is necessary.

D –5. College Avenue: Zura Way to Montezuma Road

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of College Avenue from Zura Way to Montezuma Road is to widen the four-lane portion of College Avenue to provide an additional travel lane.

However, implementation of this~~the necessary~~ improvement is infeasible because the right-of-way necessary to add a fifth lane is not available due to the proximity of buildings fronting College Avenue along this segment~~at this location~~, and the potential future availability of right of way (see *Appendix AA* for Mitigation Infeasibility memo) on the east side of College Avenue as part of the area's redevelopment is speculative. Additionally, ~~W~~while the College Area Community Plan ~~shows~~depicts College Avenue as ~~6~~ six lanes between Zura Way and Montezuma Road, there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~34.5~~31.5%), nor is there a plan or program in place to construct the necessary improvements at this segment. Therefore, the addition of a fifth lane is infeasible and, as a result, this impact is considered significant and unavoidable.

D –6. College Avenue: Montezuma Road to Cresita Drive

~~The improvements identified to mitigate the Project's direct impact to the segment of College Avenue from Montezuma Road to Cresita Drive (widen College Avenue to construct a raised median) would, if implemented, also mitigate the Project's significant cumulative impact at this location. However, as previously explained in B-4, the improvements identified to mitigate the direct impacts at this location are infeasible and, therefore, the cumulative impact mitigation also is infeasible and, as a result, cumulative impacts at this location are considered significant and unavoidable.~~ The improvement necessary to mitigate the Project's significant impact on the segment of College Avenue from Montezuma Road to Cresita Drive is to construct a raised median either by widening College Avenue or removing the existing on-street parking. However, widening College Avenue at this location is not feasible because it would require the acquisition of additional right-of-way that is owned by multiple individual third parties. As to the removal of on street parking, the City of San Diego has informed SDSU that only portions of the parking could be removed.

To that end, if the removal of on-street parking on the segment of College Avenue between Montezuma Road and Cresita Drive is approved by the City of San Diego, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,670 or its equivalent, SDSU shall, to the reasonable satisfaction of the City of San Diego City Engineer, construct the recommended median. To implement the improvements, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer. However, if the removal of on-street parking is not approved by the City, this mitigation is infeasible because: (i) the installation of a raised median would require road widening, which in turn would require the acquisition of additional right-of-way (see *Appendix AA* for Mitigation Infeasibility memo) on College Avenue between Montezuma Road and Cresita Drive that is owned by multiple individual third parties; and (ii) installation of a raised median would restrict access to the residential uses fronting College Avenue. Therefore, the installation of a raised median would be infeasible and, as a result, this impact is considered significant and unavoidable.

D –7. Montezuma Road: Fairmount Avenue to Collwood Boulevard

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Fairmount Avenue to Collwood Boulevard is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvement is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography (see *Appendix AA* for Mitigation Infeasibility memo); and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~8.2~~7.8%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,283 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signal located at the Montezuma Road / Collwood Boulevard intersection. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant.

D –8. Montezuma Road: Collwood Boulevard to 55th Street

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from Collwood Boulevard to 55th Street is to widen this segment of Montezuma Road to provide an additional eastbound travel lane.

However, implementation of the necessary improvements is infeasible because: (i) the right-of-way necessary to add a lane is not available due to the existing topography (see *Appendix AA* for Mitigation Infeasibility memo); and (ii) there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~9.1~~8.7%), nor is there a plan or program in place to construct the necessary improvements at this location. Therefore, the identified improvements are infeasible and, as a result, this impact is considered significant and unavoidable.

Notwithstanding, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 28,032 or its equivalent, SDSU shall provide funding to the City of San Diego, in an amount to be jointly agreed upon by SDSU and the City based upon professional cost estimates, for the installation of Adaptive Signal Controls at the traffic signals located at the intersections of Montezuma Road and Yerba Santa Drive, 54th Street, and 55th Street. Implementation of this feasible mitigation, however, will not reduce the identified impacts to less than significant.

D –9. Montezuma Road: 55th Street to College Avenue

The improvement necessary to mitigate the Project's significant cumulative impact to the segment of Montezuma Road from 55th Street to College Avenue is to install a raised median along this segment of Montezuma Road.

~~However,~~Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~21.9~~21.2%), nor is there a plan or program in place to construct the necessary improvements at this location~~.~~, SDSU has determined it is feasible and, therefore, agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 26,998 or its equivalent, SDSU shall install a raised median on the segment of Montezuma Road between 55th Street and College Avenue, to the reasonable satisfaction of the City of San Diego City Engineer. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfaction of the City Engineer.~~ Therefore, the identified improvement is infeasible and, as a result, this impact is considered significant and unavoidable.~~

Ramp Meter

E–1. Northbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Northbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Northbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

E–2. Southbound College Avenue to I-8 Westbound

The improvement necessary to mitigate the Project's identified significant cumulative impact at the Southbound College Avenue to I-8 Westbound ramp meter is to provide additional capacity on the I-8 westbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the Interstate-8 / College Avenue interchange including the Southbound College Avenue to I-8 Westbound on-ramp. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent on the outcome of the study, California State University/SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this on-ramp, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

Freeway Mainline

F–1. Interstate 8: Fairmount Avenue to Waring Road (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (~~5.4~~4.1%) to the eastbound segment of Interstate-8 between Fairmount Avenue and Waring Road is to provide additional capacity on the I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at either the I-8 / Fairmount Avenue or I-8 / Waring Road interchange and, relatedly, on the segment of I-8 between Fairmount Avenue and Waring Road. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–2. Interstate 8: Waring Road to College Avenue (eastbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact (~~6.2~~4.8%) to the eastbound segment of Interstate-8 between Waring Road and College Avenue is to provide additional capacity on I-8 eastbound mainline. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between Waring Road and College Avenue. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support

F–3/F-4. Interstate 8: College Avenue to Lake Murray Boulevard (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (~~4.1~~3.8%) and westbound (~~3.7~~3.3%) segments of Interstate-8 between College Avenue and Lake Murray Boulevard is to provide additional capacity on I-8 eastbound and westbound mainlines. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / College Avenue Interchange and, relatedly, on the segment of I-8 between College Avenue and Lake Murray Boulevard. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

F–5/F-6. Interstate 8: Lake Murray Boulevard to Fletcher Parkway (eastbound and westbound)

The improvement necessary to mitigate the Project's identified significant cumulative impact to the eastbound (~~10.4~~9.8%) and westbound (~~9.4~~8.7%) segments of Interstate-8 between Lake Murray Boulevard and Fletcher Parkway is to provide additional capacity on the I-8 eastbound and westbound mainlines. To that end, California State University / SDSU shall support Caltrans in its efforts to obtain funding from the state Legislature for the costs to prepare a Project Study Report-Project Development Support-Project Initiation Document (Study) to evaluate alternatives to increase capacity, improve mobility, and relieve congestion at the I-8 / Fletcher Parkway or I-8 / Lake Murray Boulevard interchange and, relatedly, on the segment of I-8 between Lake Murray Boulevard and Fletcher Parkway. Alternatives to be considered could include enhanced acceleration/deceleration lanes and interconnecting ramp meters. Dependent upon the outcome of the Study, California State University / SDSU shall continue to support Caltrans in its efforts to obtain funding from the state Legislature for the costs to implement the capital improvements identified in the Study. However, as there presently are no capacity improvements planned for this segment of I-8, mitigation to reduce the identified significant impact to less than significant is infeasible and the impact is considered significant and unavoidable.

~~12.2.3~~13.2.3 *Post Mitigation Operations*

Tables 1~~2~~3–~~4~~3 and ***1~~2~~3–~~5~~4*** report the results of the intersection and street segment mitigation analysis for the Horizon Year (Year 2035) + Project conditions. As shown in the tables, if implemented, the recommended improvements would reduce the project's impacts to intersections and street segments to less than significant. However, as previously explained, implementation of

Table 1~~2~~3–~~4~~3
Horizon Year (Year 2035) Intersection Mitigation Analysis

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation[g] (fair-share)
			Delay	LOS	Delay	LOS	Δ[f]	Delay	LOS	
1. Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	Signal	PM	241.7	F	243.8	F	**2.1**	178.6	F	Widen to provide an additional (second) eastbound exclusive right-turn lane on Camino Del Rio N. to southbound Fairmount Avenue (infeasible). Provide Adaptive Signal Control (feasible).
4. 55th Street / Montezuma Road	Signal	AM PM	59.0 107.8	E F	~~66.0~~ 65.5 ~~110.7~~ 110.4	E F	~~**7.0**~~ **6.5** ~~**2.9**~~ **2.6**	~~56.7~~ 56.2 ~~103.2~~ 103.0	E F	Restripe the southbound approach on the 55th Street/Montezuma Road intersection to provide: one (1) dedicated southbound right-turn lane; one (1) shared southbound right/thru/left-turn lane; and one (1) dedicated southbound left-turn lane (feasible).
5. Campanile Dr / Montezuma Rd	Signal	AM	93.4	F	~~105.9~~ 99.8	F	~~**12.5**~~ **6.4**	~~47.4~~ 39.6	D	Restripe to provide an exclusive westbound right-turn lane on Montezuma Road to northbound Campanile Drive (feasible).
8. College Ave / I-8 EB Ramps	Signal	AM PM	45.3 140.0	D F	~~55.1~~ 53.0 ~~182.4~~ 178.0	~~E~~ D F	~~**9.8**~~ **7.7** ~~**42.4**~~ **38.0**	~~54.3~~ 52.2 ~~44.3~~ 42.3	D D	Provide an additional (third) northbound lane between I-8 EB off-ramp and Canyon Crest Drive (feasible).
9. College Ave / Canyon Crest Dr	Signal	AM PM	81.6 102.9	F F	~~91.4~~ 89.1 ~~193.6~~ 177.4	F F	~~**9.8**~~ **7.5** ~~**90.7**~~ **74.5**	~~76.5~~ 72.7 ~~92.4~~ 86.3	E F	Provide an additional (third) northbound through lane (feasible).
10. College Ave / Zura Way	MSSC[c]	PM	393.8	F	~~528.3~~ 514.5	F	~~**134.5**~~ **120.7**	~~38.3~~ 37.7	D	Provide a traffic signal (feasible).

TABLE 1~~2~~3–~~4~~3
HORIZON YEAR (YEAR 2035) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation[g] (fair-share)
			Delay	LOS	Delay	LOS	Δ[f]	Delay	LOS	
11. College Ave / Montezuma Rd	Signal	AM	107.3	F	~~121.9~~ 120.5	F	**~~14.6~~ 13.2**	~~80.3~~ 79.6	~~F~~ E	Restripe to provide an additional (second) exclusive eastbound left-turn lane on Montezuma Road to northbound College Avenue; and an overlap phase on the eastbound right-turn to southbound College Avenue (feasible).
		PM	135.6	F	~~155.0~~ 153.0	F	**~~19.4~~ 17.5**	~~106.1~~ 105.4	F	
12. Alvarado Ct / Alvarado Rd	MSSC[d]	PM	18.3	C	~~72.2~~ 69.7	F	**~~53.9~~ 51.4**	~~9.6~~ 9.5	A	Install a traffic signal and provide a dedicated left-turn lane on the westbound approach (~~in~~feasible).
15. 70th St / Alvarado Rd	Signal	PM	94.9	F	~~98.2~~ 98.1	F	**~~3.3~~ 3.2**	~~86.8~~ 86.7	F	Provide an overlap phase on northbound 70th Street to eastbound Alvarado Road (feasible).
16. I-8 WB Ramps / Parkway Dr	AWSC[e]	AM	65.6	F	~~94.7~~ 92.3	F	**~~29.1~~ 26.7**	~~18.9~~ 18.8	B	Provide a traffic signal (feasible).
		PM	128.6	F	~~147.6~~ 144.3	F	**~~19.0~~ 15.7**	~~22.6~~ 22.2	C	

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service.

c. MSSC – Minor Street Stop Controlled intersection. The highest (worst) of the minor street right-turn delay (westbound right-turn) or major street (northbound left-turn) is reported. Left-turns from Zura Way to College Avenue ~~are~~ would not be allowed.

d. MSSC – Minor Street Stop Controlled intersection. Minor street approach delay is reported.

e. AWSC – All-Way Stop Controlled intersection.

f. Δ denotes project induced delay increase.

~~f.~~g. SDSU to implement feasible mitigation measures as described herein.

General Notes:

1. Bold and shading represents a potential significant impact

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 < 10.0	A	0.0 < 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
> 80.1	F	> 50.1	F

TABLE 1~~2~~3–~~5~~4
HORIZON YEAR (YEAR 2035) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Horizon Year (Year 2035) without Project			Horizon Year (Year 2035) with Project				Mitigated LOS E Capacity [a]	With Mitigation			Mitigation[d] (fair-share)
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Alvarado Road													
E. Campus Dr to Reservoir Dr	8,000	11,340	F	1.418	~~14,900~~ 14,780	F	~~1.863~~ 1.848	**~~0.445~~ 0.430**	15,000 [d]	~~14,900~~ 14,780	E	~~0.993~~ 0.985	Widen/restripe to include a two-way left-turn lane or ~~add~~ left-turn pockets (infeasible/feasible).
Reservoir Dr to 70th St	8,000	14,830	F	1.854	~~16,900~~ 16,780	F	~~2.113~~ 2.098	**~~0.259~~ 0.244**	15,000 [d]	~~16,900~~ 16,780	F	~~1.127~~ 1.119	Restripe Alvarado Road to include a two-way left-turn lane or ~~add~~ left-turn pockets (infeasible/feasible)
College Avenue													
Del Cerro Blvd to I-8 WB off-ramp	40,000	35,930	E	0.898	~~38,100~~ 37,980	E	~~0.953~~ 0.950	**~~0.055~~ 0.052**	45,000	~~38,100~~ 37,980	D	~~0.847~~ 0.844	Restripe/widen and provide an additional (third) northbound through lane (feasible/infeasible).
I-8 EB Ramps to Zura Way	40,000	61,100	F	1.528	~~67,670~~ 66,950	F	~~1.692~~ 1.674	**~~0.164~~ 0.146**	45,000	~~67,670~~ 66,950	F	~~1.504~~ 1.488	Provide an additional (third) northbound through lane (feasible).
Zura Way to Montezuma Rd	40,000	35,180	E	0.880	~~38,020~~ 37,660	E	~~0.951~~ 0.942	**~~0.071~~ 0.062**	45,000	~~38,020~~ 37,660	D	~~0.845~~ 0.837	Widen to provide an additional lane (infeasible).

TABLE 1~~2~~3–~~5~~4
HORIZON YEAR (YEAR 2035) SEGMENT MITIGATION ANALYSIS

Segment	LOS E Capacity [a]	Horizon Year (Year 2035) without Project			Horizon Year (Year 2035) with Project				Mitigated LOS E Capacity [a]	With Mitigation			Mitigation[d] (fair-share)
		Volume	LOS [b]	V/C [c]	Volume	LOS [b]	V/C [c]	V/C Δ		Volume	LOS	V/C	
Montezuma Rd to Cresita Drive	30,000	32,130	F	1.071	~~33,840~~ 33,660	F	~~1.128~~ 1.122	**~~0.057~~ 0.051**	~~45,000~~ 40,000	~~33,840~~ 33,660	~~C~~ D	~~0.752~~ 0.842	~~Widen to p~~Provide a raised median (feasible/infeasible)~~.~~
Montezuma Road													
Fairmount Ave to Collwood Blvd	40,000	66,740	F	1.669	~~68,020~~ 67,960	F	~~1.701~~ 1.699	**~~0.032~~ 0.030**	45,000	**~~68,020~~ 67,960**	**F**	**~~1.512~~ 1.510**	Widen to provide an additional lane (infeasible); provide Adaptive Signal Control (feasible).
Collwood Blvd to 55th St	40,000	41,810	F	1.045	~~43,090~~ 43,030	F	~~1.077~~ 1.076	**~~0.032~~ 0.031**	45,000	**~~43,090~~ 43,030**	**E**	**~~0.958~~ 0.956**	Widen to provide an additional lane (infeasible); provide Adaptive Signal Control (feasible).
55th St to College Ave	30,000	38,210	F	1.274	~~39,790~~ 39,730	F	~~1.326~~ 1.324	**~~0.052~~ 0.050**	40,000	~~39,790~~ 39,730	E	~~0.995~~ 0.933	Provide a raised median (~~in~~feasible).

Footnotes:

a. Capacities based on City of San Diego's Roadway Classification & LOS table.

b. Average Daily Traffic

c. Volume to Capacity ratio

~~c.~~d. SDSU to implement feasible mitigation measures as described herein.

General Notes:

1. Bold and shading represents a potential significant impact

~~12.2.4~~13.2.4 *Mitigation Measure Fair-Share Contributions*

Table 1~~2~~3–~~6~~5 shows fair share percentages for each of the recommended cumulative mitigation measures. These percentages have been calculated according to the following formula, which is commonly used by the City of San Diego: ***Appendix R*** includes a fair share calculation conducted for each improvement.

Intersections: Horizon Year (Year 2035) Impact Fair Share (using entering intersection volumes and highest of AM or PM peak hour fair-share percentages) =

> (Horizon Year (Year 2035) Project Traffic Volumes) / (Horizon Year (Year 2035) With Project – Existing Traffic Volumes)

Street Segments: Horizon Year (Year 2035) Impact Fair Share =

> (Horizon Year (Year 2035) Project Traffic Volumes) / (Horizon Year (Year 2035) With Project – Existing Traffic Volumes)

TABLE 1~~2~~3–~~6~~5

HORIZON YEAR (YEAR 2035) FAIR SHARE CONTRIBUTION

Mitigation Measure Number	Impacted Locations	Fair Share Percentage
C–1	Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.	0.9%
C–2	55th Street / Montezuma Road	~~10.9%~~ 10.6%
C–3	Campanile Drive / Montezuma Road	~~12.1%~~ 10.3%
C–4	College Avenue / I-8 EB Ramps	*
C–5	College Avenue / Canyon Crest Drive intersection	*
C–6	College Avenue / Zura Way intersection	*
C–7	College Avenue / Montezuma Road intersection	*
C–8	Alvarado Court / Alvarado Road intersection	~~59.8%~~ 59.1%
C–9	70th Street / Alvarado Road	~~10.2%~~ 9.6%
C–10	I-8 WB Ramps / Parkway Drive intersection	~~*~~ 14.2%
C–11	Montezuma Road / Collwood Boulevard	9.3%
D–1	Alvarado Road: E. Campus Drive to Reservoir Drive	*
D–2	Alvarado Road: Reservoir Drive to 70th Street	~~*~~ 20.0%
D–3	College Avenue: Del Cerro Boulevard to I-8 WB off-ramp	~~32.1%~~ 30.8%

TABLE 1~~2~~3–~~6~~5
HORIZON YEAR (YEAR 2035) FAIR SHARE CONTRIBUTION

Mitigation Measure Number	Impacted Locations	Fair Share Percentage
D–4	College Avenue: I-8 EB Ramps to Zura Way	*
D–5	College Avenue: Zura Way to Montezuma Road	~~34.5%~~ 31.5%
D–6	College Avenue: Montezuma Road to Cresita Drive	* 24.8%
D–7	Montezuma Road: Fairmount Avenue to Collwood Boulevard	~~8.2%~~ 7.8
D–8	Montezuma Road: Collwood Boulevard to 55th Street	~~9.1%~~ 8.7%
D–9	Montezuma Road: 55th Street to College Avenue	~~21.9%~~ 21.2%
E–1	Northbound College Avenue to westbound I-8	~~15.7%~~ 8.9%
E–2	Southbound College Avenue to westbound I-8	~~6.1%~~ 6.6%
F–1	I-8: Fairmount Avenue to Waring Road (EB)	~~5.4%~~ 4.1%
F–2	I-8: Waring Road to College Avenue (EB)	~~6.2%~~ 4.8%
F–3	I-8: College Avenue to Lake Murray Boulevard (EB)	~~4.1%~~ 3.8%
F–4	I-8: College Avenue to Lake Murray Boulevard (WB)	~~3.7%~~ 3.3%
F–5	I-8: Lake Murray Boulevard to Fletcher Parkway (EB)	~~10.4%~~ 9.8%
F–6	I-8: Lake Murray Boulevard to Fletcher Parkway (WB)	~~9.4%~~ 8.7%

General Notes:

* indicates Near-Term (Year 2022) direct impact location.

** Fair-share percentages listed represent the project's proportionate share of cumulative traffic. As to mitigation, SDSU will fully fund and implement measures C-2, 3, 8, 9, 11 and D-9.

Figure 1~~2~~3–1 Near-Term (Year 2022) + Project Impacts & Mitigation Measures

Figure 1~~2~~3–2 Horizon Year (Year 2035) + Project Impacts & Mitigation Measures

~~13.0~~14.0 MITIGATION TRIGGER ANALYSIS

An analysis was conducted to determine the estimated number of FTE students that could be added prior to triggering a significant impact at an intersection, street segment, ramp meter, or I-8 mainline under the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios presented in this report. The analysis is provided below.

~~13.1~~14.1 Trigger Analysis Methodology

The ~~proposed~~ project consists of ~~various~~following components that would generate vehicle trips: ~~including~~ non-resident students, resident students, and the Adobe Falls Faculty/Staff housing ~~and the Alvarado Hotel~~. Each of these uses has a different trip rate metric, such as student headcount increase, and dwelling units for faculty/staff housing~~, and rooms for the hotel~~. For the purposes of this analysis, all of these differing metrics were converted to a common improvement trigger metric in Full Time Equivalent (FTE) students. In addition, for purposes of this analysis only, in order to present the most conservative scenario (i.e., the most accelerated scenario), it was assumed that ~~both~~the the Adobe Falls Faculty/Staff housing ~~and the Alvarado Hotel~~ would be built in the initial stages of Master Plan development. This would be conservative as buildout of Adobe Falls Faculty/Staff development ~~and Alvarado Hotel~~ would reduce the reserve/available roadway capacity and thereby trigger significant impacts and corresponding mitigation measures earlier than ~~would occur~~ under the forecasted FTE increase scenario.

Intersections – The number of FTE students that could be added before a significant impact to an intersection would occur was determined as follows:

Based on the City of San Diego's significance criteria, the project would have a significant impact when the project adds more than 2.0 seconds of delay at LOS E operating intersections or 1.0 second for LOS F intersections. Based on the project's trip generation and trip distribution, the increase in FTE students and the associated traffic that would add exactly 2.0 seconds of delay at LOS E operating intersections or exactly 1.0 second for LOS F operations was determined for each significantly impacted location/facility.

Street Segments – The number of FTE students that could be added before a significant impact to a street segment would occur was determined as follows:

Based on the City of San Diego's significance criteria, the project would have a significant impact when the project adds more than 2% of the total traffic for LOS E operating segments or 1% of the total traffic for LOS F segments. Based on the project's trip generation and trip distribution, the increase in FTE students and the associated traffic that would add exactly 2% of the total traffic for LOS E segments or exactly 1% of the total traffic for LOS F segments was determined for each significantly impacted location/facility.

Table 1~~3~~4–1 shows the mitigation triggers analyses for the Near-Term (Year 2022) and Horizon Year (Year 2035) scenarios.

Table 1~~3~~4–1
Mitigation Trigger Analysis

Mitigation Measure Number	Impacted Locations	~~Alvarado Hotel FTE~~[~~a~~]	Adobe Falls Faculty/ Staff Housing FTE[~~b~~a]	Student FTE[~~c~~b]	FTE Trigger Increase[~~d~~c]
			Near-Term (Year 2022)		
A–1	College Avenue / I-8 EB Ramps	~~576~~	~~80~~ 501	–	~~656~~ 501
A–2	College Avenue / Canyon Crest Drive	~~576~~	~~120~~ 661	~~–~~ 49	~~696~~ 710
A–3	College Avenue / Zura Way	~~53~~	~~–~~ 31	–	~~53~~ 31
A–4	College Avenue / Montezuma Road	~~576~~	661	~~120~~ 782	~~1,357~~ 1,443
~~A–5~~	~~I-8 WB Ramps / Parkway Drive~~	~~240~~	~~–~~	~~–~~	~~240~~
B–1	Alvarado Road: E. Campus Drive to Reservoir Drive	~~355~~	~~–~~ 661	~~–~~ 70	~~355~~ 731
~~B–2~~	~~Alvarado Road: Reservoir Drive to 70th Street~~	~~576~~	~~334~~	~~–~~	~~910~~
B–~~3~~2	College Avenue: I-8 EB Ramps to Zura Way	~~307~~	~~–~~ 249	–	~~307~~ 249
			Horizon Year (Year 2035)		
C–1	Fairmount Avenue / I-8 WB Off Ramp / Camino Del Rio N.		661	2,590	3,251
C–2	55th Street / Montezuma Road	~~576~~	661	~~2,970~~ 3,130	~~4,207~~ 3,791
C–3	Campanile Drive / Montezuma Road	~~576~~	661	~~2,878~~ 3,058	~~4,115~~ 3,719
C–4	College Avenue / I-8 EB Ramps			*See A–1*	
C–5	College Avenue / Canyon Crest Drive			*See A–2*	
C–6	College Avenue / Zura Way			*See A–3*	
C–7	College Avenue / Montezuma Road			*See A–4*	
C–8	Alvarado Court / Alvarado Road		661	2,069	2,730
C–9	70th Street / Alvarado Road	~~576~~	661	~~3,567~~ 3,870	~~4,804~~ 4,531
C–10	I-8 WB Ramps / Parkway Drive		661	1,455	2,116
C–11	Montezuma Road / Collwood Boulevard	~~576~~	661	~~4,594~~ 4,834	~~5,831~~ 5,495
D–1	Alvarado Road: E. Campus Drive to Reservoir Drive			*See B–1*	

Table 1~~3~~4–1
Mitigation Trigger Analysis

Mitigation Measure Number	Impacted Locations	~~Alvarado Hotel FTE[a]~~	Adobe Falls Faculty/ Staff Housing FTE[~~b~~a]	Student FTE[~~c~~b]	FTE Trigger Increase[~~d~~c]
D–2	Alvarado Road: Reservoir Drive to 70th Street		661	1,318	1,979
D–3	College Avenue: Del Cerro Boulevard to I-8 WB off-ramp		661	1,455	2,116
D–4	College Avenue: I-8 EB Ramps to Zura Way	*See B–~~3~~2*			
D–6	College Avenue: Montezuma Road to Cresita Drive		661	1,454	2,115
D–7	Montezuma Road: Fairmount Avenue to Collwood Boulevard		661	3,067	3,728
D–8	Montezuma Road: Collwood Boulevard to 55th Street		661	2,816	3,477
D–9	Montezuma Road: 55th Street to College Avenue		661	1,782	2,443

Footnotes:

~~a. 120 room of Hotel is calculated to generate 1,200 ADT's (per *Table 8–3A*). Based on Horizon Year (Year 2035) student headcount (11,385 students) to student trips (20,830 ADT) relationship and 1.1385 FTE conversion factor (see *footnote c*), the total FTE's for Alvarado Hotel was calculated as 576 FTE's [(11,385/20,830) x (1,200/1.1385)].~~

~~b.~~a. 172 DU of Adobe Falls is calculated to generate 1,376 ADT's (per *Table ~~8–3~~12–2A*). Based on Horizon Year (Year 2035) student headcount (11,385 students) to student trips (20,830 ADT) relationship and 1.1385 FTE conversion factor (see *footnote c*), the total FTE's for Adobe Falls housing was calculated as 661 FTE's [(11,385/20,830) x (1,376/1.1385)].

~~c.~~b. 11,385 student headcount = 10,000 FTE's. Therefore, 1 student headcount = 1.1385 FTE.

~~d.~~c. FTE Trigger Increase = ~~Alvarado Hotel FTE +~~ Adobe Falls FTE + Student FTE

General Notes:

1. FTE – Full Time Enrollments.
2. ~~Significant and unmitigated impacted locations not shown in this table.~~

~~14.0~~15.0 ADDITIONAL INTERSECTION ANALYSES

Based on discussions with City staff, traffic analyses of two (2) additional intersections in the Project area were conducted. The intersections are Montezuma Road / Collwood Boulevard and Montezuma Road / Yerba Santa Drive. This section presents the analysis of the Project's impacts at these two intersections.

~~14.1~~15.1 Existing Street Network

Collwood Boulevard is a north-south roadway and is classified as a 4-lane Major Street in the College Area Community Plan. Collwood Boulevard is currently constructed as a two-lane Collector with two way left turn lane between College Avenue and 54th Street. Bike lanes are provided along Collwood Boulevard. On-street parking is generally allowed. Bus stops are provided at College Avenue. The posted speed limit is 40 mph.

Yerba Santa Drive is a north-south roadway and is classified as a 2-lane Collector in the College Area Community Plan. Yerba Santa Drive is currently constructed as a two-lane undivided roadway. Bike lanes are not provided along Yerba Santa Drive. On-street parking is allowed on the southbound direction side, north of College Avenue. There are no posted speed limit signs.

~~14.2~~15.2 Analysis of Existing Conditions

~~14.2.1~~15.2.1 *Existing Intersection Operations*

Intersection capacity analyses were conducted for the two additional intersections under Existing without and with Total Project conditions. ***Table 1~~4~~5–1*** reports the intersection operations during the peak hour conditions. Under Existing without and with Total Project conditions, both intersections would operate at LOS C or better.

Appendix S contains the intersection analysis worksheets for these intersections under Existing without and with Total Project scenario.

Table 145–1
Existing + Total Project Intersection Operations

Intersection	Control Type	Peak Hour	Existing		Existing + Total Project	
			Delay[a]	LOS[b]	Delay	LOS
1. Montezuma Road / Collwood Boulevard	Signal	AM PM	21.5 25.3	C C	21.7 25.7	C C
2. Montezuma Road / Yerba Santa Drive	Signal	AM PM	9.4 9.2	A A	11.2 9.4	B A

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

~~14.3~~15.3 Near-Term (Year 2022) Analysis

Intersection capacity analyses were conducted for the two additional intersections under Near-Term (Year 2022) without and with Project conditions. ***Table 1~~4~~5–2*** reports the intersection operations during the peak hour conditions. Under Near-Term (Year 2022) without and with Project conditions, both intersections would operate at LOS C or better. Based on the City of San Diego's significance criteria, no significant impacts are identified at the two intersections as the Project's traffic contribution would not exceed the allowable threshold.

Appendix S contains the intersection analysis worksheets for these intersections under the Near-Term without and with Project scenarios.

TABLE 1~~4~~5–2
NEAR-TERM (YEAR 2022) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term (Year 2022)		Near-Term (Year 2022) + Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Montezuma Road / Collwood Boulevard	Signal	AM	21.6	C	21.9	C	0.3	No
		PM	31.9	C	32.1	C	0.2	No
2. Montezuma Road / Yerba Santa Drive	Signal	AM	9.5	A	11.4	B	1.9	No
		PM	9.4	A	9.5	A	0.1	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

~~14.4~~15.4 Horizon Year (Year 2035) Analysis

Intersection capacity analyses were conducted for the two additional intersections under Horizon Year (Year 2035) without and with Project conditions. ***Table 1~~4~~5–3*** reports the intersection operations during the peak hour conditions. As shown on the table, under the Horizon Year (Year 2035) without and with Project scenario, the following intersection would operate at LOS E:

- Montezuma Road / Collwood Boulevard (LOS E during the PM peak hour)

Appendix S contains the intersection analysis worksheets for the additional intersections under Horizon Year (Year 2035) without and with Project scenario.

TABLE 1~~4~~5–3
HORIZON YEAR (YEAR 2035) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035)		Horizon Year (Year 2035) + Project		Δ[c]	Significant Impact?
			Delay[a]	LOS[b]	Delay	LOS		
1. Montezuma Road / Collwood Boulevard	Signal	AM PM	24.8 **55.0**	C **E**	30.4 **59.6**	C **E**	5.6 **4.6**	No **Yes**
2. Montezuma Road / Yerba Santa Drive	Signal	AM PM	11.7 11.6	B B	13.9 12.2	B B	2.2 0.6	No No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

General Notes:
1. **Bold** typeface indicates intersections operating at LOS E.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

~~14.5~~15.5 Significant Impacts and Mitigation Measures

~~14.5.1~~15.5.1 *Near-Term*

Based on the City of San Diego's significance criteria, no significant impacts are identified at the two intersections as the project traffic contribution would not exceed the allowable threshold. Therefore, no mitigation measures are required.

~~14.5.2~~15.5.2 *Horizon Year (Year 2035)*

Based on the City of San Diego's significance criteria, a significant impact is identified at the intersection below as the Project's traffic contribution would exceed the allowable threshold.

C–11. Montezuma Road / Collwood Boulevard (PM peak hour)

~~14.5.3~~15.5.3 *Mitigation Measures*

The improvements listed below would mitigate the Project's significant cumulative impacts identified under the Horizon Year (Year 2035) scenario.

Intersections

C –11. Montezuma Road / Collwood Boulevard

> The improvement necessary to mitigate the Project's significant cumulative impact at the Montezuma Road / Collwood Boulevard intersection is to ~~provide~~modify the traffic signal at the intersection to provide a right-turn overlap phase on the northbound approach.
>
> Since there is no plan or program in place to provide the necessary funding in combination with the Project's fair-share (~~9.7~~9.3%), nor is there a plan or program in place to construct the necessary improvements at this intersection~~.~~, SDSU has determined it is feasible and, therefore,~~has~~ agreed to fully fund and implement the necessary improvements in light of the substantial benefits that would accrue to the SDSU community and for the limited purpose of this project only. To that end, prior to SDSU Full-Time Equivalent (FTE) enrollment reaching 30,~~386~~050~~,~~ or its equivalent, SDSU shall modify the traffic signal at the Montezuma Road / Collwood Boulevard intersection to provide a right-turn overlap phase on the northbound approach to the reasonable satisfaction of the San Diego City Engineer. To implement the improvement, SDSU shall prepare design plans and submit such plans to the City of San Diego for review and approval, and prior to commencing construction, SDSU shall obtain any necessary construction permits and provide bond assurances to the reasonable satisfact~~ory~~ion ~~to~~of the City Engineer.

Post Mitigation Operations

Tables 1~~4~~5–4 reports the result of the intersection mitigation analysis for the Horizon Year (Year 2035) + Project conditions. As shown in the table, if implemented, the recommended improvement would reduce the project's impacts to the intersection to less than significant.

Appendix S contains the post mitigation analysis worksheets.

TABLE 1~~4~~5–4
HORIZON YEAR (YEAR 2035) INTERSECTION MITIGATION ANALYSIS

Intersection	Control Type	Peak Hour	Horizon Year (Year 2035) without Project		Horizon Year (Year 2035) with Project			With Mitigation		Mitigation (fair-share)
			Delay[a]	LOS[b]	Delay	LOS	Δ[c]	Delay	LOS	
1. Montezuma Road / Collwood Road	Signal	PM	**55.0**	**E**	**~~59.6~~** 59.2	**E**	**~~4.6~~** **4.2**	~~53.8~~ 53.6	D	Modify the traffic signal to ~~P~~provide a right-turn overlap phase on the northbound approach (feasible).

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. "Δ" denotes the project-induced increase in delay.

General Notes:

1. Bold and shading represents a potential significant impact

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

~~15.0~~16.0 PEDESTRIAN AND BICYCLE FACILITIES ASSESSMENT

An assessment of the existing bicycle / pedestrian infrastructure near the campus and a determination of recommended improvements was conducted.

~~15.1~~16.1 Existing Pedestrian Infrastructure

A field review of the existing pedestrian infrastructure was conducted in the study area and the results are shown in ***Appendix U***. The exhibit graphically shows where sidewalks are provided. Also, ***Table 1~~5~~6–1*** provides additional information regarding the presence of sidewalks, including where contiguous and noncontiguous sidewalks exist.

~~15.2~~16.2 Existing Bicycle Infrastructure

Table 1~~5~~6–2 shows where existing bicycle facilities are provided. It also indicates whether the bike facilities are Class 1 or Class 2 and whether bike buffers are provided. As can be seen, Class 2 bike lanes are provided on portions of Alvarado Road, College Avenue and Montezuma Road.

~~15.3~~16.3 Pedestrian / Bike Improvements

Recently Installed Improvements

The University recently has installed several bicycle and pedestrian improvements including:

- On-campus Class I bike paths between Hardy Road and Hilltop Way, and between Union Street and Viejas Arena (Aztec Walk)(installed since 2007);
- Class II bike lanes on College Avenue between Montezuma Road and Zura Way (installed since 2007);
- Pedestrian improvements, including pedestrian signals, widened sidewalks, and bulb-outs at South Campus Plaza (east side of College Avenue), and Montezuma Road and Campanile Drive (installed since 2007).

Recommended Improvements

- Establish a Bike-Share pilot program on campus;
- Upgrade the existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street;
- Install a bike lane within existing curb lines on Canyon Crest Drive between Parking Lot 16 and Parking Lot 15;
- Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane.

~~15.4~~16.4 Potential Pedestrian / Bicycle Safety Impacts

A review of potential impacts to pedestrian & bicycle movement that could result from implementation of the ~~project~~ mitigation measures was conducted. Based on that review, it was determined that none of the mitigation measures would result in the removal of existing bike lanes or sidewalks, nor would they result in a decrease in width of these facilities. In the one instance where a potential conflict would arise (restriping the southbound approach to the Montezuma Road / 55th Street intersection to provide two southbound right turn movements), since there is no pedestrian crossing allowed on the west leg of the intersection, the right turn improvements would not present a pedestrian or bicycle conflict. Therefore, implementation of the recommended mitigation would not significantly impact existing pedestrian and bicycle facilities.

Additionally, several of the recommended improvements would improve bicycle/pedestrian safety, such as the installation of a bike lane along Canyon Crest Drive. ~~For example, the installation of a bike lane along Canyon Crest Drive would improve safety conditions for bicyclists along Canyon Crest Drive.~~

In addition, the installation of a new traffic signal at College Avenue and Zura Way would allow for a controlled crossing of College Avenue where one does not presently exist. This would be a positive safety improvement for both bicyclists and pedestrians. There is no existing sidewalks along the west side of College Avenue, left-turns from Zura Way onto southbound College Avenue are not permitted.

A review of the potential conflicts between the recommended bicycle improvements and the transit circulation was conducted. No conflicts were identified~~.~~ as ~~N~~no travel lanes utilized by transit will be removed in order to provide the recommended ~~bicycle~~ improvements.

TABLE 1~~5~~6–1
EXISTING PEDESTRIAN INFRASTRUCTURE

Segment	Segment Length (Approx.)	Sidewalk (Yes / No)	Location (One Side / Both Sides)	Type (Contiguous / Noncontiguous)	Notes
Alvarado Road					
E Campus Drive to Alvarado Court	2,140'	No	–	–	
Alvarado Court to Reservoir Drive	1,880'	Yes	Both Sides	Contiguous	No westbound sidewalk between Alvarado Court and Sterling Verde Drive.
Reservoir Drive to 70th Street	3,360'	Yes	Both Sides	Contiguous	Eastbound sidewalk terminates 760' west of 70th Street. There is no westbound sidewalk between Reservoir Drive and 2,040' just east.
College Avenue					
Del Cerro Boulevard to I-8 EB Ramps	2,560'	Yes	Northbound Only	Contiguous	
I-8 EB Ramps to Canyon Crest Drive	510'	Yes	Northbound Only	Contiguous	
Canyon Crest Drive to Zura Way	1,100'	Yes	Northbound Only	Contiguous	
Zura Way to Montezuma Road	1,340'	Yes	Both Sides	Northbound – Contiguous Southbound – Noncontiguous	Southbound sidewalk is only provided between transit center and Montezuma Road.
South of Montezuma Road		Yes	Both Sides	Contiguous	
Montezuma Road					
Fairmount Avenue to Collwood Boulevard	3,290'	Yes	Eastbound Only	Contiguous	
Collwood Boulevard to Yerba Santa Drive	520'	Yes	Eastbound Only	Contiguous	
Yerba Santa Drive to 55th Street	2,580'	Yes	Westbound Only	Contiguous and Noncontiguous	The sidewalk transitions to a noncontiguous design between 54th Street and 55th Street.
55th Street and Campanile Drive	1,330'	Yes	Both Sides	Eastbound – Contiguous Westbound – Noncontiguous	
Campanile Drive to College Avenue	610'	Yes	Both Sides	Contiguous	
East of College Avenue		Yes	Both Sides	Contiguous	

Table 1~~5~~6–1
Existing Pedestrian Infrastructure

Segment	Segment Length (Approx.)	Sidewalk (Yes / No)	Location (One Side / Both Sides)	Type (Contiguous / Noncontiguous)	Notes
55th Street					
Remington Road and Hardy Avenue	1,070'	Yes	Both Sides	Contiguous	The northbound sidewalk transitions to a noncontiguous design between Aztec Walk and Hardy Avenue.
Hardy Avenue to Montezume Road	630'	Yes	Both Sides	Noncontiguous	
Campanile Drive					
Hardy Avenue to Lindo Paseo	340'	Yes	Both Sides	Nontiguous	
Lindo Paseo to Montezuma Road	340'	Yes	Both Sides	Contiguous	
Hardy Avenue					
55th Street and Cul-De-Sac	1,750'	Yes	Both Sides	Eastbound – Contiguous and Noncontiguous Westbound – Contiguous	Eastbound approach provides a noncontiguous design intermittently.
Lindo Paseo					
55th Street and College Avenue	1,890'	Yes	Both Sides	Eastbound – Contiguous and Noncontiguous Westbound – Contiguous	Both sides provides a noncontiguous design intermittently.

TABLE 1~~5~~6–2
EXISTING BICYCLE INFRASTRUCTURE

Segment	Segment Length (Approx.)	Bicycle Mobility Type	Location One Side/ Both Sides	Notes
Alvarado Road				
E Campus Drive to Alvarado Court	2,140'	Class II	Both Sides	Bike lane begins approximately 380' north of E Campus Drive.
Alvarado Court to Reservoir Drive	1,880'	Class II	Both Sides	
Reservoir Drive to 70th Street	3,360'	None	–	
College Avenue				
Del Cerro Boulevard to I-8 EB Ramps	2,560'	None	–	
I-8 EB Ramps to Canyon Crest Drive	510'	None	–	
Canyon Crest Drive to Zura Way	1,100'	None	–	
Zura Way to Montezuma Road	1,340'	Class II (buffered)	Both Sides	Southbound buffer is between Zura Way and transit center; Lindo Paseo and Montezuma Road.
South of Montezuma Road		None	–	
Montezuma Road				
Fairmount Avenue to Collwood Boulevard	3,290'	Class II (buffered)	Both Sides	
Collwood Boulevard to Yerba Santa Drive	520'	Class II (buffered)	Both Sides	
Yerba Santa Drive to 55th Street	2,580'	Class II	Both Sides	Westbound buffer is between Yerba Santa Drive and 54th Street.
55th Street and Campanile Drive	1,330'	None		
Campanile Drive to College Avenue	610'	Class II	Westbound Only	
East of College Avenue		Class II (buffered)	Both Sides	Bike lane begins approximately 450' east of College Avenue.

Table 1~~5~~6–2

Existing Bicycle Infrastructure

Segment	Segment Length (Approx.)	Bicycle Mobility Type	Location One Side/ Both Sides	Notes
55th Street				
Remington Road and Hardy Avenue	1,070'	Class II	Both Sides	
Hardy Avenue to Montezume Road	630'	Class II	Both Sides	
Campanile Drive				
Hardy Avenue to Lindo Paseo	340'	None	–	
Lindo Paseo to Montezuma Road	340'	None	–	
Hardy Avenue				
55th Street and Cul-De-Sac	1,750'	None	–	
Lindo Paseo				
55th Street and College Avenue	1,890'	None	–	

~~16.0~~17.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) MITIGATION MEASURE

As part of the 2007 Campus Master Plan, The Board of Trustees of the California State University adopted a mitigation measure requiring SDSU to develop a campus transportation demand management (TDM) program that facilitates a balanced approach to mobility, with the ultimate goal of reducing single occupant vehicle trips to and from campus in favor of alternative modes of travel. The adequacy of the mitigation measure was challenged in court, and while the litigation was pending, SDSU retained a transportation consulting firm to prepare a study evaluating potential TDM measures that would reduce the number of single-rider vehicle trips generated by SDSU students, faculty, and staff in favor of alternative forms of transportation. Following review and input by SANDAG and the Metropolitan Transit System, the study was made final.[9]

The TDM Study included a transportation and parking existing conditions analysis, a screening process for potential TDM strategies, and the development of a multi-phase implementation plan. The Study was intended "to assist and guide SDSU in its efforts to maximize its transportation resources and provide specific strategies to enable the university to invest in a transportation system that supports all modes of travel." (TDM Study, page 1-1.)

Included within the TDM Study is a series of strategies to be considered and further evaluated for implementation by SDSU. The strategies include: identifying a TDM coordinator; increasing ride-sharing and car-sharing opportunities; enhancing the existing bicycle and pedestrian network; facilitating transit ridership through various means, including financial incentives; and, prioritizing investments in on-campus housing and amenities. (TDM Study, pages 1-2 to 1-3.)

Following its review and consideration of the TDM Study strategies, and in direct response to Paragraph 3.(c) of the Writ of Mandate, SDSU recommends the Board of Trustees adopt the following mitigation measure to reduce to the extent possible the number of single-rider vehicle trips generated by the SDSU campus:

AATCP-19 Immediately, ~~F~~following re-approval of the 2007 Campus Master Plan by The Board of Trustees of the California State University, and no later than commencement of the Fall 2019 semester unless otherwise noted, SDSU shall take the following actions to implement or, as applicable, continue to implement, the following~~on-campus~~ transportation demand management (TDM) strategies designed to reduce the number of vehicle trips generated by SDSU students, faculty, and staff:

1. **TDM Coordinator.** Immediately following Master Plan approval, SDSU shall identify the SDSU employment position with primary responsibility for overseeing implementation of the following TDM strategies~~measures on campus including, but not limited to, the TDM measures listed in this mitigation measure,~~

[9] *Transportation Demand Management Program Final Report* (June 2013), Nelson Nygaard (TDM Study). A copy of the TDM Study is included as *Appendix V* to the Draft Additional Analysis.

and task such position with conducting the appropriate implementation, outreach, ~~and~~ marketing, and monitoring activities.

2. **Increase Rideshare Opportunities.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Provide a central digital platform location for information relating to available alternative transportation opportunities (to be implemented by Fall 2018);
   b. Provide preferential vanpool/carpool parking spaces in each parking lot commensurate with demand (to be implemented by Fall 2018);
   c. Allow use of shared parking passes for carpools and vanpools (shared parking passes authorize the use of one parking pass that is shared amongst all of the drivers of a designated carpool or vanpool) (to be implemented by Fall 2018);
   d. Connect the existing Enterprise Rent-A-Car VanPool system to the SDSU Human Resources (HR) staff/faculty database for more efficient ride-matching (the HR database includes information regarding home address and employment department, thereby facilitating carpool matches based on location and work schedule) (to be implemented by Fall 2019);
   e. Provide dedicated parking spaces and subsidies, funded through SANDAG and SDSU, towards leasing (SANDAG provides $400 towards) and fuel costs (SDSU provides $100 towards) associated with vanpools operated through the Enterprise Rent-A-Car VanPool system (to be implemented by Fall 2018);
   f. Promote ZimRide and Waze Carpool (~~a~~ rideshare platforms) and SANDAG's iCommute program by all appropriate means including, but not limited to, providing informational packets to all resident students during student orientation (to be implemented by Fall 2018);
   g. Expand hours of operation, increase frequency, and expand the service area of the currently on-campus only SDSU Red & Black shuttle to include off-campus locations to be determined based on the results of a pilot program to be implement in 2018 (to be implemented by Fall 2019);
   h. Facilitate continued operation of private shuttles operating between off-campus apartments and campus by identifying off-campus pick-up/drop-off locations (to be implemented by Fall 2018); and,
   i. Designate on campus locations for ride-hailing services, including, but not limited to, Uber~~,~~ and Lyft (see *Appendix V*, *Figure 16-1*, On Campus Student Housing and Amenities, for location of existing and planned future rideshare locations) (to be implemented by Fall 2018).

3. **Facilitate Bicycle and Pedestrian Travel.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Establish a Bike-Share pilot program on campus to be expanded if successful. Program features will include: dockless program; 100 bicycles initially;

students to receive a discount for subscription; incentives/disincentives relating to placement of bicycles following use; and, bicycles may be taken off-campus (to be implemented by Fall 2018);

b. Upgrade existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street (to be implemented by Fall 2019);
c. Install a Class II bike lane~~,~~ within the existing 36-foot curb-to-curb ~~lines~~width on Canyon Crest Drive between Lot 16 (former A Lot) and Lot 15 (former X Lot) in order to improve bicycle access to/from and within campus (to be implemented by Fall 2019);
d. Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane (implemented 2018);
e. Provide on-campus Class I bike paths between Hardy Road and Hilltop Way, and between Union Street and Viejas Arena (Aztec Walk)(installed since 2007, in 2010);
f. Provide Class II bike lanes on College Avenue between Montezuma Road and Zura Way (installed since 2007, in 2017);
g. Maintain the existing on-campus bike racks (with capacity for approximately 1,070 bikes) and four bike maintenance stations (tools and air, unstaffed), and continue to monitor need for additional racks as necessary (to be implemented by Fall 2018); and
h. Provide pedestrian improvements, including pedestrian signals, widened sidewalks, and bulb-outs at South Campus Plaza (west~~east~~ side of College Avenue), and Montezuma Road and Campanile Drive (installed since 2007, in 2017).

4. **Facilitate Transit Ridership.** SDSU, or the TDM Coordinator as applicable, shall:
   a. Maintain existing transit pass program for students (discounted by Metropolitan Transit System (MTS) and subsidized by SDSU) ~~transit pass program for students~~ and enable purchases by credit card (credit card purchases to be implemented by Fall 2018);
   b. Establish a pre-tax payroll deduction program for faculty and staff purchase of MTS transit passes, vanpooling, and pooled on-demand rideshare services (e.g., uberPOOL, and Lyft Line), provided SDSU meets the state/CSU required minimum participation level (to be implemented by Fall 2019);
   c. Provide reduced cost transit passes for faculty and staff, provided SDSU meets the MTS required minimum participation level. Cost reduction will be between 10% and 25%, depending on participation level (to be implemented by Fall 2019); and,

d. Increase on-campus vehicle parking ~~rates~~fees for single-rider student vehicles by 2025.

In light of the ongoing evolution of transportation technology and advancements, the strategies set forth above may be modified or replaced, as necessary, with alternative strategies of equal or enhanced effectiveness. Therefore, the TDM Coordinator shall annually evaluate the above strategies to ensure that the strategies are meeting the needs and priorities of the SDSU students, faculty, and staff. Program monitoring shall occur pursuant to the Mitigation Monitoring and Reporting Program adopted as part of the project approvals. As new technologies and strategies become available, the strategies included in this mitigation measure can be modified in order to implement alternative technologies and/or strategies of equal or enhanced effectiveness.

In addition to the above TDM strategies, since approval in 2007 of the Campus Master Plan, SDSU has adopted student residency policies and constructed a substantial number of student housing units and amenities both on and adjacent to or within walking distance of campus that have assisted in reducing vehicle trips and related vehicle miles traveled (VMT). Since 2010, SDSU has required Freshmen enrolling from out of the SDSU service area to live on campus, and, beginning in Fall 2019, all out of service area Sophomores also will be required to live on campus. To meet these requirements and the increased demand to live on campus, SDSU has added approximately 1,350 on-campus student housing beds since 2007, and additional housing presently is being constructed and/or planned for construction on and adjacent to campus (within one block of Montezuma) that would house an additional approximate 1,630 students by 2019 (1,330 on campus and 300 adjacent to campus). Thus, by Fall 2019, SDSU will be housing approximately 2,980 more students on and adjacent to campus than it did in 2007. Additionally, the previously approved (2011) Plaza Linda Verde project (now referred to as South Campus Plaza) provides additional student housing capacity for 1,016 beds, and this 2007 Campus Master Plan would provide additional potential housing capacity of 1,800 beds, for a total of 2,816 additional beds. See Final Additional Analysis, Appendix AA, Student Housing Demand Materials.

In addition, since 2007, SDSU has added over 35,000 gross square feet (GSF) of retail amenities within walking distance of campus. These amenities, which include a grocery store (Trader Joe's), several restaurants, and a Verizon store, reduce the need for students, faculty, and staff to drive from the campus to shop for their goods and services. Please see *Appendix V*, *Figure 16–2* for illustration of the housing and amenities added since 2007.

A TDM Quantification analysis was conducted for the project TDM measures. ***Appendix W*** contains the TDM Quantification memo and analyses.

~~17.0~~18.0 CALIFORNIA STATE UNIVERSITY (CSU) SIGNIFICANCE CRITERIA

This section is provided for information purposes and presents a comparative analysis of the Project's significant impacts relating to off-site traffic operations based on application of the significance criteria provided in the California State University *Transportation Impact Study Manual* (November 2012). Under the CSU criteria, a project would result in a significant impact to off-site traffic operations under the following conditions:

- A roadway segment or intersection operates at LOS D or better under a no project scenario and the addition of project trips causes overall traffic operations on the facility to operate at LOS E or F.
- A roadway segment or intersection operates at LOS E or F under a no project scenario and the project adds both 10 or more peak hour trips and 5 seconds or more of peak hour delay [at intersections], during the same peak hour, [or in the case of segments, the project increase in volume to capacity ratio is 0.02 or more].
- If an intersection [or segment] operates at a very poor LOS F (control delay of 120 seconds or more [for intersections, and v/c ratio of 1.50 or more for segments], the significance criterion [for intersections] shall be an increase in v/c ratio of 0.02 or more [and the significance criterion for segments shall be an increase in v/c ratio of 0.01 or more].

~~17.1~~18.1 Near-Term Significant Impacts under CSU Significance Criteria

If the CSU significance criteria were applied under the Near-Term (Year 2022) scenario, the significant impacts would be the same as those identified under the City of San Diego thresholds less the following locations; that is, impacts at the following locations would be less than significant with application of the CSU thresholds:

Intersections

I-8 WB Ramps / Parkway Drive

Street Segments

College Avenue: Montezuma Road to Cresita Drive

~~17.2~~18.2 Horizon Year Significant Impacts under CSU Significance Criteria

If the CSU significance criteria were applied under the Horizon Year (Year 2035) scenario, the significant impacts would be the same as those identified under the City of San Diego thresholds less the following locations; that is, impacts at the following locations would be less than significant with application of the CSU thresholds:

Intersections

Fairmount Avenue / I-8 WB off-ramp / Camino Del Rio N.

70th Street / Alvarado Road

19.0 QUEUE ANALYSIS

Per the request of Caltrans, an exit-ramp queue analysis was conducted at the I-8/College Avenue Interchange. This section discusses the queue analysis methodology, queue calculations and findings.

19.1 Methodology

The queue analysis was performed for the two ramp intersections on College Avenue: College Avenue / I-8 Eastbound Ramps and College Avenue / I-8 Westbound Ramps. The queue analyses were conducted under AM and PM peak hour conditions using the SimTraffic software. In addition, to obtain a complete understanding of existing operations and accurate evaluation of with project conditions, LLG conducted queue observations on Thursday, February 22, 2018 during the AM/PM peak hours to confirm the model assumptions.

19.2 Significance Thresholds

Queue analysis is not required under CEQA, nor under the City of San Diego or Caltrans traffic study guidelines. Thus there is no adopted industry standard for a threshold of when such an analysis is required or at what level/length of additional queue due to project traffic would the queue length be considered significant.

Based on discussions with Caltrans, an off-ramp queue that backs up to the mainline freeways would be deemed oversaturated and congested. Therefore, for the purposes of this analysis, an off-ramp queue spillback to the mainline freeway was considered and applied as the relevant criteria.

Table 19–1 shows the queue analysis at the I-8 / College Avenue interchange ramp intersections. As shown, under the Existing + Project Buildout conditions, with the addition of the project traffic, the off-ramp queues would not spillback to the freeway mainlines. Therefore, no significant queue impacts are identified.

Appendix X contains the queue analysis worksheets.

TABLE 19–1
QUEUE OPERATIONS TABLE

Location	Movement	Storage	Existing	Existing + Project Buildout	Δ
College Avenue / I-8 WB Ramps	WBL	1,030’	190’/210’	240’/690’	50’/480’
	WBR		120’/180’	190’/220’	70’/40’
College Avenue / I-8 EB Ramps	EBL	720’	200’/220’	210’/240’	10’/20’
	EBR		460’/610’	650’/690’	190’/80’

General Notes:

1. The above table shows 95th percentile queues, which are defined as the queue length that has a 5% probability of being exceeded.
2. Queues are rounded up to the nearest 10 feet.

19.3 Conclusions

A queue analysis was prepared at the I-8 / College Avenue interchange for both the eastbound and westbound off ramps. Using the Simtraffic software, the queues were analyzed under both with and without project traffic at both exit ramps. Based on the analysis, the queues would not back up onto the I-8 mainlines due to the addition of project traffic. Given that there are no established significance criteria for the analysis, the project’s impacts are considered less than significant under any standard.

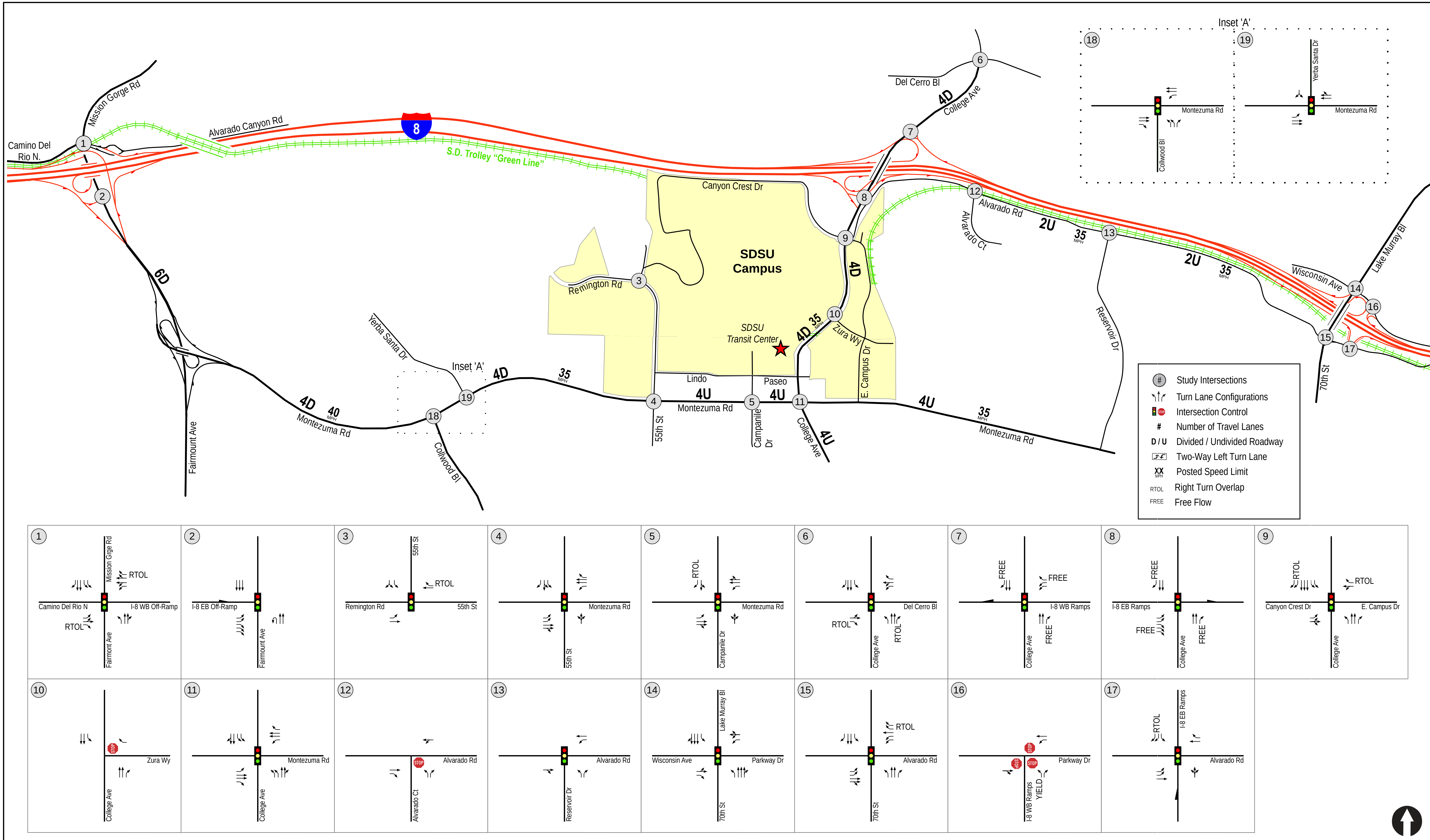

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Figure 3-1

Existing Conditions Diagram

SDSU Master Plan Update

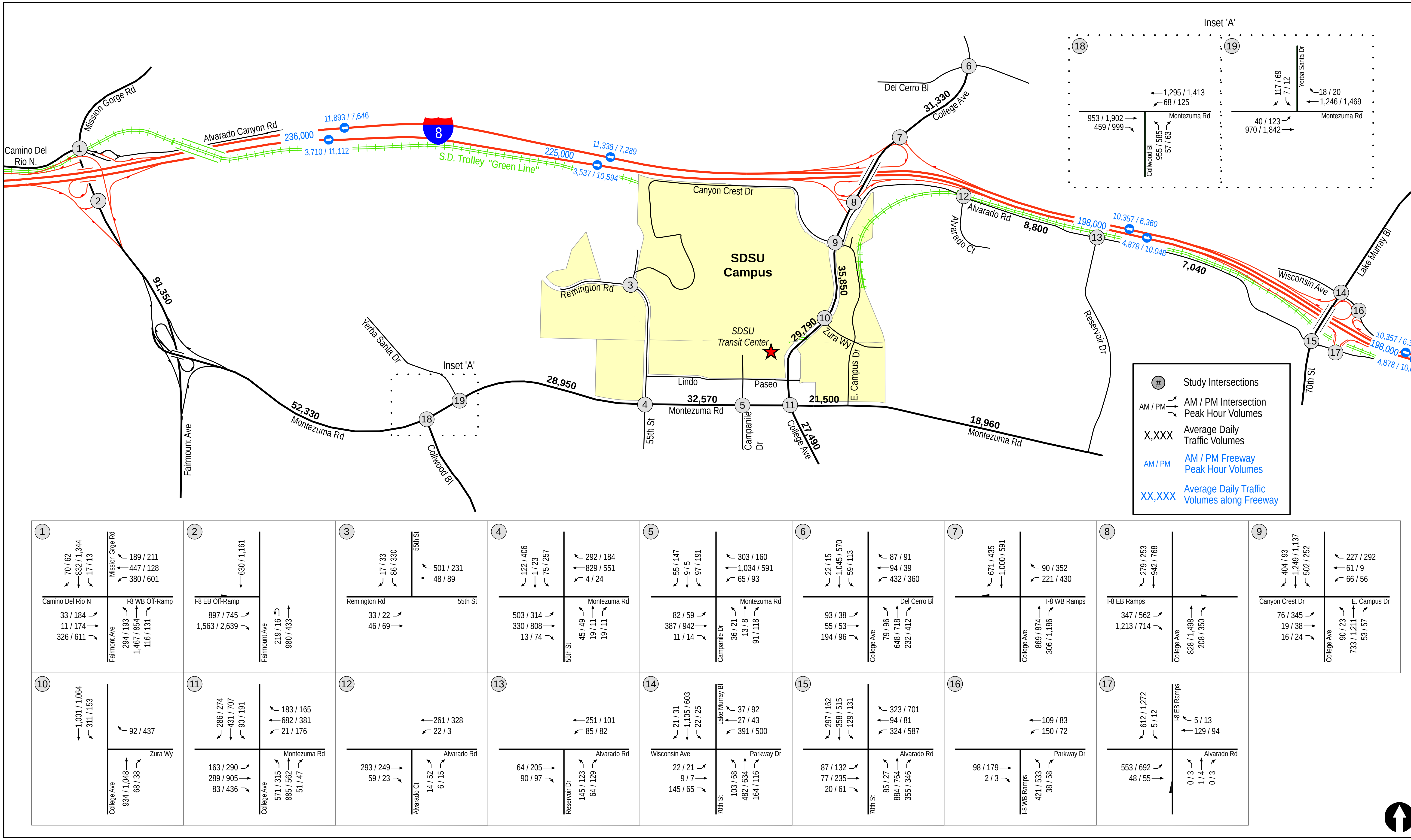

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Figure 3-2

Existing Traffic Volumes

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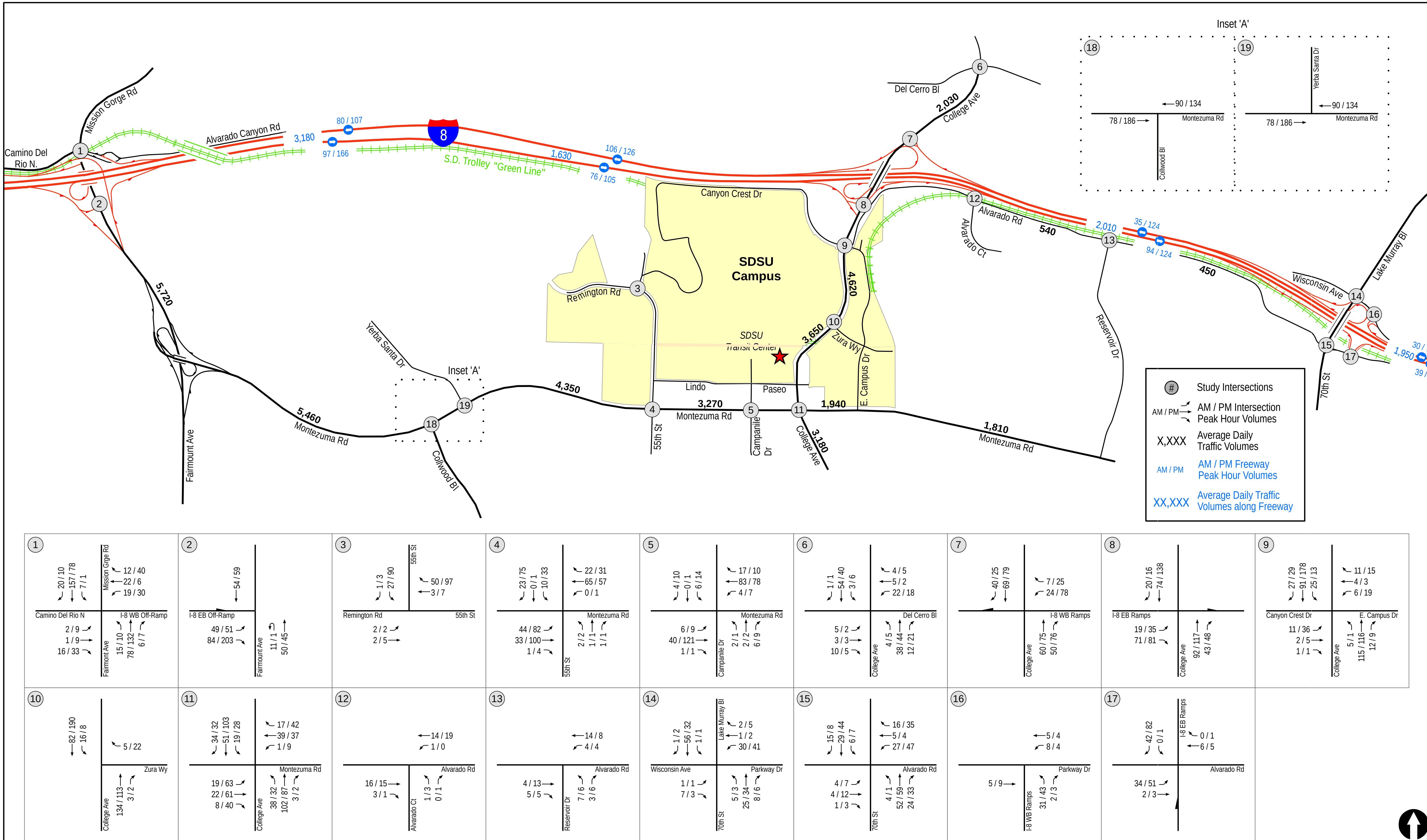

Figure 6-1

Cumulative Projects Traffic Volumes

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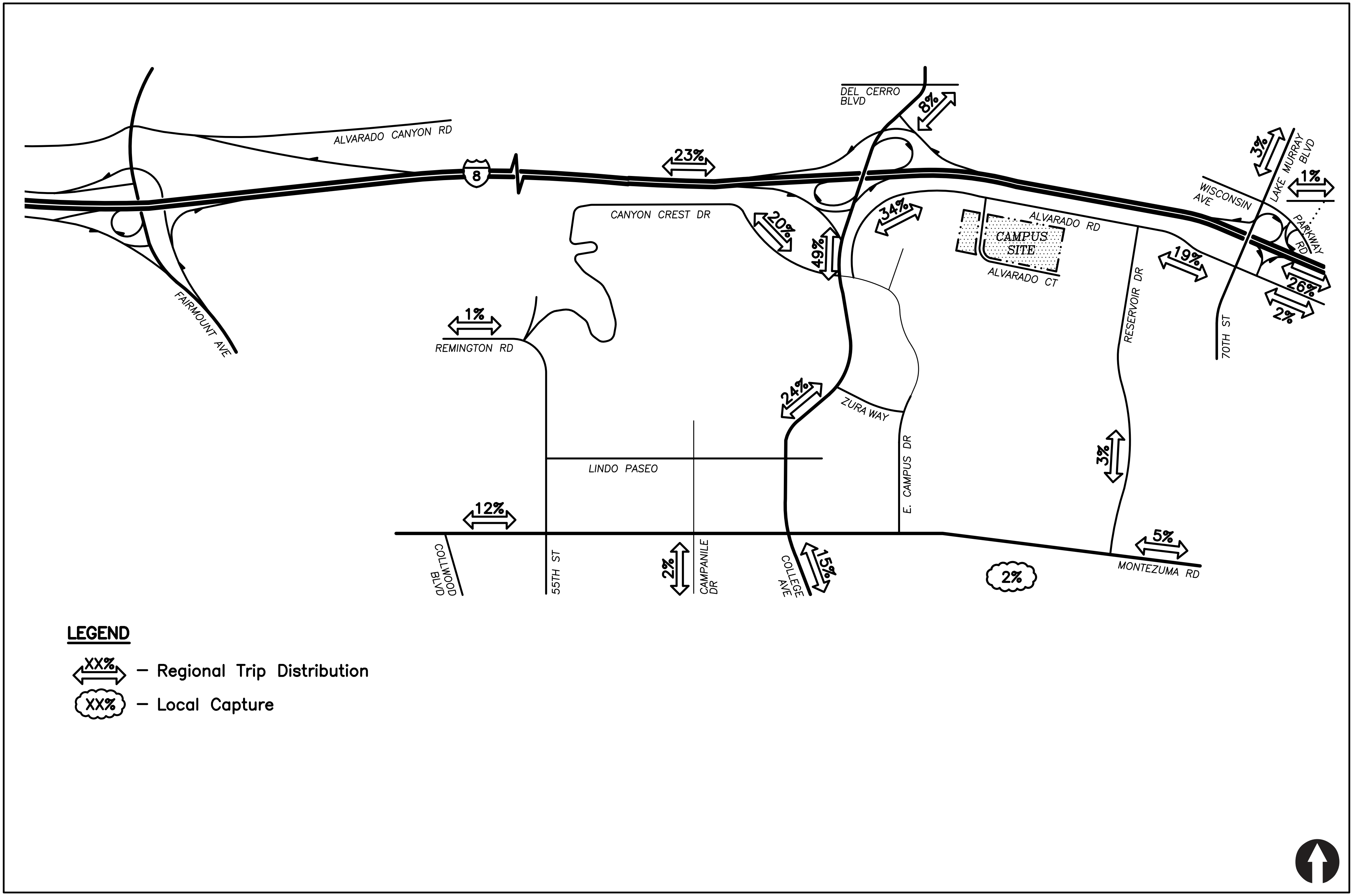

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Figure 8-1

Alvarado Campus Project Traffic Distribution

(Near-Term & Horizon Year)

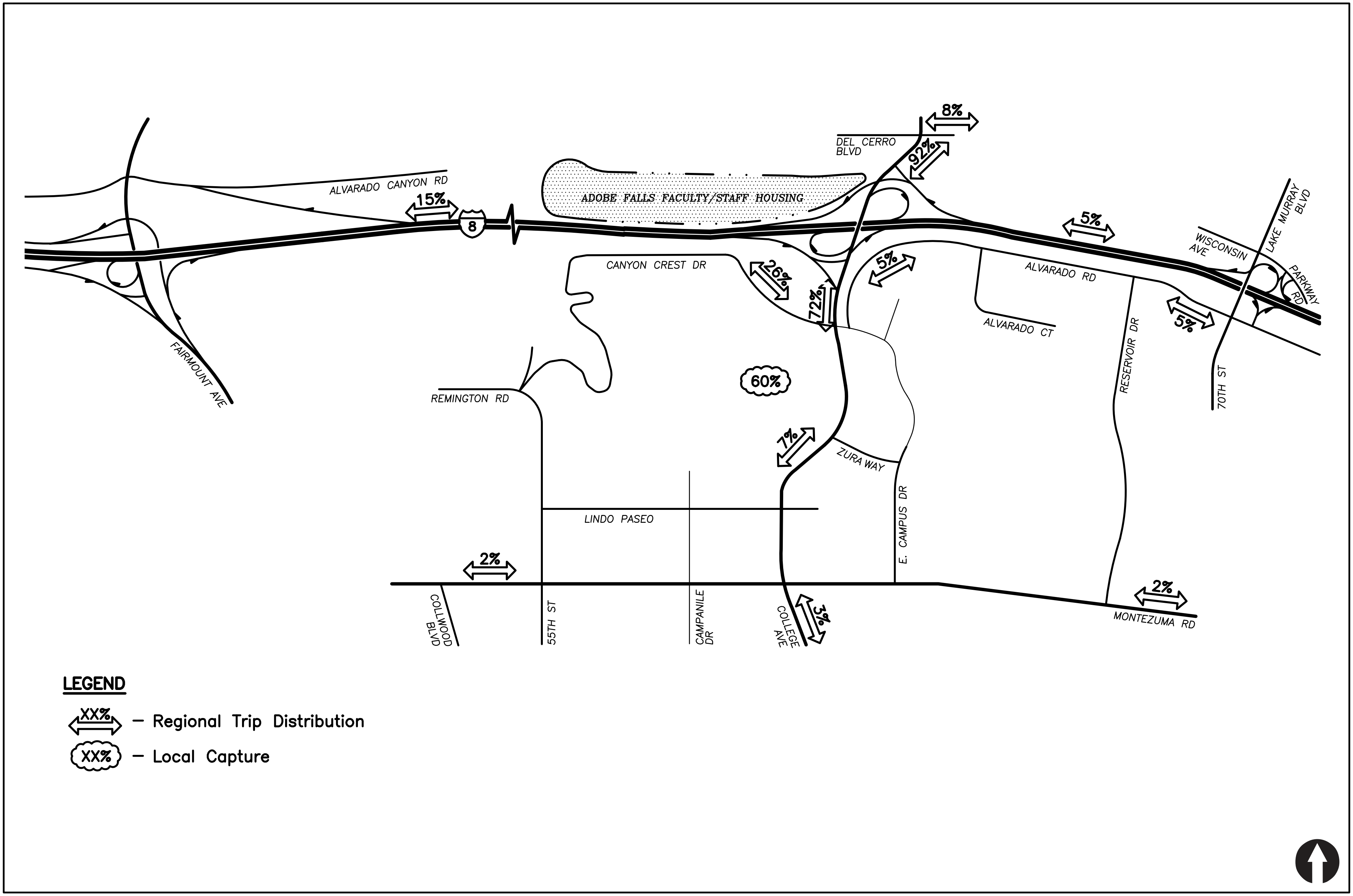

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Figure 8-2
Adobe Falls Faculty/Staff Housing Traffic Distribution
(Near-Term & Horizon Year)

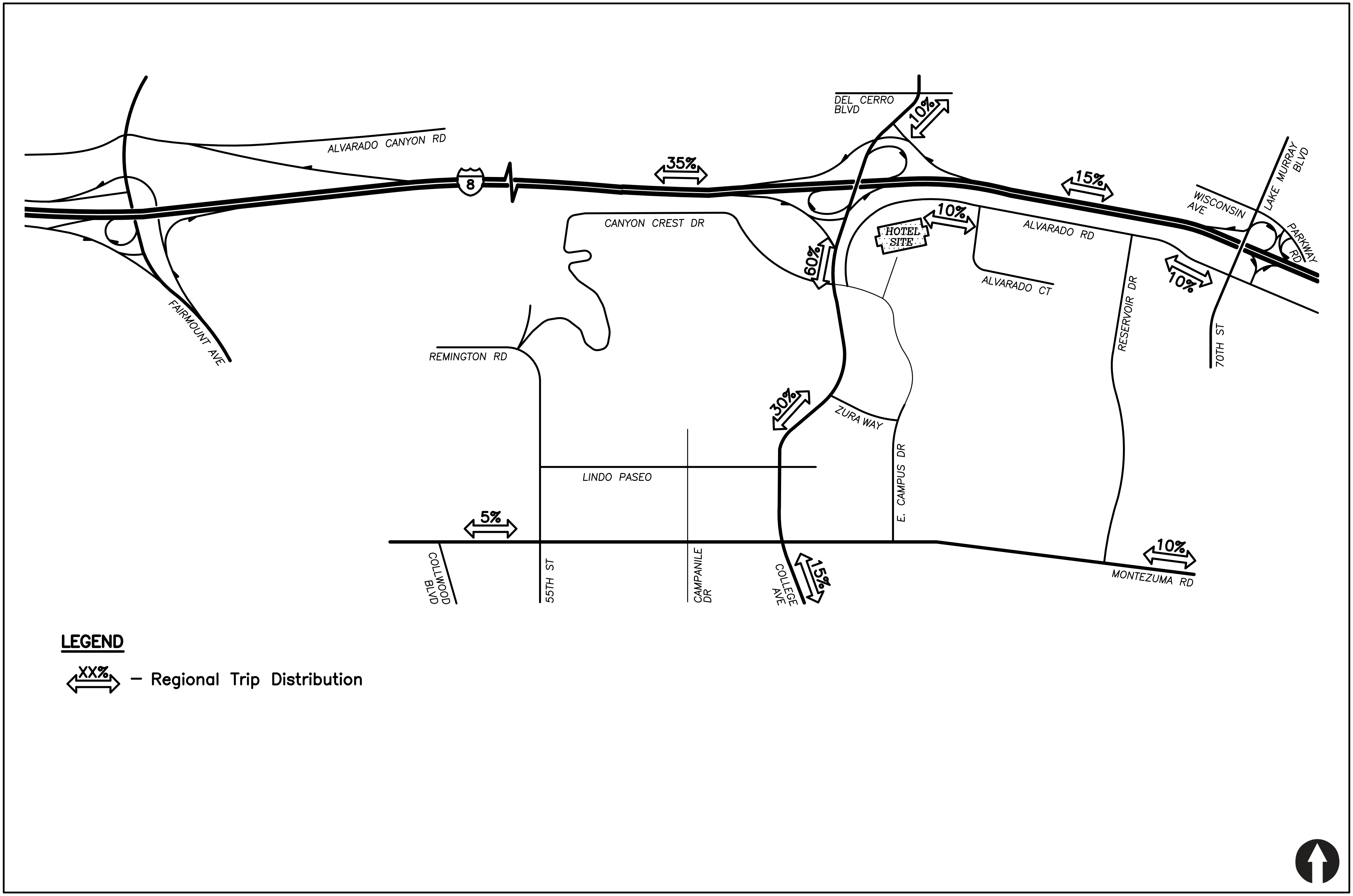

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Figure 8-3

Alvarado Hotel Project Traffic Distribution

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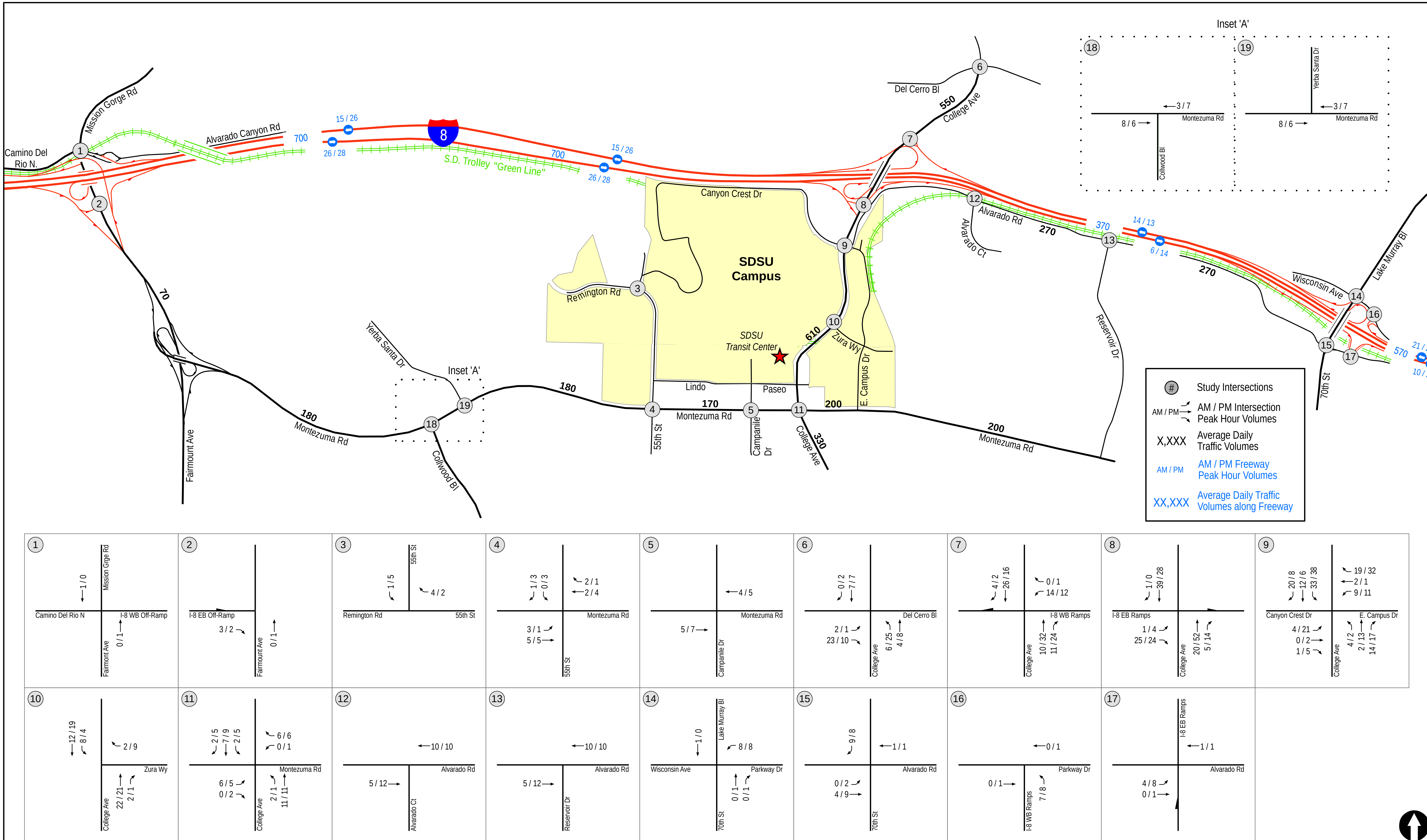

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Figure 8-4

Near-Term (Year 2022) Total Project Traffic Volumes

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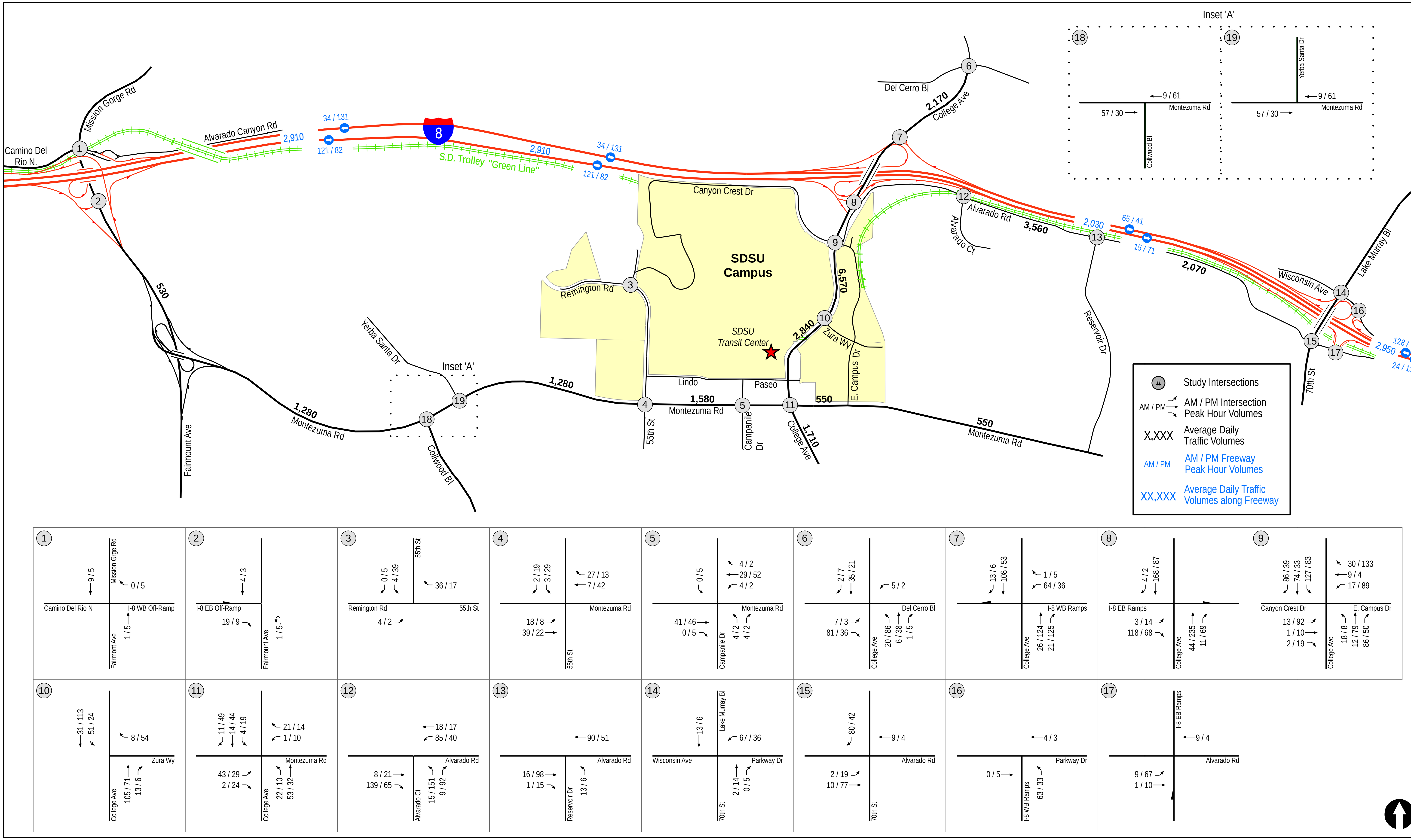

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Figure 8-5

Horizon Year (Year 2035) Total Project Traffic Volumes

SDSU MASTER PLAN UPDATE

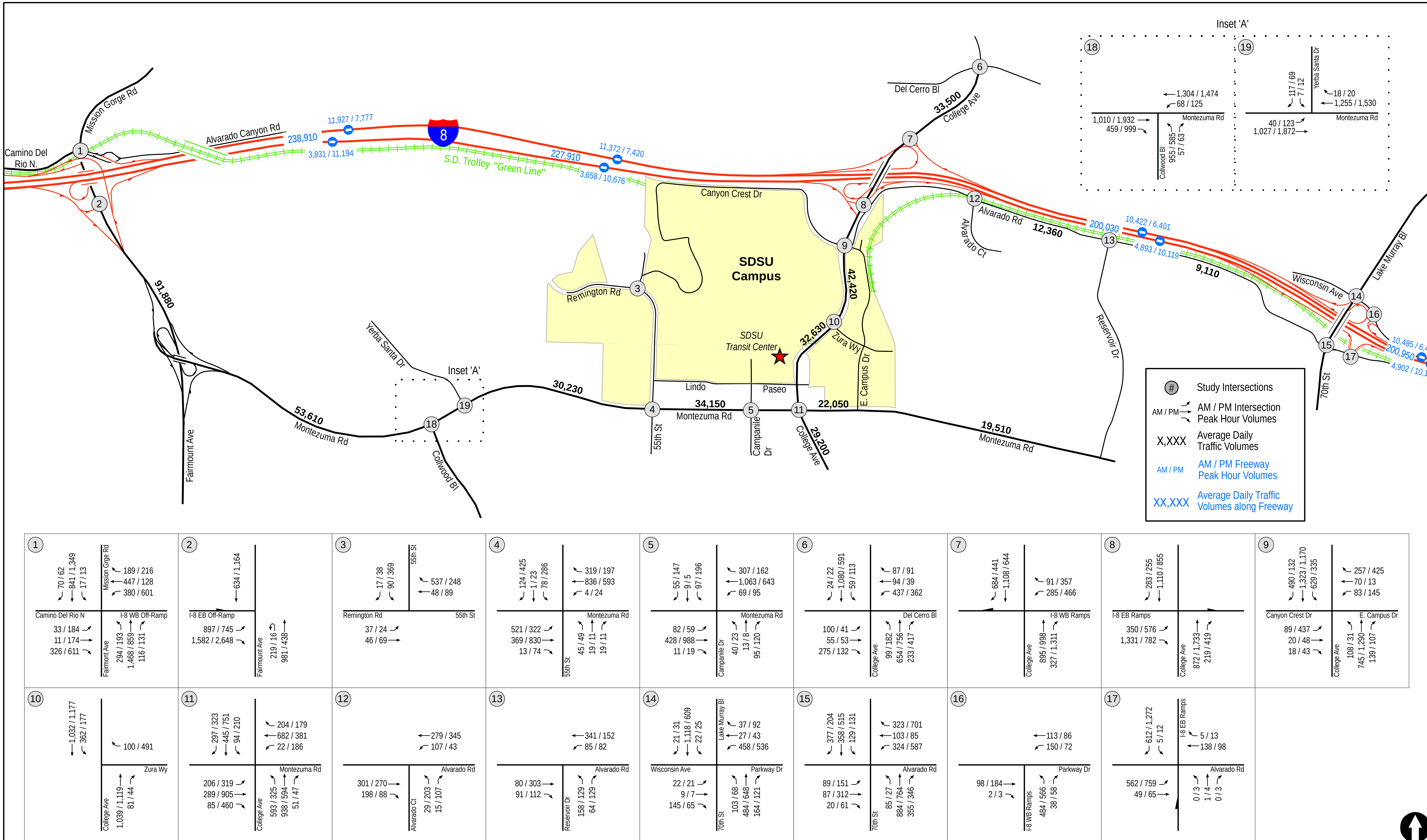

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Figure 9-1

Existing + Project Traffic Volumes

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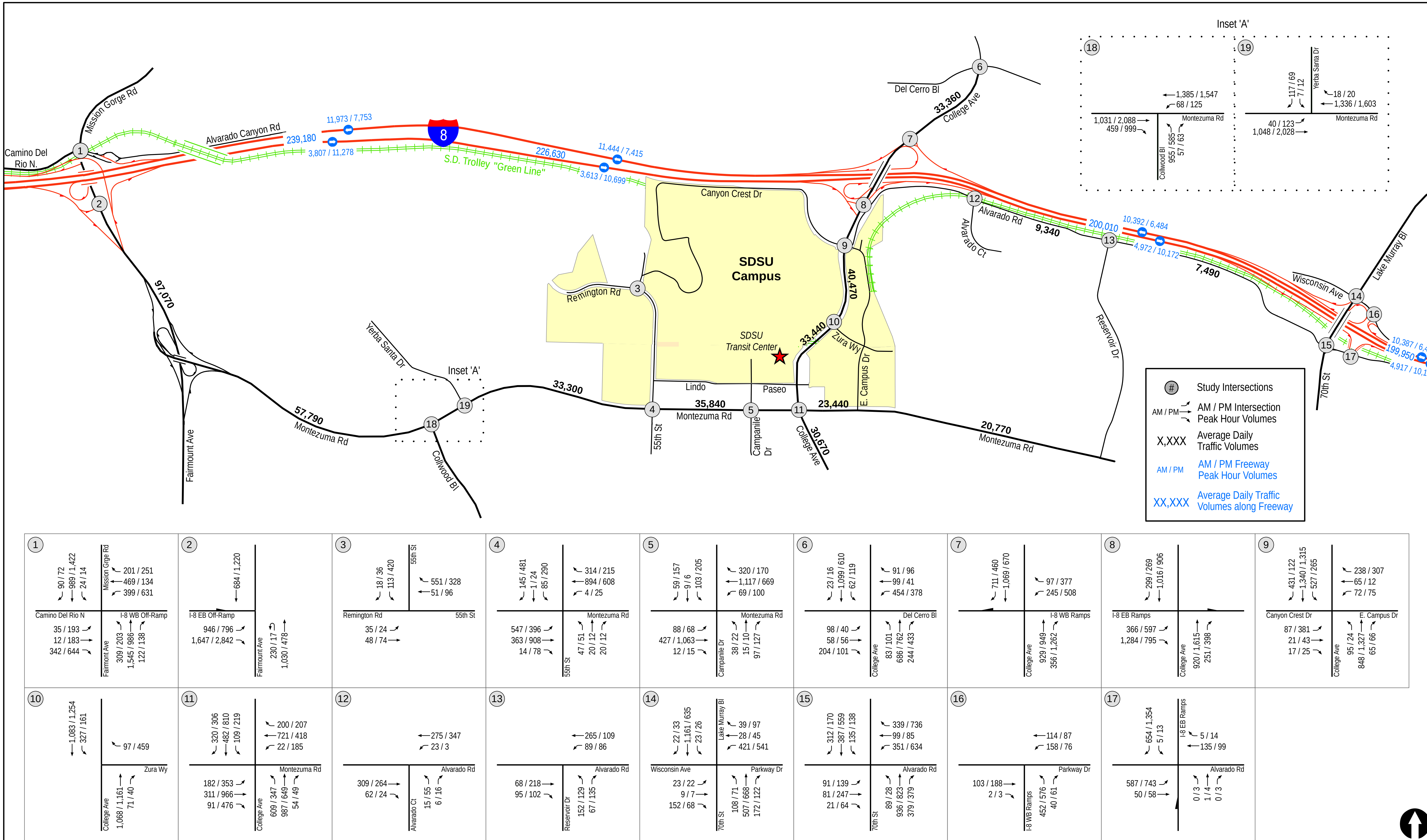

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Figure 9-2

Near-Term (Year 2022) Without Project Traffic Volumes

SDSU MASTER PLAN UPDATE

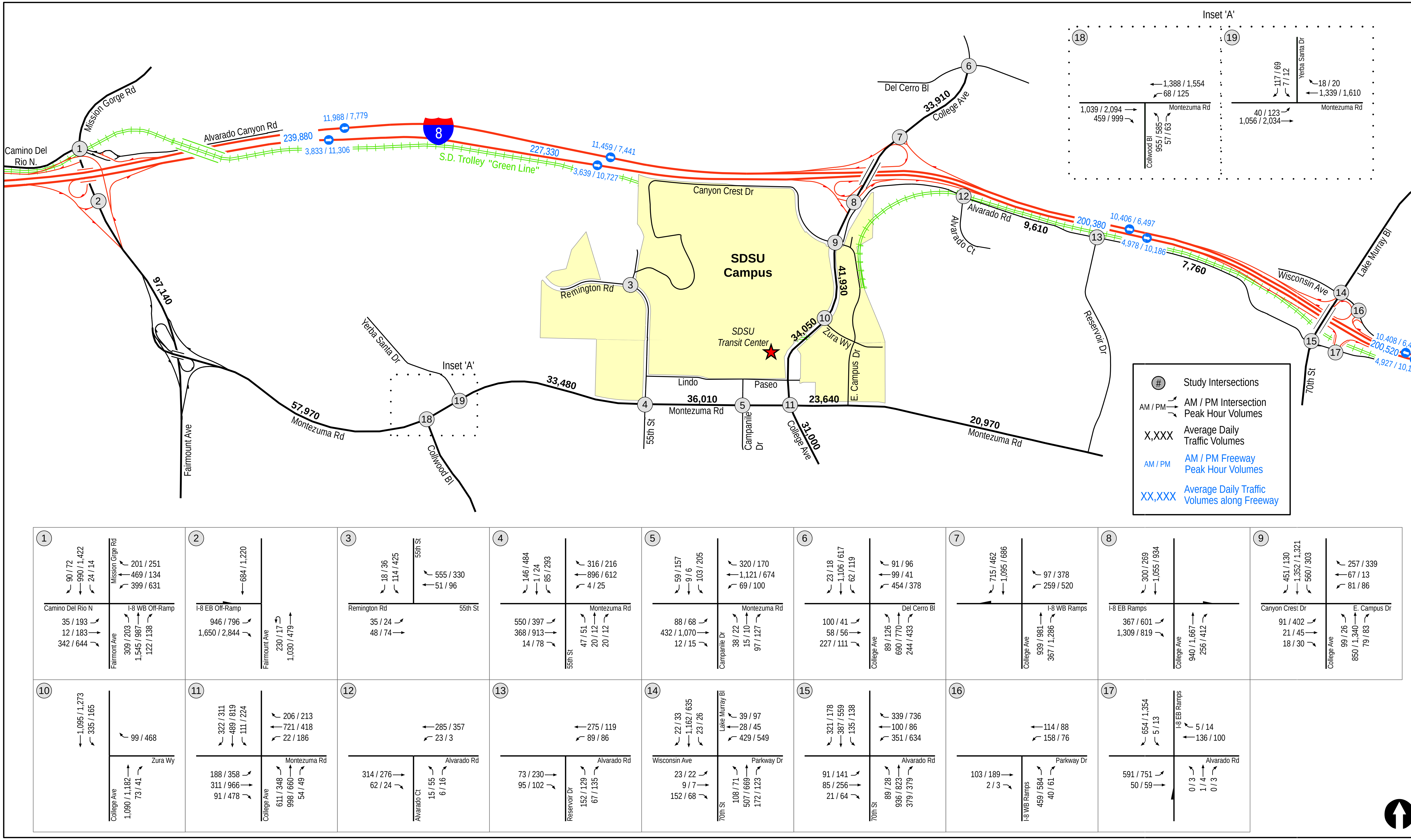

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Figure 9-3

Near-Term (Year 2022) With Project Traffic Volumes

SDSU MASTER PLAN UPDATE

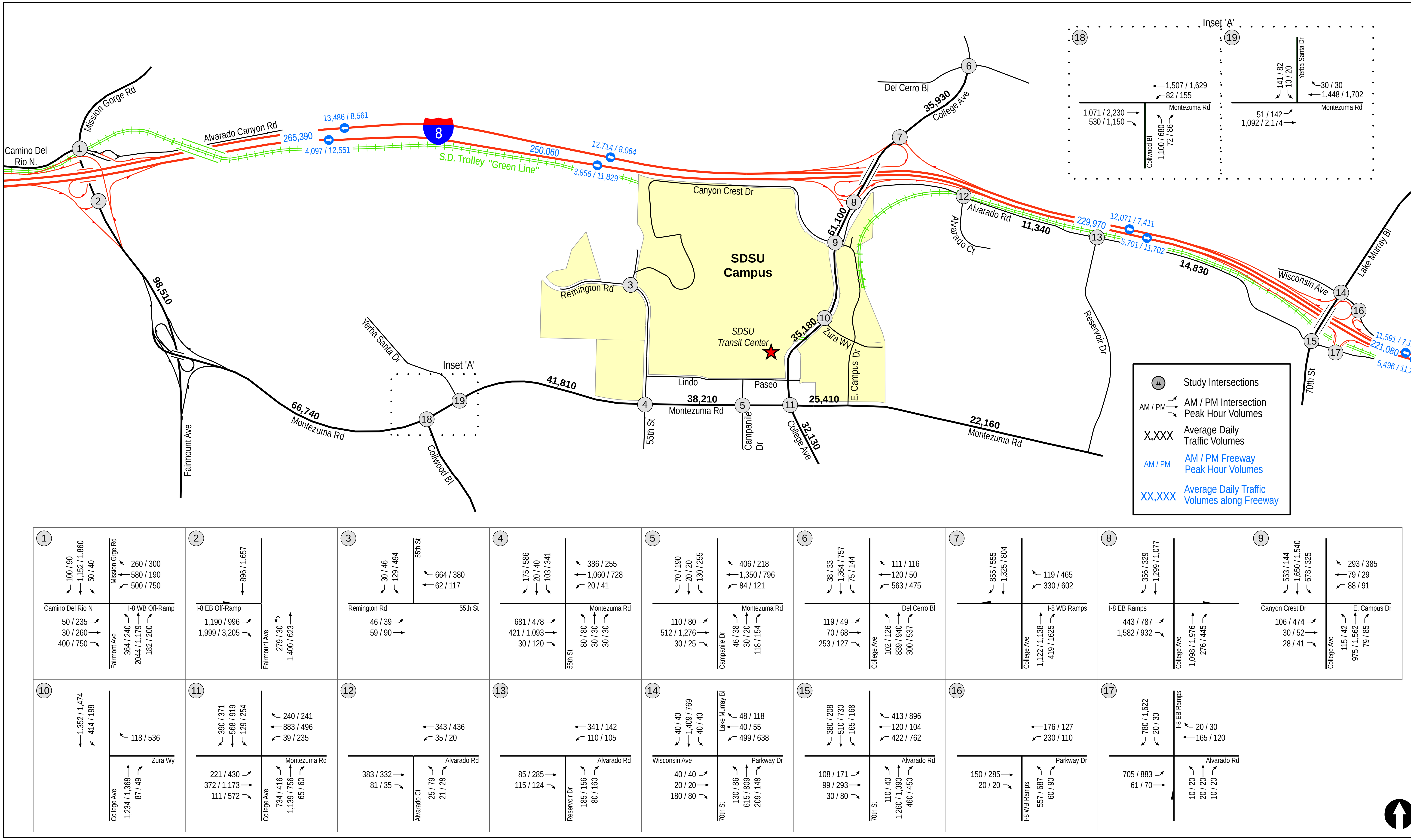

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Figure 10-1

Horizon Year (Year 2035) Without Project Traffic Volumes

SDSU MASTER PLAN UPDATE

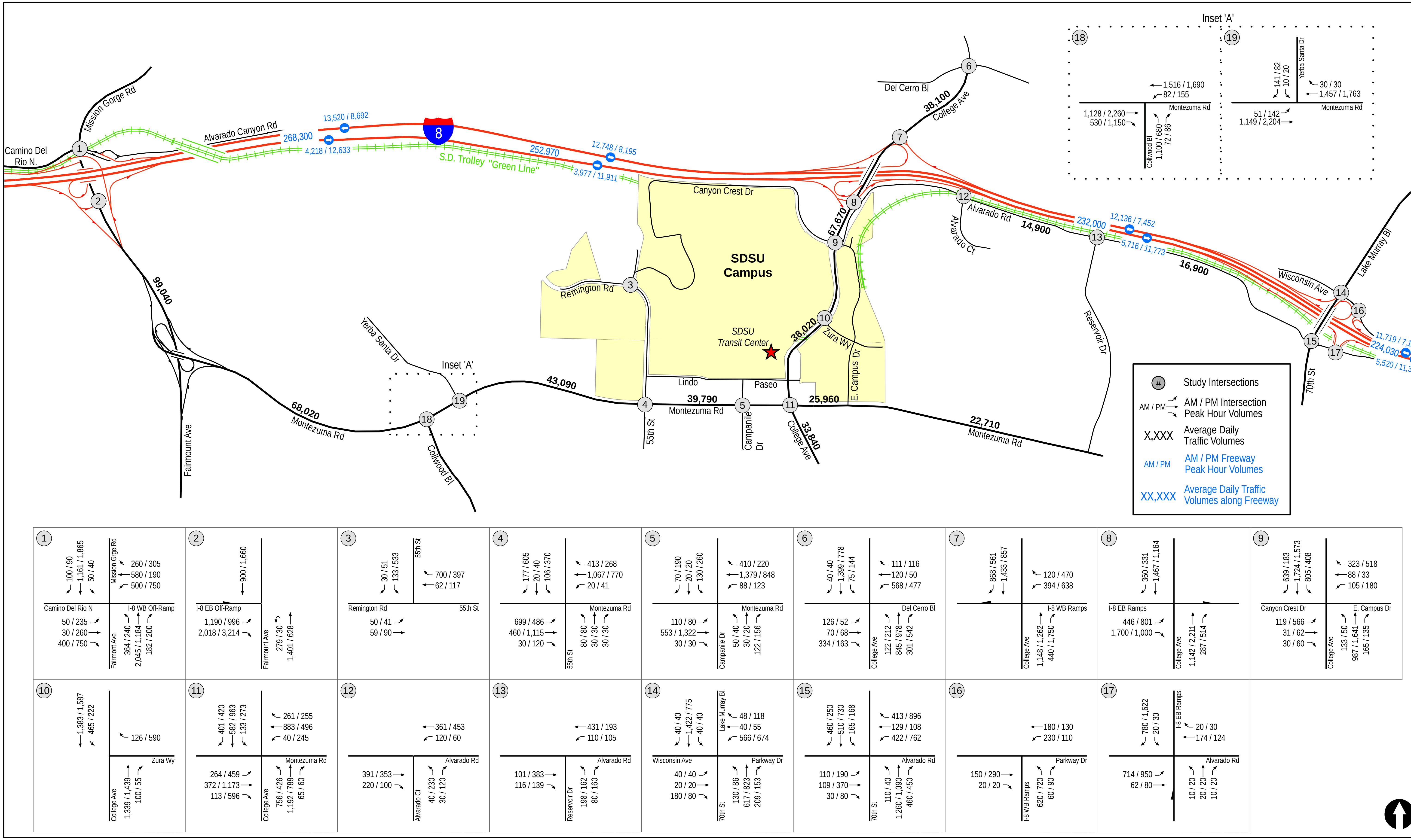

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Figure 10-2

Horizon Year (Year 2035) With Project Traffic Volumes

SDSU MASTER PLAN UPDATE

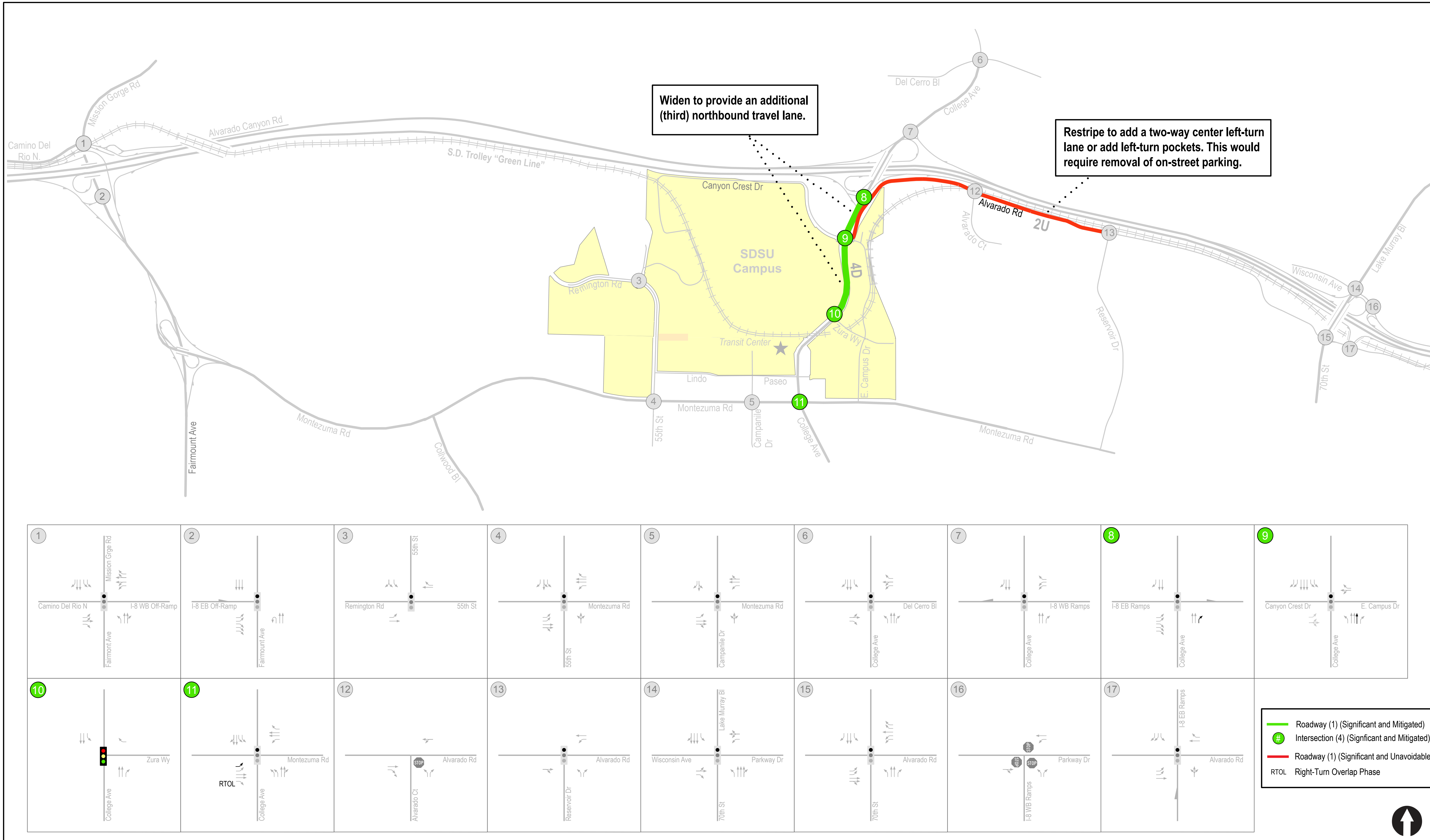

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Figure 13-1

City of Near-Term (Year 2022) Project Impacts & Mitigation Measures

SDSU MASTER PLAN UPDATE

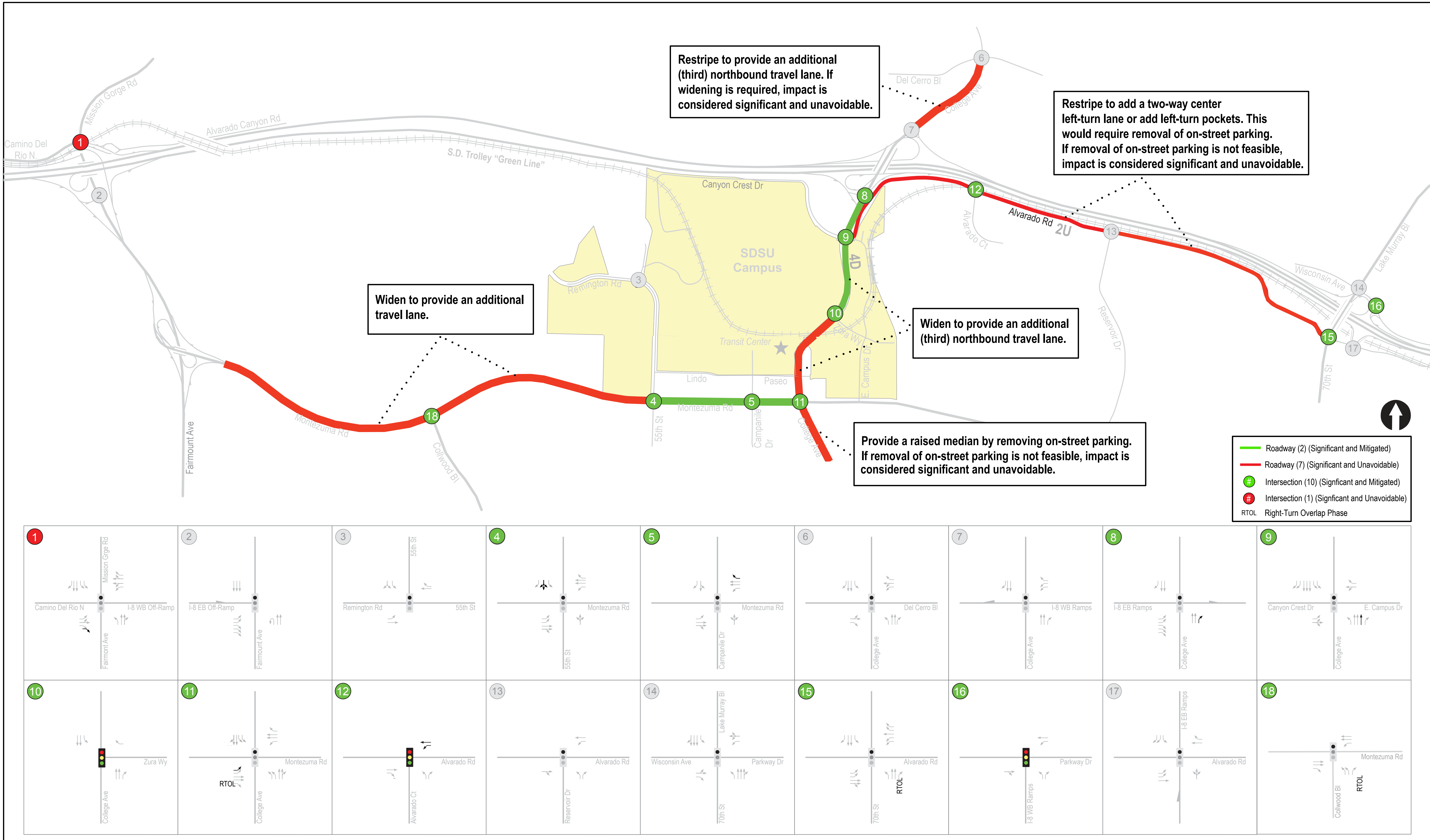

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Figure 13-2

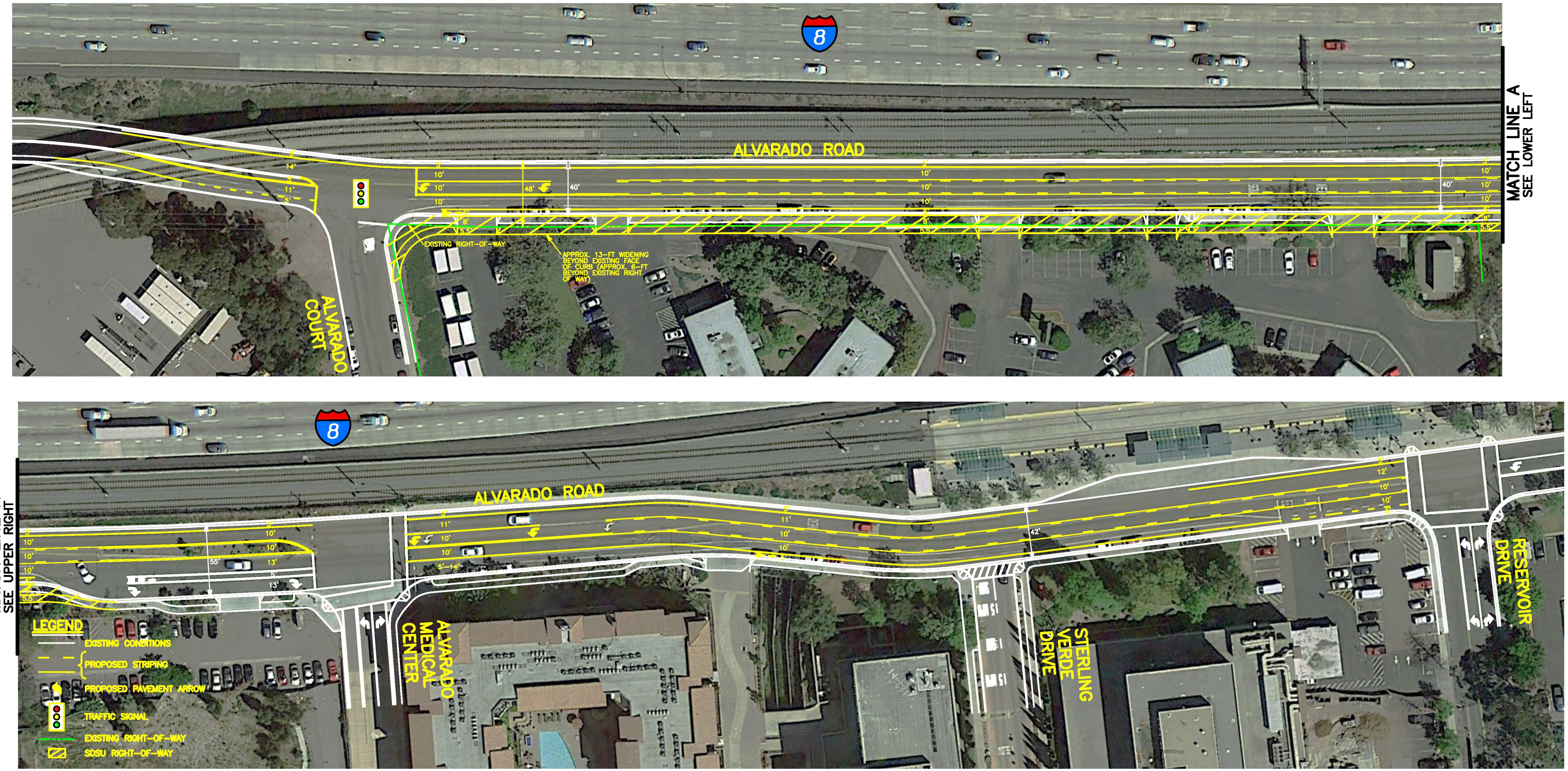
City of San Diego Horizon Year (Year 2035) Impacts & Mitigation Measures

SDSU Master Plan Update

REVISED TRANSPORTATION IMPACT ANALYSIS APPENDICES

APPENDIX Q

CONCEPTUAL SKETCHES – MITIGATION



NOTES:

- Signalize Alvarado Court/Alvarado Road intersection
- Restripe to provide a two-way left-turn lane or left-turn pockets
- On-street parking to be retained on SDSU fronting portion.
- On-street parking to be removed between Alvarado Medical Center and Reservoir Drive.

NORTH

SCALE: 1"=80'

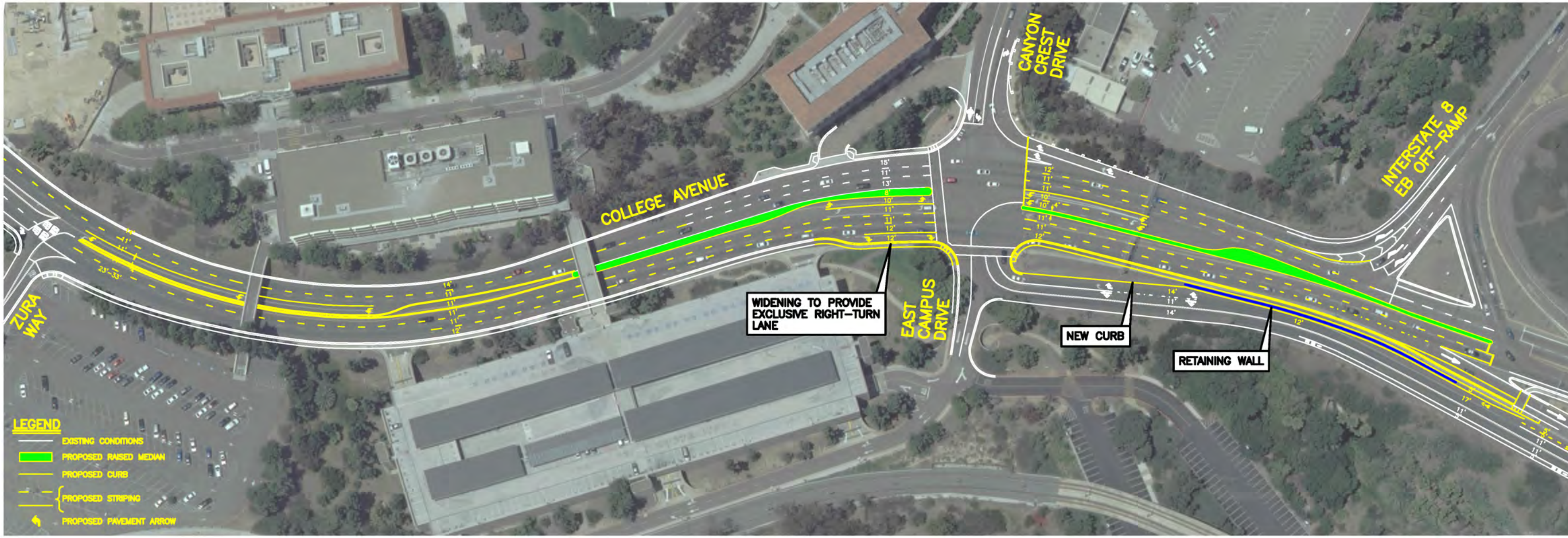
CONCEPTUAL ONLY

REV. 1/9/2018
N:\2604\Design\LLG2604-FIG B-1 (Alt).dwg

LINSCOTT LAW & GREENSPAN engineers

Figure B-1

Alvarado Road: Alvardo Court to Reservoir Drive Mitigation Measure



NOTES:
- Third northbound through lane
- Widen to retain northbound right-turn lane at East Campus Drive
- New retaining wall on Alvarado Road

CONCEPTUAL ONLY

NORTH

SCALE: 1"=120'

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG B-2.dwg

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Figure B-2

College Avenue: Zura Way to I-8 Mitigation Measure

NOTES:
– Widening to provide an additional eastbound right-turn lane.

NORTH

CONCEPTUAL ONLY

SCALE: 1"=50'

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG C-1.dwg

LINSCOTT LAW & GREENSPAN engineers

Figure C-1

Camino Del Rio North/Fairmount Avenue Intersection Mitigation Measure

NOTES:

– Restripe southbound approach to include a shared left–thru–right lane.

NORTH

SCALE: 1"=50'

CONCEPTUAL ONLY

REV. 10/2/2017
N:\2604\Design\LLG2604–FIG C–2.dwg

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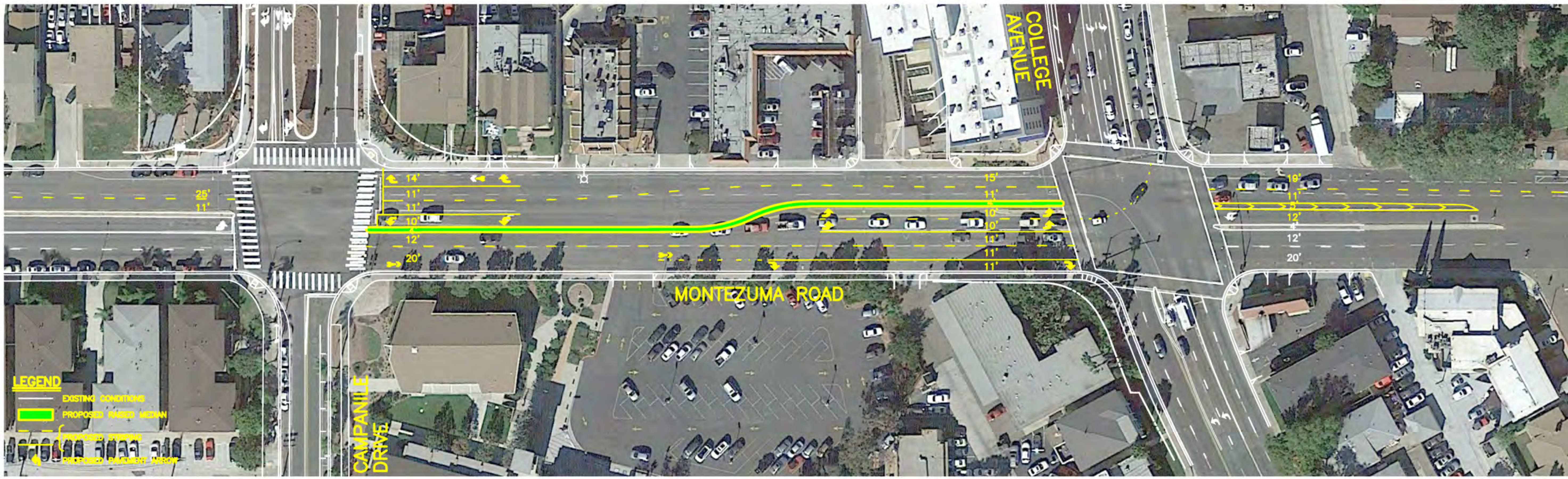
Figure C-2

55th Street/Montezuma Road Intersection Mitigation Measure



NOTES:

- Second eastbound left-turn lane proposed with raised median
- No widening

CONCEPTUAL ONLY

NORTH

SCALE: 1"=80'

REV. 10/2/2017
N:\2604\Design\LLG2604-FIG C-3.dwg

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Figure C-3

College Avenue/Montezuma Road Intersection Mitigation Measure

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Figure D-2

Alvarado Road: Reservoir Drive to 70th Street Mitigation Measure

NOTES:
- Third northbound through lane
- No widening

CONCEPTUAL ONLY

NORTH

SCALE: 1"=120'

REV. 10/2/2017
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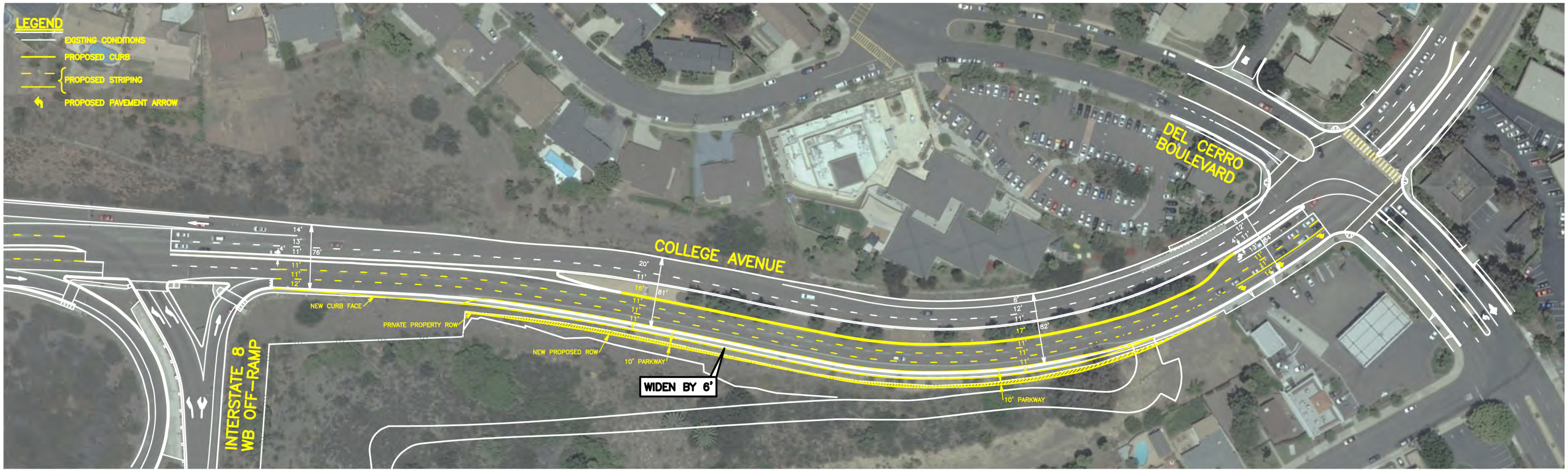
Figure D-3

College Avenue: I-8 to Del Cerro Boulevard Mitigation Measure



NOTES:
- Third northbound through lane

CONCEPTUAL ONLY

NORTH

SCALE: 1"=120'

REV. 4/30/2018
N:\2604\Design\LLG2604-FIG D-3_WITH PDF IMAGE.dwg

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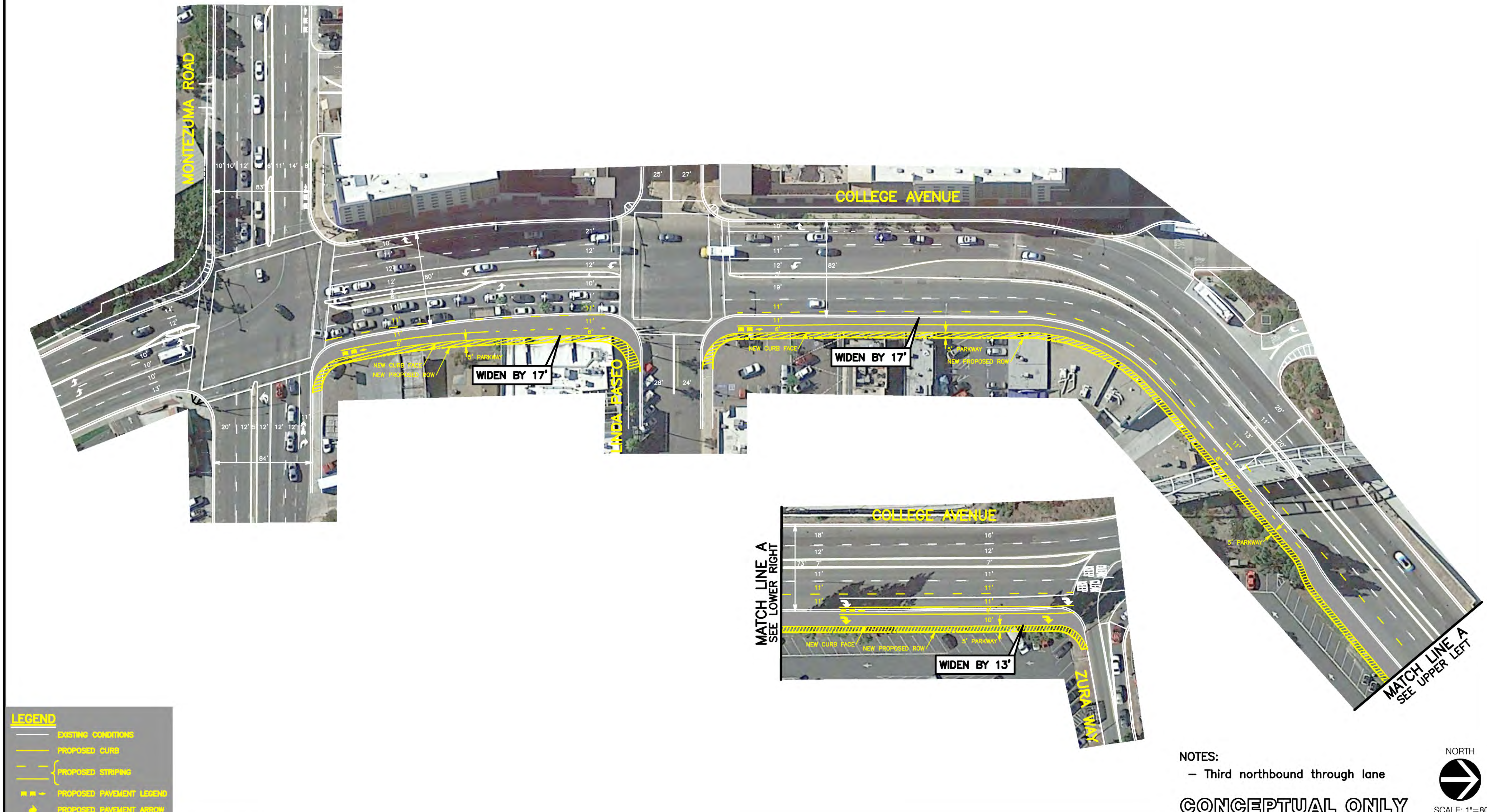
Figure D-3

College Avenue: I-8 to Del Cerro Boulevard Mitigation Measure



NOTES:
– Third northbound through lane

CONCEPTUAL ONLY

NORTH
SCALE: 1"=80'

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REV. 4/30/2018
N:\2604\Design\18-4-20\LLG2604-FIG D-5.dwg

Figure D-5

College Avenue: Montezuma Road to Zura Way Mitigation Measure

NOTES:
- Third eastbound through lane
- Widening required on Montezuma Road on both sides

CONCEPTUAL ONLY

REV. 4/26/2018
N:\2604\Design\18-4-24\LLG2604-FIG D-8.dwg

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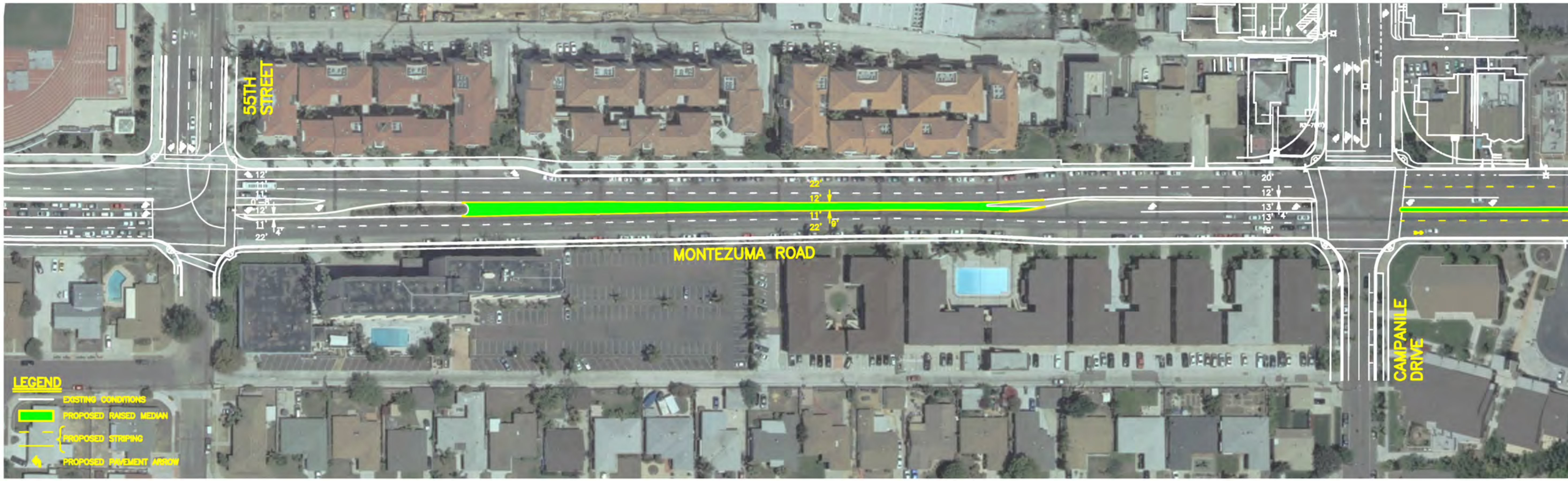
Figure D-8

Montezuma Road: Collwood Boulevard to 55th Street Mitigation Measure



NOTES:
- Raised median proposed
- No widening

CONCEPTUAL ONLY

NORTH

SCALE: 1"=120'

REV. 10/2/2017
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Figure D-9

Montezuma Road: 55th Street to College Avenue Mitigation Measure

LEGEND

EXISTING CONDITIONS

PROPOSED CURB

PROPOSED STRIPING

PROPOSED PAVEMENT ARROW

CONCEPTUAL ONLY

NORTH

SCALE: 1"=80'

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REV. 4/30/2018
N:\2604\Concept\LLG2604-College at Montezuma-RM.dwg

Figure 2

Conceptual Raised Median
College Avenue: Montezuma Road to Cresita Drive

SDSU MASTER PLAN UPDATE

APPENDIX R

FAIR SHARE CALCULATIONS

Table M–1A

SDSU Master Plan Update

Near-Term Mitigation Improvements Cost Calculations

April 27, 2018

Impacted Locations	Mitigation Improvement Description	% Contribution [a]
Intersections		
A-1: College Avenue / I-8 EB Ramps *(AM Peak)*	Widen to accommodate a third NB through lane	*See A-2*
A-2: College Avenue / Canyon Crest Drive *(AM Peak)*	Widen to accommodate a third NB through lane	100.0%
A-3: College Avenue / Zura Way *(AM Peak)*	Install a traffic signal	100.0%
A-4: College Avenue / Montezuma Road *(AM Peak)*	Restripe to provide a second eastbound left-turn lane and right-turn overlap phase	100.0%
Segments		
B-1: Alvarado Road, E. Campus Drive to Reservoir Drive	Widen/restripe to provide a center turn lane or left-turn pockets (restripe requires removal of on-street parking)	100.0%
B-2: College Avenue, I-8 EB Ramps to Zura Way	Widen to accommodate a third NB through lane	*See A-2*

Footnotes:

a. City of San Diego deems Near-Term impacts as Direct Impacts and therefore, 100% contribution.

Table M–2A

SDSU Master Plan Update

Year 2035 (Horizon Year) Mitigation Improvement Cost Calculations

April 27, 2018

Impacted Locations	Mitigation Improvement Description	Year 2035 Project Traffic	Year 2035 + Project Traffic	Existing Traffic	% Horizon Year Fair Share [a]
Intersections [b]					
C-1: Fairmount Avenue / I-8 WB off-ramp *(PM Peak)*	Widen to provide an additional EB right-turn lane	15	6,109	4,506	0.9%
C-2: 55th Street / Montezuma Road *(AM Peak)*	Restripe to provide a southbound shared right-thru-left-turn lane	93	3,129	2,252	10.6%
C-3: Campanile Drive / Montezuma Road *(AM Peak)*	Restripe to provide a dedicated westbound right-turn lane	83	2,989	2,183	10.3%
C-4: College Avenue / I-8 EB Ramps *(PM Peak)*	Widen to accommodate a third NB through lane	417	5,963	4,145	*Near-Term Impact (see Table M-1A)*
C-5: College Avenue / Canyon Crest Drive *(PM Peak)*	Widen to accommodate a third NB through lane	552	5,322	3,537	*Near-Term Impact (see Table M-1A)*
C-6: College Avenue / Zura Way *(PM Peak)*	Install a traffic signal	240	3,865	2,740	*Near-Term Impact (see Table M-1A)*
C-7: College Avenue / Montezuma Road *(PM Peak)*	Restripe to provide a second eastbound left-turn lane and right-turn overlap phase	205	6,128	4,449	*Near-Term Impact (see Table M-1A)*
C-8: Alvarado Court / Alvarado Road *(PM Peak)*	Install a traffic signal	376	1,306	670	59.1%
C-9: 70th Street / Alvarado Road *(PM Peak)*	Provide a NB right-turn overlap phase	132	5,124	3,742	9.6%
C-10: I-8 WB Ramps / Parkway Drive *(AM Peak)*	Install a traffic signal	62	1,255	818	*14.2%*
C-11: Montezuma Road / Collwood Boulevard *(PM Peak)*	Provide a NB right-turn overlap phase	86	6,016	5,087	9.3%
Segments					
D-1: Alvarado Road, E. Campus Drive to Reservoir Drive	Widen/restripe to provide a center turn lane or left-turn pockets (restripe requires removal of on-street parking)	3,440	14,780	8,800	*Near-Term Impact (see Table M-1A)*
D-2: Alvarado Road, Reservoir Drive to 70th Street	Restripe to provide a center turn lane or left-turn pockets (requires removal of on-street parking)	1,950	16,780	7,040	*20.0%*
D-3: College Avenue, Del Cerro Boulevard to I-8 WB off-Ramps	Restripe to provide a third northbound through lane	2,050	37,980	31,330	30.8%
D-4: College Avenue, I-8 EB Ramps to Zura Way	Widen to accommodate a third NB through lane	5,850	66,950	35,850	*Near-Term Impact (see Table M-1A)*
D-5:College Avenue, Zura Way to Montezuma Road	Widen to provide an additional lane	2,480	37,660	29,790	31.5%
D-6: College Avenue, Montezuma Road to Cresita Drive	Provide a raised median	1,530	33,660	27,490	24.8%
D-7: Montezuma Road, Fairmount Avenue to Collwood Boulevard	Widen to provide an additional lane	1,220	67,960	52,330	7.8%
D-8: Montezuma Road, Collwood Boulevard to 55th Street	Widen to provide an additional lane	1,220	43,030	28,950	8.7%
D-9: Montezuma Road, 55th Street to College Avenue	Intall a raised median	1,520	39,730	32,570	21.2%
Ramp Meters					
E-1: Northbound College Avenue to westbound I-8	Support Caltrans in obtaining funds from Legislature to prepare a PSR-PDS	11	430	306	8.9%
E-2: Soutbound College Avenue to westbound I-8		13	868	671	6.6%
Freeway Mainlines					
F-1: I-8 - Fairmount Avenue to Waring Road (EB, PM peak)	Support Caltrans in obtaining funds from Legislature to prepare a PSR-PDS	62	12,613	11,112	4.1%
F-2: I-8 - Waring Road to College Avenue (EB, PM peak)		62	11,891	10,594	4.8%
F-3: I-8 - College Avenue to Lake Murray Boulevard (EB, PM peak)		65	11,767	10,048	3.8%
F-4: I-8 - College Avenue to Lake Murray Boulevard (WB, AM peak)		59	12,130	10,357	3.3%
F-5: I-8 - Lake Murray Boulevard to Fletcher Parkway (EB, PM peak)		128	11,359	10,048	9.8%
F-6: I-8 - Lake Murray Boulevard to Fletcher Parkway (WB, AM peak)		117	11,708	10,357	8.7%

Footnotes:

a. Fair share percentages calculated as

$$\frac{\text{Horizon Year Project Traffic}}{\text{(Year 2035 + Project Traffic)} - \text{(Existing Traffic)}}$$

b. Intersection fair share contributions are calculated to result in higher fair-share perecentage depending on higher of the AM and PM entering peak hour volumes.

General Notes:

There may be minor rounding errors on the above calculations.

Green highlighted rowns indicate locations where SDSU has agreed to fully fund and implement the necessary improvements.

APPENDIX W

TDM QUANTIFICATION MEMO

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MEMORANDUM

To:	Ms. Laura Shinn San Diego State University	Date:	April 26, 2018
From:	John Boarman/ Shankar Ramakrishnan LLG Engineers	LLG Ref:	3-16-2604
Subject:	SDSU DAA TDM Quantification Analysis		

Linscott, Law & Greenspan, Engineers (LLG) has prepared this memo to evaluate the potential reduction in vehicle miles traveled (VMT) that would result with implementation of the Transportation Demand Management (TDM) mitigation measure proposed as part of the Draft Additional Analysis (DAA) to the SDSU 2007 Campus Master Plan Revision Final EIR. Each element, or strategy, included in the proposed TDM measure was evaluated by comparing each to the corresponding strategies set forth and evaluated in the California Air Pollution Control Officers Association (CAPCOA) report entitled *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA Report). The results of that analysis are explained below.

1.0 TDM MITIGATION MEASURE

As part of the 2007 Campus Master Plan, The Board of Trustees of the California State University adopted a mitigation measure requiring SDSU to develop a campus TDM program with the goal of identifying measures that could potentially reduce the number of single-rider vehicle trips generated by SDSU students, faculty, and staff and encourage them to use different modes of transportation.

Following its review and consideration of various TDM strategies, SDSU developed the following TDM strategies to reduce the number of single–rider vehicle trips generated by the SDSU campus:

1. **TDM Coordinator.** Immediately following Master Plan approval, identify the SDSU employment position with primary responsibility for overseeing implementation of the following TDM strategies and task such position with conducting the appropriate implementation, outreach, marketing, and monitoring activities.
2. **Increase RideShare Opportunities**. SDSU, or the TDM Coordinator as applicable, shall:
    a. Provide a central digital platform location for information relating to available alternative transportation opportunities (to be implemented by Fall 2018);

b. Provide preferential vanpool/carpool parking spaces in each parking lot commensurate with demand (to be implemented by Fall 2018);

c. Allow use of shared parking passes for carpools and vanpools (shared parking passes authorize the use of one parking pass that is shared amongst all of the drivers of a designated carpool or vanpool) (to be implemented by Fall 2018);

d. Connect the existing Enterprise Rent-A-Car VanPool system to the Human Resources (HR) staff/faculty database for more efficient ride-matching (the HR database includes information regarding home address and employment department, thereby facilitating carpool matches based on location and work schedule) (to be implemented by Fall 2019);

e. Provide dedicated parking spaces and subsidies, funded through SANDAG and SDSU, towards leasing and fuel costs associated with vanpools operated through the Enterprise Rent-A-Car VanPool system (to be implemented by Fall 2018);

f. Promote ZimRide and Waze Carpool (rideshare platforms) and SANDAG's iCommute program by all appropriate means including, but not limited to, providing informational packets to all resident students during student orientation (to be implemented by Fall 2018);

g. Expand hours of operation, increase frequency, and expand the service area of the currently on-campus only SDSU Red & Black shuttle to include off-campus locations (to be implemented by Fall 2019);

h. Facilitate continued operation of private shuttles operating between off-campus apartments and campus by identifying off-campus pickup/drop-off locations (to be implemented by Fall 2018); and,

i. Designate on campus locations for ride-hailing services, including, but not limited to, Uber and Lyft (to be implemented by Fall 2018).

3. **Facilitate Bicycle and Pedestrian Travel.** SDSU, or the TDM Coordinator as applicable, shall:

   a. Establish a Bike-Share pilot program on campus to be expanded if successful. Program features will include: dockless program; 100 bicycles initially; students to receive a discount for subscription; incentives/disincentives relating to placement of bicycles following

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use; and bicycles may be taken off-campus (to be implemented by Fall 2018);

b. Upgrade existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street (to be implemented by Fall 2019);

c. Install a Class II bike lane within the existing curb lines on Canyon Crest Drive between Lot 16 (former A Lot) and Lot 15 (former X lot) in order to improve bicycle access to/from and within campus (to be implemented by Fall 2019);

d. Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane (implemented 2018);

e. Provide on-campus Class I bike paths between Hardy Road and Hilltop Way, and between Union Street and Viejas Arena (Aztec Walk) (installed 2010);

f. Provide Class II bike lanes on College Avenue between Montezuma Road and Zura Way (installed 2017);

g. Maintain the existing on-campus bike racks (with capacity for approximately 1,070 bikes) and four bike maintenance stations (tools and air, unstaffed), and continue to monitor need for additional racks as necessary (to be implemented by Fall 2018); and

h. Provide pedestrian improvements, including pedestrian signals, widened sidewalks, and bulb-outs at South Campus Plaza (west side of College Avenue), and Montezuma Road and Campanile Drive (installed since 2007).

4. **Facilitate Transit Ridership.** SDSU, or the TDM Coordinator as applicable, shall:

   a. Maintain existing transit pass program for students (discounted by Metropolitan Transit System (MTS) and subsidized by SDSU) and enable purchases by credit card (credit card to be implemented by Fall 2018);

   b. Establish a pre-tax payroll deduction program for faculty and staff purchase of MTS transit passes, vanpooling, and pooled on-demand

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rideshare services (e.g., uberPOOL and Lyft Line), provided SDSU meets the state/CSU required minimum participation level (to be implemented by Fall 2019);

c. Provide reduced cost transit passes for faculty and staff, provided SDSU meets the MTS required minimum participation level. Cost reduction will be between 10% and 25%, depending on participation level (to be implemented by Fall 2019); and,

d. Increase on-campus vehicle parking fees for single-rider student vehicles by 2025.

2.0 APPLICABLE CAPCOA REPORT CATEGORIES

In evaluating the VMT reduction that potentially would result with implementation of the TDM mitigation measure, LLG evaluated each mitigation measure strategy relative to the strategies included in the CAPCOA Report. The following broad categories of TDM strategies, which are included in the CAPCOA Report with associated VMT reduction ranges identified, correspond to the SDSU TDM mitigation measure strategies set forth in *Section 1.0* and, therefore, were used as reference sources for the analysis:

- Land Use and Location
    - Bicycle Improvements
- Commute Trip Reduction
    - Preferential Carpool/Vanpool amenities
    - Encourage Rideshare
    - Vanpool Subsidies
    - Subsidized / Discounted transit passes
    - Marketing strategies

3.0 METHODOLOGY

To quantify the potential VMT reductions attributable to the proposed TDM strategies, LLG reviewed the transportation section of the CAPCOA Report. The transportation section of the report includes a set of guidelines for quantifying the environmental benefits of mitigation measures, such as a project's TDM program. The CAPCOA guidelines were developed based on a comprehensive review of studies documenting the effects of various TDM strategies. Using the CAPCOA guidelines, LLG developed a computer model that quantifies the effects of TDM strategies on VMT.

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To determine the amount of VMT reduction that would be attributable to the SDSU TDM mitigation measure, LLG compared the SDSU TDM strategies against the CAPCOA standards utilizing the LLG quantification model.

Only "new" TDM strategies proposed by the project were included in the analysis in order to quantify the VMT reduction attributable to these strategies. For example, SDSU TDM strategies that have already been implemented such as the installation of bicycle markings and the provision of bike paths, were not included. Second, proposed TDM strategies such as the parking pricing increase, which is not anticipated to take effect until 2025 and the intra-campus shuttle service, which will be expanded to off-campus locations were not included in the analysis as quantification of any such related reductions at this time would be speculative. Lastly, TDM measures that are not controlled by SDSU (i.e. facilitate continued operation of off-campus shuttles for students) also were not included.

Data Collection

To conduct the TDM quantification analysis, LLG coordinated with SDSU staff to obtain information relating to current and projected student enrollment, current and projected faculty/staff enrollment, current and projected number of on-campus student housing units, land use mix in the campus vicinity, and other data relevant to the analysis. This information was required because certain strategies are applicable to a "population" type (i.e., students only or faculty/staff only), or the TDM strategy was to be applied only to the "net new" increase in densities, etc.

Location Type

The location type selected for the analysis was "Suburban Center". Based on the CAPCOA guidelines, this category best fit the SDSU campus based on the campus location, density character, parking constraints, transit availability, etc.

4.0 EVALUATION OF TDM MITIGATION MEASURE

As previously explained, the CAPCOA standards were utilized to determine the VMT reduction anticipated to be achieved by implementation of each TDM strategy. The results of the analysis are presented in ***Table A***.

5.0 ANALYSIS FINDINGS

The following is a summary of the VMT reductions calculated for each category, including the calculations applied to determine the potential VMT reductions, expressed as a percentage. ***Appendix A*** contains the calculations.

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- *Category 1: Land Use/Location*
  - Improved Design of Development (CAPCOA Report reference LUT-9/SDT-5): 1.0%
  - *Combined* = **1.0%**
- *Category 4: Commute Trip Reduction Programs*
  - Implement Commute Trip Reduction Program - Voluntary (CAPCOA Report reference TRT-1): 1.0%
  - Implement Subsidized or Discounted Transit Program (CAPCOA Report reference TRT-4): 0.3%
  - Implement Commute Trip Reduction Marketing (CAPCOA Report reference TRT-7): 0.8%
  - *Combined* = 1 - (1-0.01)*(1-0.003)*(1-0.008) = **2.1%**
- *Overall VMT Reduction*
  Based on the individual category inputs identified above (i.e., 1% and 2.1%), the overall VMT reduction is estimated using the following equation:

  1 - (1 - 0.01) * (1 - 0.021) = **3.1%**

  The overall VMT reduction is estimated to be 3.1%. For comparative purposes, the CAPCOA standard for the overall maximum VMT reduction in the context of a Suburban Center is identified as 20%.

6.0 CONCLUSION

The SDSU TDM mitigation measure facilitates a balanced approach to promote overall mobility, with the ultimate goal of reducing to the extent possible the number of single-rider vehicle trips generated by SDSU students, faculty, and staff in favor of alternative forms of transportation. As explained in this analysis, implementation of the mitigation measure would potentially result in a reduction in project VMT by approximately 3.1%. While this would reduce the project's vehicular traffic, the reduction is not sufficient to eliminate any of the significant impacts identified in the traffic impacts analysis conducted for the project.

TABLE A
SDSU CAMPUS TDM QUANTIFICATION ANALYSIS

SDSU Campus TDM Measure	CAPCOA Reference	Required Elements for TDM Measure Effectiveness per CAPCOA	Range of Effectiveness per CAPCOA	Individual VMT Reduction	Combined VMT Reduction
Land Use/Location					
• Upgrade existing Class III bicycle facilities to Class II facilities along 54th Street from Collwood Boulevard to El Cajon Boulevard, and upgrade the existing Class III bicycle facilities to Class II facilities along Collwood Boulevard from Monroe Avenue to 54th Street. • Install a bike lane, within the existing curb lines on Canyon Crest Drive between Lot 16 (former A Lot) and Lot 15 (former X Lot) in order to improve bicycle access to/from and within campus. • Provide shared lane markings (sharrows) on Aztec Circle Drive to alert motorists that bicyclists may be using the full travel lane.	LUT-9 / SDT-5[a]	Project will incorporate bicycle lanes, routes, and shared-use paths into street systems and large developments.	3.0% to 21.3%	1.0%[b]	1.0%
Commute Trip Reduction Program					
• Provide preferential vanpool/carpool parking spaces in each parking lot commensurate with demand; • Connect the existing Enterprise Rent-A-Car VanPool system to the Human Resources (HR) database for more efficient ride-matching (the HR database includes information regarding home address and employment department, thereby facilitating carpool matches based on location and work schedule); • Promote ZimRide (a rideshare platform) and SANDAG's iCommute program by all appropriate means including, but not limited to, providing informational packets to all resident students during student orientation. • Provide dedicated parking spaces and subsidies, funded through SANDAG and SDSU, towards leasing and fuel costs associated with vanpools operated through the Enterprise Rent-A-Car Vanpool system	TRT-1	Project will implement a voluntary commute trip reduction (CTR) program with employers to discourage single-occupancy vehicle trips Including: • Carpool encouragement • Ride-matching assistance • Preferential carpool parking • Flexible work schedules for carpools • Half time transportation coordinator • Vanpool assistance • Bicycle end-trip facilities (parking, showers, lockers)	1.0% to 6.2%	1.0%	
• Establish a pre-tax payroll deduction program for faculty and staff purchase of MTS transit passes, provided SDSU meets the state/CSU required minimum participation level; • Provide reduced cost transit passes for faculty and staff, provided SDSU meets the MTS required minimum participation level. Cost reduction will be between 10% and 25%, depending on participation level.	TRT-4	Project will provide subsidized/discounted daily or monthly public transit passes.	0.3% to 20.0%	0.3%	2.1%
• Identify a SDSU employment position with primary responsibility for overseeing implementation of TDM measures on campus including, but not limited to, the TDM measures listed in this mitigation measure, and task such position with conducting the appropriate implementation, outreach, and marketing activities. • Provide a central digital platform location for information relating to available alternative transportation opportunities.	TRT-7	Project will implement marketing strategies including new employee orientation of trip reduction and alternative mode options, event promotions, and publications to reduce commute trips.	0.8% to 4.0%	0.8%	
SDSU Campus VMT Reduction			**20.0%***		**3.1%[c]**

Footnote:

a. Per CAPCOA, SDT-5: Incorporate Bike Lane Street Design is grouped with LUT-9: Improve Design of development.
b. The CAPCOA minimum for measure LUT-9 is 3%. To be conservative, a nominal 1% VMT reduction was used.
c. Per CAPCOA, multiplicative formula is used to account for the fact that some of the strategies may be redundant or applicable to the same populations.
Overall VMT Reduction: 1 - (1 – 1%) * (1 - 2.1%) = 3.1%

General Notes:

* Maximum VMT Reduction allowed for Suburban Center:

Land Use/Location:	10%
Commute Trip Reduction Program:	15%
Global Maximum:	*20%*

APPENDIX A

ATTACHMENTS

Transportation Measures (five subcategories) Global Maximum Reduction (all VMT)

Max	Project
20.0%	3.1%

Transportation Measures (four categories) Cross-Category Max Reduction (all VMT)

Max	Project
15.0%	1.0%

Max Reduction = 15% Overall;
Work VMT = 25%;
School VMT = 65%;

Land Use / Location

	Max	Project
Land Use / Location	10%	1.0%
Density (LUT-1)	30.0%	0.0%
Design (LUT-9)	21.3%	1.0% *
Location Efficiency (LUT-2)	65.0%	0.0%
Diversity (LUT-3)	30.0%	0.0%
Destination Accessibility (LUT-4)	20.0%	0.0%
Transit Accessibility (LUT-5)	24.6%	0.0%
BMR Housing (LUT-6)	1.2%	0.0%
Oriented Toward Non-Auto Corridor (LUT-7)		
Proximity to Bike Path (LUT-8)		

Neighborhood / Site Enhancement

	Max	Project
Neighborhood / Site Enhancement	0%	0.0%
Pedestrian Network (SDT-1)	2.0%	0.0%
Traffic Calming (STD-2)	1.0%	0.0%
NEV Network (SDT-3),(SDT-8)	12.7%	0.0%
Car Share Program (TRT-9)	0.7%	0.0%
Bicycle Network (SDT-5), (SDT-6),(SDT-7),(SDT-9)		
Urban Non-Motorized Zones (SDT-4)		

Parking Policy / Pricing

	Max	Project
Parking Policy / Pricing	20%	0.0%
Parking supply limits (PDT-1)	12.5%	0.0%
Unbundled Parking Costs (PDT-2)	13.0%	0.0%
On-Street Market Pricing (PDT-3)	5.5%	0.0%
Residential Area Parking Permits (PDT-4)		

Transit System Improvements

	Max	Project
Transit System Improvements	10%	0.0%
Network expansion (TST-3)	8.2%	0.0%
Service frequency/speed (TST-4)	2.5%	0.0%
Bus Rapid Transit (TST-1)	3.2%	0.0%
Access Improvements (TST-2)		
Station Bike Parking (TST-5)		
Local Shuttles (TST-6)		
Park and Ride lots (RPT-4)		

Commute Trip Reduction (Assumes mixed use)

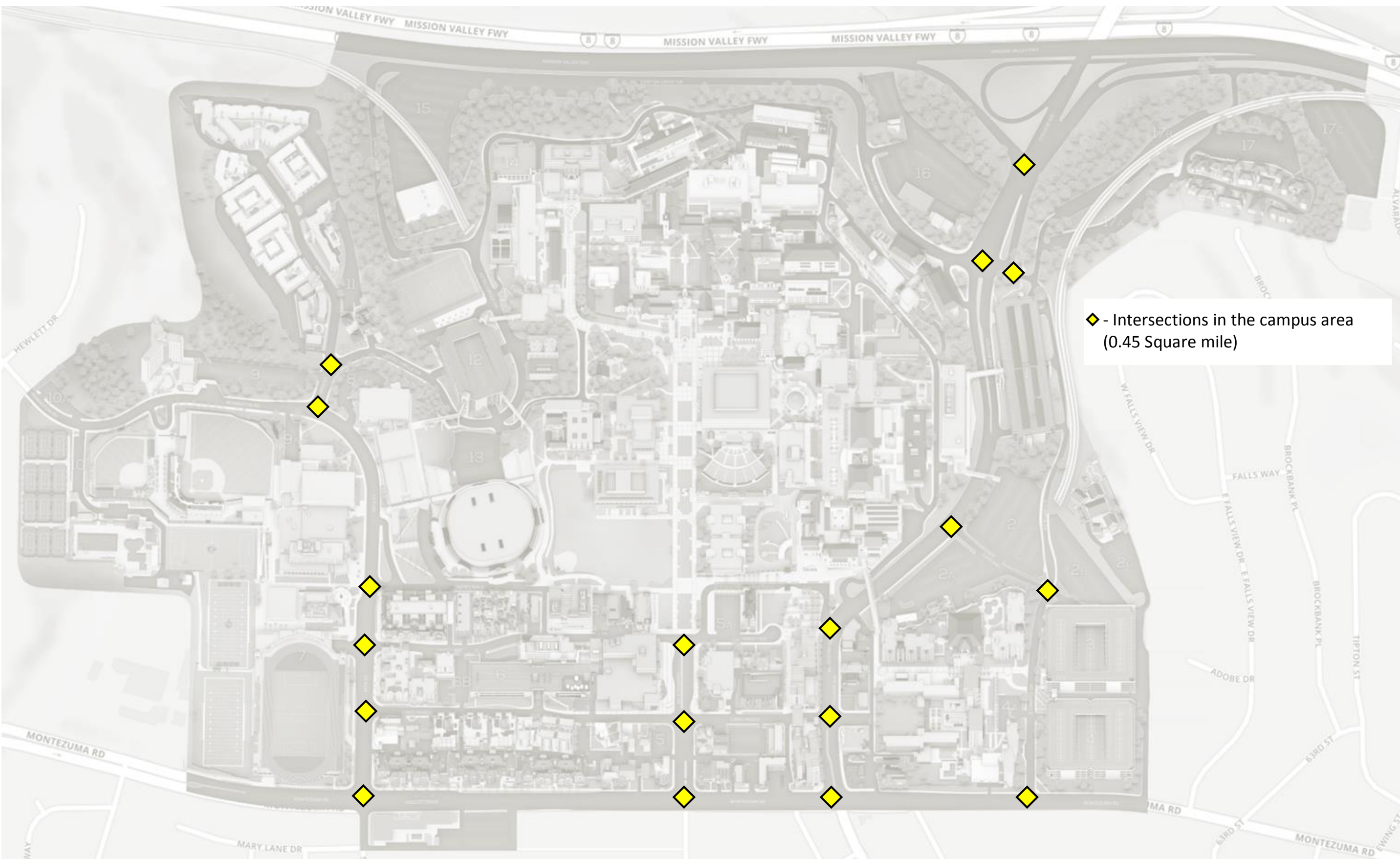
	Max	Project
Commute Trip Reduction (Assumes mixed use)	15%	2.1%
CTR Program Voluntary (TRT-1)	6.2%	1.0%
CTR Program Required (TRT-2)	21.0%	0.0%
Transit fare subsidy (TRT-4)	20.0%	0.3%
Employee parking cash-out (TRT-15)	7.7%	0.0%
Workplace paring pricing (TRT-14)	19.7%	0.0%
Alternative work schedule and telecommute (TRT-6)	5.5%	0.0%
CTR Marketing (TRT-7)	4.0%	0.8%
Employer Sponsered Vanpool/Shuttle (TRT-11)	13.4%	0.0%
Ride share programs (TRT-3)	15.0%	0.0%
Bike share program (TRT-12)		
End of Trip facilities (TRT-5)		
Prefential parking permit (TRT-8)		
School pool (TRT-10)	15.8%	0.0%
School bus (TRT-13)	6.3%	0.0%

* The CAPCOA minimum for measure LUT-9 is 3%. To be conservative a nominal 1% VMT reduction was used.

Category 1: Land Use / Location

☑	**3.1.9**	Improved Design of Development	
	LUT-9	Min	3.0%
		Max	21.3%
		Intersections per square mile	40
		A % Increase in intersections versus a typical ITE Suburban development	11%
		B Elasticity of VMT with respect to percentage of intersections	0.12
		VMT Reduction: A x B	1.0%*

* The CAPCOA minimum for measure LUT-9 is 3%. To be conservative, a nominal 1% VMT reduction was used.



Category 4: Commute Trip Reduction - Subsidy Calculation

MTS daily Pass	$ 5.00
Subsidy (at 15%)	$ 0.75

Regular Pass

Pass Type	Regional
Valid On	MTS Trolley MTS Bus/Express MTS Rapid NCTD Breeze NCTD Sprinter
1-day (valid until end of service day - 2am)	$5[1]

https://www.sdmts.com/fares-passes

Category 4: Commute Trip Reduction - Commute Population Calculation

COMMUTE POPULATION CALCULATIONS

Student Enrollment	#
Existing (2006-07) HC	33,441
Year 2035 HC	44,826
Net New	11,385

Faculty and Staff	#
Existing (2006-07) HC	4,358

Net New Student Split from MP		
Non Residents	7,401	65%
Residents	3,984	35%
Total Increase	11,385	

Faculty and Staff	#
Projected Staff in Year 2035	4,227

Employees Eligible	
Non Resident Students	29,140
Faculty Staff	4,227
Total Campus Population	49,053
All Eligible Employees	68%
Only Faculty	9%
Only New Students	15%

Notes:

TDM program for Commute Trips applies to Non-Resident students and Faculty / staff.

☑	**3.4.1**	Implement Commute Trip Reduction Program		
	TRT-1	Min		1.0%
		Max		6.2%
	A	% Reduction in commute VMT	Suburban Center	5.40%
	B	% Employee eligible		15.0%
		VMT Reduction: A x B		1.0%

☑	**3.4.4**	Implement Subsidized or Discounted Transit Program		
	TRT-4	Min		0.3%
		Max		20.0%
		Worksite Setting	Suburban Center	
		Daily Transit Subsidy	$0.75	
	A	% Reduction in commute vehicle trips (VT)		3.4%
	B	% Employees eligible		9.0%
	C	Adjustment from commute VT to commute VMT		1.00
		VMT Reduction: A x B x C		0.3%

☑	**3.4.7**	Implement Commute Trip Reduction Marketing	
	TRT-7	Min	0.8%
		Max	4.0%
	A	% Reduction in commute vehicle trips	4.0%
	B	% Employees eligible	20.0%
	C	Adjustment from commute VT to commute VMT	1.00
		VMT Reduction: A x B x C	0.8%

APPENDIX X

QUEUE ANALYSIS CALCULATION SHEETS

Intersection: 6: College Ave & Del Cerro Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	217	83	202	265	104	114	178	196	220	114	386	444
Average Queue (ft)	112	53	123	189	19	66	146	152	62	59	286	319
95th Queue (ft)	198	88	205	296	44	134	199	212	175	118	387	466
Link Distance (ft)	487		250	250			1406	1406			429	429
Upstream Blk Time (%)				3								4
Queuing Penalty (veh)				0								0
Storage Bay Dist (ft)		200			80	90			200	90		
Storage Blk Time (%)	4			26		8	20	1	0	0	27	49
Queuing Penalty (veh)	7			22		24	16	2	0	0	16	11

Intersection: 6: College Ave & Del Cerro Blvd

Movement	SB
Directions Served	R
Maximum Queue (ft)	95
Average Queue (ft)	14
95th Queue (ft)	69
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	80
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 7: College Ave & I-8WB Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	121	156	118	70	90	73	137
Average Queue (ft)	59	93	37	39	54	27	68
95th Queue (ft)	124	182	115	75	88	64	133
Link Distance (ft)		704		1005	1005	1406	1406
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	180		150				
Storage Blk Time (%)		3					
Queuing Penalty (veh)		7					

Intersection: 8: College Ave & I-8EB Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	R	T	TR	T	T	R
Maximum Queue (ft)	159	174	458	296	145	46	65	303	409	125
Average Queue (ft)	87	163	276	193	87	21	42	222	307	87
95th Queue (ft)	167	198	453	294	154	50	68	337	459	179
Link Distance (ft)			616	616		530	530	1005	1005	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150	150			120					100
Storage Blk Time (%)	1	12	14	10	2				46	0
Queuing Penalty (veh)	2	49	50	41	7				129	1

Intersection: 9: College Ave & Canyon Crest Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	LT	R	L	T	T	R	L	L	T	T
Maximum Queue (ft)	36	50	31	30	194	294	349	29	162	174	291	222
Average Queue (ft)	16	29	30	30	153	232	259	23	136	146	169	174
95th Queue (ft)	38	52	32	31	232	287	346	38	169	210	277	231
Link Distance (ft)	595	595	24	24		590	590	590			530	530
Upstream Blk Time (%)			85	26								
Queuing Penalty (veh)			151	46								
Storage Bay Dist (ft)					170				150	150		
Storage Blk Time (%)						15			9	11	5	
Queuing Penalty (veh)						14			39	45	27	

Intersection: 9: College Ave & Canyon Crest Dr

Movement	SB	SB	SB
Directions Served	T	R	R
Maximum Queue (ft)	314	145	53
Average Queue (ft)	196	126	46
95th Queue (ft)	302	191	62
Link Distance (ft)	530		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		120	120
Storage Blk Time (%)	14	0	
Queuing Penalty (veh)	55	1	

Intersection: 6: College Ave & Del Cerro Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	110	85	90	180	105	95	152	183	105	114	168	266
Average Queue (ft)	64	45	59	135	58	54	95	104	58	78	100	155
95th Queue (ft)	107	78	101	168	115	107	154	165	105	106	171	259
Link Distance (ft)	487		250	250			1406	1406			429	429
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		200			80	90			200	90		
Storage Blk Time (%)				23	0	13	13	0		1	10	25
Queuing Penalty (veh)				21	0	46	12	0		3	11	4

Intersection: 6: College Ave & Del Cerro Blvd

Movement	SB
Directions Served	R
Maximum Queue (ft)	104
Average Queue (ft)	15
95th Queue (ft)	75
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	80
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: College Ave & I-8WB Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	144	209	175	136	138	116	138
Average Queue (ft)	124	157	86	98	96	67	84
95th Queue (ft)	164	202	171	160	159	110	126
Link Distance (ft)		704		1005	1005	1406	1406
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	180		150				
Storage Blk Time (%)		7	0				
Queuing Penalty (veh)		41	0				

Intersection: 8: College Ave & I-8EB Ramp

Movement	EB	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	T	TR	T	T	R
Maximum Queue (ft)	162	174	607	311	529	557	745	789	125
Average Queue (ft)	126	168	329	71	466	539	541	587	124
95th Queue (ft)	214	179	604	246	576	564	732	773	126
Link Distance (ft)			616	616	530	530	1005	1005	
Upstream Blk Time (%)			0		0	20			
Queuing Penalty (veh)			0		1	186			
Storage Bay Dist (ft)	150	150							100
Storage Blk Time (%)	1	32						77	0
Queuing Penalty (veh)	3	75						195	1

Intersection: 9: College Ave & Canyon Crest Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	LT	R	L	T	T	R	L	L	T	T
Maximum Queue (ft)	228	318	27	46	194	605	624	617	152	157	138	160
Average Queue (ft)	172	232	22	30	43	605	608	603	100	115	91	120
95th Queue (ft)	262	325	38	41	154	605	619	617	173	164	145	172
Link Distance (ft)	595	595				590	590	590			530	530
Upstream Blk Time (%)			42	91		53	95	60				
Queuing Penalty (veh)			0	0		0	0	0				
Storage Bay Dist (ft)					170				150	150		
Storage Blk Time (%)						29			0	3	0	
Queuing Penalty (veh)						7			1	11	0	

Intersection: 9: College Ave & Canyon Crest Dr

Movement	SB	SB	SB
Directions Served	T	R	R
Maximum Queue (ft)	124	139	30
Average Queue (ft)	105	4	4
95th Queue (ft)	141	19	21
Link Distance (ft)	530		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		120	120
Storage Blk Time (%)	5	0	
Queuing Penalty (veh)	4	0	

Intersection: 6: College Ave & Del Cerro Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	502	225	199	265	105	114	264	261	78	114	444	444
Average Queue (ft)	216	197	98	206	55	86	177	144	26	68	279	335
95th Queue (ft)	486	244	175	300	128	138	260	242	65	120	386	446
Link Distance (ft)	487		250	250			1406	1406			429	429
Upstream Blk Time (%)	5			14							2	5
Queuing Penalty (veh)	0			0							0	0
Storage Bay Dist (ft)		200			80	90			200	90		
Storage Blk Time (%)		40		46	0	45	7	3		0	37	57
Queuing Penalty (veh)		61		40	0	149	7	8		0	22	14

Intersection: 6: College Ave & Del Cerro Blvd

Movement	SB
Directions Served	R
Maximum Queue (ft)	104
Average Queue (ft)	24
95th Queue (ft)	82
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	80
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: College Ave & I-8WB Ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	R	T	T
Maximum Queue (ft)	205	241	175	163	190	201	164	140
Average Queue (ft)	104	131	64	71	76	29	107	116
95th Queue (ft)	200	240	184	140	167	145	158	155
Link Distance (ft)		704		1005	1005		1406	1406
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	180		150			180		
Storage Blk Time (%)	0	9			0	0		
Queuing Penalty (veh)	0	20			1	0		

Intersection: 8: College Ave & I-8EB Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	R	T	TR	T	T	R
Maximum Queue (ft)	162	175	631	516	145	294	342	703	758	125
Average Queue (ft)	107	166	526	442	136	88	122	378	452	105
95th Queue (ft)	210	201	643	514	159	239	274	639	747	176
Link Distance (ft)			616	616		530	530	1005	1005	
Upstream Blk Time (%)			4							
Queuing Penalty (veh)			0							
Storage Bay Dist (ft)	150	150			120					100
Storage Blk Time (%)	6	14	35	18	5				55	0
Queuing Penalty (veh)	27	62	122	79	22				156	2

Intersection: 9: College Ave & Canyon Crest Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	LT	R	L	T	T	R	L	L	T	T
Maximum Queue (ft)	54	50	27	51	194	378	386	116	162	174	600	580
Average Queue (ft)	20	36	27	30	133	245	274	58	155	174	487	409
95th Queue (ft)	44	62	27	44	224	369	368	112	170	176	662	613
Link Distance (ft)	595	595				590	590	590			530	530
Upstream Blk Time (%)			67	17							19	2
Queuing Penalty (veh)			0	0							154	17
Storage Bay Dist (ft)					170				150	150		
Storage Blk Time (%)					0	22			2	46	5	
Queuing Penalty (veh)					0	24			9	201	34	

Intersection: 9: College Ave & Canyon Crest Dr

Movement	SB	SB	SB
Directions Served	T	R	R
Maximum Queue (ft)	459	145	90
Average Queue (ft)	306	143	48
95th Queue (ft)	482	149	85
Link Distance (ft)	530		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		120	120
Storage Blk Time (%)	22	0	
Queuing Penalty (veh)	106	2	

Intersection: 6: College Ave & Del Cerro Blvd

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	R	L	T	T
Maximum Queue (ft)	90	127	158	226	105	114	122	127	82	114	264	289
Average Queue (ft)	47	61	71	121	67	81	89	92	31	76	158	204
95th Queue (ft)	86	127	137	232	135	133	123	136	72	118	257	300
Link Distance (ft)	487		250	250			1406	1406			429	429
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)		200			80	90			200	90		
Storage Blk Time (%)				14	0	13	10			6	13	38
Queuing Penalty (veh)				13	0	50	19			17	15	8

Intersection: 6: College Ave & Del Cerro Blvd

Movement	SB
Directions Served	R
Maximum Queue (ft)	28
Average Queue (ft)	4
95th Queue (ft)	20
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	80
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: College Ave & I-8WB Ramp

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	T	T	T	T
Maximum Queue (ft)	205	719	175	92	135	200	263
Average Queue (ft)	181	334	125	54	68	110	140
95th Queue (ft)	222	683	219	86	128	228	283
Link Distance (ft)		704		1005	1005	1406	1406
Upstream Blk Time (%)		10					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)	180		150				
Storage Blk Time (%)	13	41	0				
Queuing Penalty (veh)	77	243	2				

Intersection: 8: College Ave & I-8EB Ramp

Movement	EB	EB	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	L	R	R	R	T	TR	T	T	R
Maximum Queue (ft)	162	174	631	476	87	543	552	1014	1028	125
Average Queue (ft)	139	173	511	285	12	489	542	926	952	124
95th Queue (ft)	232	177	690	524	63	594	549	1098	1106	126
Link Distance (ft)			616	616		530	530	1005	1005	
Upstream Blk Time (%)			5			5	26	24	28	
Queuing Penalty (veh)			0			56	277	131	158	
Storage Bay Dist (ft)	150	150			120					100
Storage Blk Time (%)	1	49		0					78	0
Queuing Penalty (veh)	4	128		0					198	2

Intersection: 9: College Ave & Canyon Crest Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LTR	LT	R	L	T	T	R	L	L	T	T
Maximum Queue (ft)	610	610	27	27	29	605	605	624	162	171	171	199
Average Queue (ft)	400	446	22	27	14	605	605	608	97	113	117	148
95th Queue (ft)	653	671	38	27	36	605	605	622	166	148	162	209
Link Distance (ft)	595	595				590	590	590			530	530
Upstream Blk Time (%)	14	30	35	86		50	93	76				
Queuing Penalty (veh)	0	0	0	0		0	0	0				
Storage Bay Dist (ft)					170				150	150		
Storage Blk Time (%)						38			0	4	0	
Queuing Penalty (veh)						12			1	14	1	

Intersection: 9: College Ave & Canyon Crest Dr

Movement	SB	SB	SB
Directions Served	T	R	R
Maximum Queue (ft)	138	140	28
Average Queue (ft)	116	64	10
95th Queue (ft)	149	172	29
Link Distance (ft)	530		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		120	120
Storage Blk Time (%)	12	0	
Queuing Penalty (veh)	16	1	

APPENDIX Y

PROJECT MODIFICATION ANALYSIS CALCULATION SHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	311	91	22	721	203	611	992	54	109	485	321
Future Volume (veh/h)	186	311	91	22	721	203	611	992	54	109	485	321
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	202	338	99	24	784	221	664	1078	59	118	527	349
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1281	547	56	955	403	699	1050	57	511	505	334
Arrive On Green	0.25	0.72	0.72	0.03	0.27	0.27	0.20	0.31	0.31	0.15	0.25	0.25
Sat Flow, veh/h	1774	3539	1512	1774	3539	1494	3442	3402	186	3442	1988	1315
Grp Volume(v), veh/h	202	338	99	24	784	221	664	561	576	118	469	407
Grp Sat Flow(s),veh/h/ln	1774	1770	1512	1774	1770	1494	1721	1770	1818	1721	1770	1534
Q Serve(g_s), s	14.0	4.1	1.5	1.7	26.2	11.1	24.0	38.9	38.9	3.8	32.0	32.0
Cycle Q Clear(g_c), s	14.0	4.1	1.5	1.7	26.2	11.1	24.0	38.9	38.9	3.8	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.86
Lane Grp Cap(c), veh/h	220	1281	547	56	955	403	699	546	561	511	449	389
V/C Ratio(X)	0.92	0.26	0.18	0.43	0.82	0.55	0.95	1.03	1.03	0.23	1.04	1.05
Avail Cap(c_a), veh/h	220	1281	547	83	955	403	699	546	561	511	449	389
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.8	11.7	3.7	59.9	43.1	19.1	49.6	43.5	43.6	47.3	47.0	47.0
Incr Delay (d2), s/veh	38.0	0.5	0.7	1.9	7.9	5.3	22.2	45.3	45.0	0.1	54.2	57.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	2.1	0.7	0.8	13.8	5.1	13.6	25.8	26.5	1.8	22.4	19.8
LnGrp Delay(d),s/veh	84.8	12.2	4.4	61.8	51.0	24.4	71.8	88.9	88.6	47.4	101.2	104.9
LnGrp LOS	F	B	A	E	D	C	E	F	F	D	F	F
Approach Vol, veh/h		639			1029			1801			994	
Approach Delay, s/veh		33.9			45.5			82.5			96.3	
Approach LOS		C			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	44.0	8.4	50.5	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	18.7	38.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	5.8	40.9	3.7	6.1	26.0	34.0	16.0	28.2
Green Ext Time (p_c), s	2.0	0.0	0.0	22.5	0.0	0.0	0.0	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	70.1
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	601	0	799	0	0	0	0	1650	406	0	919	269
Future Volume (vph)	601	0	799	0	0	0	0	1650	406	0	919	269
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3411			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3411			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	653	0	868	0	0	0	0	1793	441	0	999	292
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	653	0	868	0	0	0	0	2213	0	0	999	292
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	20.8		69.2					66.7			18.3	100.0
Effective Green, g (s)	20.8		69.2					66.7			18.3	100.0
Actuated g/C Ratio	0.21		0.69					0.67			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	714		2498					2275			647	1536
v/s Ratio Prot	c0.19		0.24					c0.65			c0.28	
v/s Ratio Perm												0.19
v/c Ratio	0.91		0.35					0.97			1.54	0.19
Uniform Delay, d1	38.7		6.2					15.8			40.9	0.0
Progression Factor	1.00		1.00					1.53			0.85	1.00
Incremental Delay, d2	16.0		0.0					2.2			251.9	0.3
Delay (s)	54.7		6.3					26.4			286.5	0.3
Level of Service	D		A					C			F	A
Approach Delay (s)		27.1			0.0			26.4			221.8	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	76.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	402	45	30	75	13	316	26	1340	66	268	1321	130
Future Volume (veh/h)	402	45	30	75	13	316	26	1340	66	268	1321	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	503	0	0	82	14	343	28	1457	72	291	1436	141
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	723	380	0	75	13	206	38	1625	718	279	2663	1999
Arrive On Green	0.20	0.00	0.00	0.05	0.05	0.05	0.02	0.46	0.46	0.08	0.52	0.52
Sat Flow, veh/h	3548	1863	0	1526	261	1583	1774	3539	1563	3442	5085	2733
Grp Volume(v), veh/h	503	0	0	96	0	343	28	1457	72	291	1436	141
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1786	0	1583	1774	1770	1563	1721	1695	1367
Q Serve(g_s), s	13.2	0.0	0.0	4.9	0.0	4.9	1.6	37.8	2.6	8.1	18.7	1.5
Cycle Q Clear(g_c), s	13.2	0.0	0.0	4.9	0.0	4.9	1.6	37.8	2.6	8.1	18.7	1.5
Prop In Lane	1.00		0.00	0.85		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	723	380	0	88	0	206	38	1625	718	279	2663	1999
V/C Ratio(X)	0.70	0.00	0.00	1.10	0.00	1.67	0.73	0.90	0.10	1.04	0.54	0.07
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1625	718	279	2663	1999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.12	0.12	0.12
Uniform Delay (d), s/veh	36.9	0.0	0.0	47.6	0.0	43.5	48.6	24.9	15.3	46.0	15.8	3.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	124.8	0.0	320.3	23.0	8.2	0.3	31.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	0.0	5.4	0.0	24.0	1.0	20.3	1.2	5.0	8.8	1.0
LnGrp Delay(d),s/veh	37.4	0.0	0.0	172.5	0.0	363.8	71.7	33.0	15.6	77.3	15.9	3.9
LnGrp LOS	D			F		F	E	C	B	F	B	A
Approach Vol, veh/h		503			439			1557			1868	
Approach Delay, s/veh		37.4			322.0			32.9			24.6	
Approach LOS		D			F			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	51.9		25.3	6.6	58.4		9.8				
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9				
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9				
Max Q Clear Time (g_c+I1), s	10.1	39.8		15.2	3.6	20.7		6.9				
Green Ext Time (p_c), s	0.0	0.0		1.4	0.0	15.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			58.9									
HCM 2010 LOS			E									
Notes												
User approved volume balancing among the lanes for turning movement.												

Intersection	
Int Delay, s/veh	29.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	466	1166	41	164	1263
Future Vol, veh/h	0	466	1166	41	164	1263
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	507	1267	45	178	1373

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	674	0	0	1287	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 397	-	-	535	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 384	-	-	526	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	189.7	0	1.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	384	526	-
HCM Lane V/C Ratio	-	-	1.319	0.339	-
HCM Control Delay (s)	-	-	189.7	15.3	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	23.4	1.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	355	966	478	186	418	209	348	651	49	221	813	309
Future Volume (veh/h)	355	966	478	186	418	209	348	651	49	221	813	309
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.95	1.00		0.94	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	386	1050	520	202	454	227	378	708	53	240	884	336
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	1427	612	160	1098	466	449	783	59	471	597	226
Arrive On Green	0.37	0.81	0.81	0.09	0.31	0.31	0.13	0.24	0.24	0.14	0.24	0.24
Sat Flow, veh/h	1774	3539	1517	1774	3539	1503	3442	3321	248	3442	2465	931
Grp Volume(v), veh/h	386	1050	520	202	454	227	378	377	384	240	633	587
Grp Sat Flow(s),veh/h/ln	1774	1770	1517	1774	1770	1503	1721	1770	1799	1721	1770	1627
Q Serve(g_s), s	25.6	19.8	19.8	12.6	14.2	12.1	15.0	29.0	29.0	9.1	33.9	33.9
Cycle Q Clear(g_c), s	25.6	19.8	19.8	12.6	14.2	12.1	15.0	29.0	29.0	9.1	33.9	33.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.57
Lane Grp Cap(c), veh/h	324	1427	612	160	1098	466	449	417	424	471	428	394
V/C Ratio(X)	1.19	0.74	0.85	1.27	0.41	0.49	0.84	0.90	0.90	0.51	1.48	1.49
Avail Cap(c_a), veh/h	324	1427	612	160	1098	466	629	454	461	580	428	394
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	10.0	4.9	63.7	38.2	19.5	59.5	51.9	52.0	56.1	53.0	53.1
Incr Delay (d2), s/veh	105.3	2.4	10.2	159.5	1.2	3.6	5.3	20.8	20.8	0.3	227.2	233.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.9	9.5	9.3	13.2	7.1	5.5	7.5	16.6	16.8	4.3	43.6	40.8
LnGrp Delay(d),s/veh	149.7	12.4	15.1	223.2	39.4	23.1	64.7	72.8	72.7	56.4	280.3	286.6
LnGrp LOS	F	B	B	F	D	C	E	E	E	E	F	F
Approach Vol, veh/h		1956			883			1139			1460	
Approach Delay, s/veh		40.2			77.3			70.1			246.0	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	38.1	17.0	61.3	22.7	39.0	30.0	48.3
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	23.6	35.9	12.6	49.1	25.6	33.9	25.6	36.1
Max Q Clear Time (g_c+I1), s	11.1	31.0	14.6	21.8	17.0	35.9	27.6	16.2
Green Ext Time (p_c), s	1.5	2.0	0.0	24.3	1.2	0.0	0.0	18.2

Intersection Summary			
HCM 2010 Ctrl Delay			107.7
HCM 2010 LOS			F

Intersection	
Intersection Delay, s/veh	60.2
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	189	3	0	76	88	0	578	61
Future Vol, veh/h	0	189	3	0	76	88	0	578	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	205	3	0	83	96	0	628	66
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	14.2	11.8	86.4
HCM LOS	B	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	98%	0%	100%
Vol Right, %	0%	100%	2%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	578	61	192	76	88
LT Vol	578	0	0	76	0
Through Vol	0	0	189	0	88
RT Vol	0	61	3	0	0
Lane Flow Rate	628	66	209	83	96
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.108	0.095	0.385	0.171	0.185
Departure Headway (Hd)	6.351	5.14	6.919	7.781	7.269
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	578	702	524	464	496
Service Time	4.051	2.84	4.919	5.481	4.969
HCM Lane V/C Ratio	1.087	0.094	0.399	0.179	0.194
HCM Control Delay	94.6	8.4	14.2	12.1	11.6
HCM Lane LOS	F	A	B	B	B
HCM 95th-tile Q	19.6	0.3	1.8	0.6	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	699	458	30	20	1066	413	80	30	30	106	20	177
Future Volume (veh/h)	699	458	30	20	1066	413	80	30	30	106	20	177
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.92	1.00		0.86
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	760	498	33	22	1159	449	87	33	33	131	0	192
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	664	1975	130	30	1459	628	153	58	58	284	0	109
Arrive On Green	0.19	0.59	0.59	0.03	0.82	0.82	0.16	0.16	0.16	0.08	0.00	0.08
Sat Flow, veh/h	3442	3357	222	1774	3539	1522	973	369	369	3548	0	1354
Grp Volume(v), veh/h	760	262	269	22	1159	449	153	0	0	131	0	192
Grp Sat Flow(s),veh/h/ln	1721	1770	1810	1774	1770	1522	1711	0	0	1774	0	1354
Q Serve(g_s), s	24.3	9.0	9.1	1.5	21.0	15.9	10.4	0.0	0.0	4.4	0.0	10.1
Cycle Q Clear(g_c), s	24.3	9.0	9.1	1.5	21.0	15.9	10.4	0.0	0.0	4.4	0.0	10.1
Prop In Lane	1.00		0.12	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	664	1041	1064	30	1459	628	269	0	0	284	0	109
V/C Ratio(X)	1.15	0.25	0.25	0.73	0.79	0.72	0.57	0.00	0.00	0.46	0.00	1.77
Avail Cap(c_a), veh/h	664	1041	1064	56	1459	628	407	0	0	284	0	109
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.8	12.5	12.6	60.6	8.3	7.9	49.1	0.0	0.0	55.3	0.0	58.0
Incr Delay (d2), s/veh	82.2	0.6	0.6	1.1	0.4	0.6	0.7	0.0	0.0	1.2	0.0	380.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.1	4.5	4.7	0.8	9.7	6.3	5.0	0.0	0.0	2.2	0.0	15.3
LnGrp Delay(d),s/veh	133.1	13.1	13.1	61.7	8.8	8.5	49.8	0.0	0.0	56.6	0.0	438.4
LnGrp LOS	F	B	B	E	A	A	D			E		F
Approach Vol, veh/h		1291			1630			153			323	
Approach Delay, s/veh		83.8			9.4			49.8			283.5	
Approach LOS		F			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	79.7		15.0	28.7	57.6		24.7
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9
Max Green Setting (Gmax), s	4.0	62.1		10.1	24.3	* 43		30.0
Max Q Clear Time (g_c+I1), s	3.5	11.1		12.1	26.3	23.0		12.4
Green Ext Time (p_c), s	0.0	29.3		0.0	0.0	15.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	65.5
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	551	30	88	1378	410	50	30	122	130	20	70
Future Volume (veh/h)	110	551	30	88	1378	410	50	30	122	130	20	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.93	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1900	1900	1863	1863
Adj Flow Rate, veh/h	120	599	33	96	1498	446	54	33	133	141	22	76
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	1477	81	118	1258	353	71	44	176	252	39	295
Arrive On Green	0.07	0.87	0.87	0.09	0.62	0.62	0.18	0.18	0.18	0.16	0.16	0.16
Sat Flow, veh/h	1774	3398	187	1774	2707	759	390	238	960	1545	241	1459
Grp Volume(v), veh/h	120	311	321	96	947	997	220	0	0	163	0	76
Grp Sat Flow(s),veh/h/ln	1774	1770	1815	1774	1770	1696	1587	0	0	1786	0	1459
Q Serve(g_s), s	4.6	4.5	4.5	6.7	58.6	58.6	16.6	0.0	0.0	10.6	0.0	5.5
Cycle Q Clear(g_c), s	4.6	4.5	4.5	6.7	58.6	58.6	16.6	0.0	0.0	10.6	0.0	5.5
Prop In Lane	1.00		0.10	1.00		0.45	0.25		0.60	0.87		1.00
Lane Grp Cap(c), veh/h	65	769	789	118	822	788	291	0	0	291	0	295
V/C Ratio(X)	1.85	0.41	0.41	0.81	1.15	1.26	0.76	0.00	0.00	0.56	0.00	0.26
Avail Cap(c_a), veh/h	65	769	789	135	822	788	365	0	0	439	0	417
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.09	0.09	0.09	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.4	5.0	5.0	56.6	24.1	24.1	48.8	0.0	0.0	48.6	0.0	42.6
Incr Delay (d2), s/veh	435.5	1.5	1.5	2.7	69.7	120.0	4.9	0.0	0.0	0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	2.4	2.5	3.4	44.1	53.3	7.7	0.0	0.0	5.3	0.0	2.2
LnGrp Delay(d),s/veh	493.9	6.5	6.5	59.3	93.8	144.1	53.7	0.0	0.0	49.2	0.0	42.8
LnGrp LOS	F	A	A	E	F	F	D			D		D
Approach Vol, veh/h		752			2040			220			239	
Approach Delay, s/veh		84.3			116.7			53.7			47.2	
Approach LOS		F			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.8	59.8		25.4	9.0	63.6		28.0
Change Period (Y+Rc), s	4.4	* 5		4.9	4.4	5.0		4.9
Max Green Setting (Gmax), s	9.6	* 37		31.0	4.6	42.2		29.0
Max Q Clear Time (g_c+I1), s	8.7	6.5		12.6	6.6	60.6		18.6
Green Ext Time (p_c), s	0.0	30.0		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	99.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	446	0	1685	0	0	0	0	1129	282	0	1455	360
Future Volume (vph)	446	0	1685	0	0	0	0	1129	282	0	1455	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3410			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3410			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	485	0	1832	0	0	0	0	1227	307	0	1582	391
RTOR Reduction (vph)	0	0	0	0	0	0	0	22	0	0	0	0
Lane Group Flow (vph)	485	0	1832	0	0	0	0	1512	0	0	1582	391
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	16.5		47.9					71.0			39.6	100.0
Effective Green, g (s)	16.5		47.9					71.0			39.6	100.0
Actuated g/C Ratio	0.16		0.48					0.71			0.40	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	566		1729					2421			1401	1536
v/s Ratio Prot	0.14		c0.51					0.44			c0.45	
v/s Ratio Perm												0.25
v/c Ratio	0.86		1.06					0.62			1.13	0.25
Uniform Delay, d1	40.6		26.1					7.6			30.2	0.0
Progression Factor	1.00		1.00					0.79			1.06	1.00
Incremental Delay, d2	11.8		39.4					0.1			65.4	0.3
Delay (s)	52.4		65.5					6.1			97.3	0.3
Level of Service	D		E					A			F	A
Approach Delay (s)		62.7			0.0			6.1			78.1	
Approach LOS		E			A			A			E	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	31	30	96	88	306	133	987	152	799	1723	639
Future Volume (veh/h)	119	31	30	96	88	306	133	987	152	799	1723	639
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	98	77	33	104	96	333	145	1073	165	868	1873	695
Adj No. of Lanes	1	1	0	0	1	1	1	2	1	2	3	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	252	173	74	91	84	394	117	1422	627	527	2512	1744
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.07	0.40	0.40	0.05	0.16	0.16
Sat Flow, veh/h	1774	1220	523	944	871	1583	1774	3539	1560	3442	5085	2730
Grp Volume(v), veh/h	98	0	110	200	0	333	145	1073	165	868	1873	695
Grp Sat Flow(s),veh/h/ln	1774	0	1743	1816	0	1583	1774	1770	1560	1721	1695	1365
Q Serve(g_s), s	5.0	0.0	5.8	9.6	0.0	9.6	6.6	26.0	7.1	15.3	35.1	16.7
Cycle Q Clear(g_c), s	5.0	0.0	5.8	9.6	0.0	9.6	6.6	26.0	7.1	15.3	35.1	16.7
Prop In Lane	1.00		0.30	0.52		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	252	0	248	174	0	394	117	1422	627	527	2512	1744
V/C Ratio(X)	0.39	0.00	0.44	1.15	0.00	0.84	1.24	0.75	0.26	1.65	0.75	0.40
Avail Cap(c_a), veh/h	568	0	558	174	0	394	117	1422	627	527	2512	1744
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	39.0	0.0	39.3	45.2	0.0	35.7	46.7	25.7	20.0	47.5	35.9	16.0
Incr Delay (d2), s/veh	0.4	0.0	0.5	113.4	0.0	14.7	160.6	3.8	1.0	292.6	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	2.8	10.3	0.0	10.3	8.4	13.4	3.2	28.7	16.5	8.8
LnGrp Delay(d),s/veh	39.3	0.0	39.7	158.6	0.0	50.4	207.3	29.4	21.0	340.0	36.1	16.1
LnGrp LOS	D		D	F		D	F	C	C	F	D	B
Approach Vol, veh/h		208			533			1383			3436	
Approach Delay, s/veh		39.5			91.0			47.1			108.8	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.2	46.2		19.1	11.0	55.4		14.5
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	15.3	22.4		32.0	6.6	* 32		9.6
Max Q Clear Time (g_c+I1), s	17.3	28.0		7.8	8.6	37.1		11.6
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	89.1
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	15.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	124	1326	100	463	1375
Future Vol, veh/h	0	124	1326	100	463	1375
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	135	1441	109	503	1495

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	761	0	0	1461	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	348	-	-	~ 458	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	336	-	-	~ 450	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.7	0	27.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	336	~ 450	-
HCM Lane V/C Ratio	-	-	0.401	1.118	-
HCM Control Delay (s)	-	-	22.7	108.4	-
HCM Lane LOS	-	-	C	F	-
HCM 95th %tile Q(veh)	-	-	1.9	17.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	262	372	113	40	883	258	756	1186	65	131	577	400
Future Volume (veh/h)	262	372	113	40	883	258	756	1186	65	131	577	400
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.94	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	285	404	123	43	960	280	822	1289	71	142	627	435
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	1253	535	71	955	403	699	1104	61	456	494	342
Arrive On Green	0.21	0.59	0.59	0.04	0.27	0.27	0.20	0.32	0.32	0.13	0.25	0.25
Sat Flow, veh/h	1774	3539	1511	1774	3539	1494	3442	3401	187	3442	1946	1348
Grp Volume(v), veh/h	285	404	123	43	960	280	822	669	691	142	570	492
Grp Sat Flow(s),veh/h/ln	1774	1770	1511	1774	1770	1494	1721	1770	1818	1721	1770	1525
Q Serve(g_s), s	15.6	7.3	2.8	3.0	34.0	15.2	25.6	40.9	40.9	4.7	32.0	32.0
Cycle Q Clear(g_c), s	15.6	7.3	2.8	3.0	34.0	15.2	25.6	40.9	40.9	4.7	32.0	32.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		0.88
Lane Grp Cap(c), veh/h	220	1253	535	71	955	403	699	574	590	456	449	387
V/C Ratio(X)	1.30	0.32	0.23	0.61	1.01	0.69	1.18	1.17	1.17	0.31	1.27	1.27
Avail Cap(c_a), veh/h	220	1253	535	83	955	403	699	574	590	456	449	387
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	18.1	5.8	59.5	46.0	21.3	50.2	42.5	42.6	49.4	47.0	47.0
Incr Delay (d2), s/veh	161.6	0.6	0.9	4.4	30.4	9.5	93.5	92.3	93.6	0.1	137.4	140.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.4	3.6	1.3	1.6	20.6	7.3	21.2	34.7	35.8	2.2	32.8	28.6
LnGrp Delay(d),s/veh	211.5	18.8	6.7	63.9	76.4	30.8	143.7	134.8	136.1	49.6	184.4	187.5
LnGrp LOS	F	B	A	E	F	C	F	F	F	D	F	F
Approach Vol, veh/h		812			1283			2182			1204	
Approach Delay, s/veh		84.6			66.0			138.6			169.7	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.1	46.0	9.4	49.5	30.0	37.1	20.0	38.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	16.7	40.9	5.9	43.7	25.6	32.0	15.6	34.0
Max Q Clear Time (g_c+I1), s	6.7	42.9	5.0	9.3	27.6	34.0	17.6	36.0
Green Ext Time (p_c), s	2.3	0.0	0.0	25.8	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	120.5
HCM 2010 LOS	F

Intersection	
Intersection Delay, s/veh	92.3
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	150	20	0	230	180	0	615	60
Future Vol, veh/h	0	150	20	0	230	180	0	615	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	163	22	0	250	196	0	668	65
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	14.9	17.2	157.4
HCM LOS	B	C	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	88%	0%	100%
Vol Right, %	0%	100%	12%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	615	60	170	230	180
LT Vol	615	0	0	230	0
Through Vol	0	0	150	0	180
RT Vol	0	60	20	0	0
Lane Flow Rate	668	65	185	250	196
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.304	0.105	0.354	0.509	0.371
Departure Headway (Hd)	7.021	5.804	7.746	8.148	7.635
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	521	622	467	445	473
Service Time	4.721	3.504	5.746	5.848	5.335
HCM Lane V/C Ratio	1.282	0.105	0.396	0.562	0.414
HCM Control Delay	171.9	9.2	14.9	19	14.8
HCM Lane LOS	F	A	B	C	B
HCM 95th-tile Q	28.3	0.4	1.6	2.8	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Future Volume (veh/h)	235	260	750	750	190	305	240	1184	200	40	1865	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.92	1.00		0.96	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	255	283	815	831	350	221	261	1287	217	43	2027	98
Adj No. of Lanes	1	1	1	2	1	1	1	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	201	332	946	497	531	195	1187	198	271	1281	553
Arrive On Green	0.11	0.11	0.11	0.27	0.27	0.27	0.11	0.39	0.39	0.08	0.36	0.36
Sat Flow, veh/h	1774	1863	1463	3548	1863	1523	1774	3020	504	3442	3539	1529
Grp Volume(v), veh/h	255	283	815	831	350	221	261	749	755	43	2027	98
Grp Sat Flow(s),veh/h/ln	1774	1863	1463	1774	1863	1523	1774	1770	1754	1721	1770	1529
Q Serve(g_s), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Cycle Q Clear(g_c), s	14.0	14.0	14.0	29.2	22.1	14.4	14.3	51.1	51.1	1.5	47.0	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	191	201	332	946	497	531	195	696	689	271	1281	553
V/C Ratio(X)	1.33	1.41	2.46	0.88	0.70	0.42	1.34	1.08	1.10	0.16	1.58	0.18
Avail Cap(c_a), veh/h	191	201	332	983	516	547	195	696	689	344	1281	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.0	58.0	51.1	45.7	43.1	32.6	57.9	39.5	39.5	55.9	41.5	28.3
Incr Delay (d2), s/veh	181.8	211.7	664.6	9.0	4.2	0.5	182.3	56.6	63.3	0.1	265.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.5	19.0	73.2	15.5	11.9	6.2	16.9	35.9	36.8	0.7	70.3	2.5
LnGrp Delay(d),s/veh	239.8	269.7	715.7	54.6	47.2	33.1	240.2	96.0	102.8	56.0	307.4	29.0
LnGrp LOS	F	F	F	D	D	C	F	F	F	E	F	C
Approach Vol, veh/h		1353			1402			1765			2168	
Approach Delay, s/veh		532.7			49.4			120.2			289.8	
Approach LOS		F			D			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.9	56.2		19.1	19.0	52.1		39.8				
Change Period (Y+Rc), s	* 4.7	5.1		5.1	* 4.7	5.1		5.1				
Max Green Setting (Gmax), s	* 13	47.0		14.0	* 14	45.7		36.0				
Max Q Clear Time (g_c+I1), s	3.5	53.1		16.0	16.3	49.0		31.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			243.8									
HCM 2010 LOS			F									
Notes												
User approved volume balancing among the lanes for turning movement.												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	486	1112	120	41	768	268	80	30	30	370	40	605
Future Volume (veh/h)	486	1112	120	41	768	268	80	30	30	370	40	605
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.92	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1900	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	528	1209	130	45	835	291	87	33	33	433	0	658
Adj No. of Lanes	2	2	0	1	2	1	0	1	0	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	524	1332	143	58	1049	446	149	57	57	887	0	374
Arrive On Green	0.15	0.42	0.42	0.03	0.30	0.30	0.15	0.15	0.15	0.25	0.00	0.25
Sat Flow, veh/h	3442	3201	343	1774	3539	1506	972	369	369	3548	0	1495
Grp Volume(v), veh/h	528	666	673	45	835	291	153	0	0	433	0	658
Grp Sat Flow(s),veh/h/ln	1721	1770	1775	1774	1770	1506	1710	0	0	1774	0	1495
Q Serve(g_s), s	20.4	47.3	47.8	3.4	29.1	22.6	11.1	0.0	0.0	14.0	0.0	33.5
Cycle Q Clear(g_c), s	20.4	47.3	47.8	3.4	29.1	22.6	11.1	0.0	0.0	14.0	0.0	33.5
Prop In Lane	1.00		0.19	1.00		1.00	0.57		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	524	736	738	58	1049	446	263	0	0	887	0	374
V/C Ratio(X)	1.01	0.91	0.91	0.78	0.80	0.65	0.58	0.00	0.00	0.49	0.00	1.76
Avail Cap(c_a), veh/h	524	736	738	74	1049	446	383	0	0	887	0	374
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	0.00	0.97	0.00	0.97
Uniform Delay (d), s/veh	56.8	36.7	36.8	64.3	43.4	41.1	52.7	0.0	0.0	42.9	0.0	50.2
Incr Delay (d2), s/veh	41.2	16.8	17.4	17.4	4.3	5.0	0.8	0.0	0.0	0.4	0.0	352.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	26.4	26.9	1.9	14.9	10.0	5.3	0.0	0.0	6.9	0.0	50.5
LnGrp Delay(d),s/veh	98.1	53.4	54.3	81.7	47.8	46.1	53.5	0.0	0.0	43.3	0.0	402.9
LnGrp LOS	F	D	D	F	D	D	D			D		F
Approach Vol, veh/h		1867			1171			153			1091	
Approach Delay, s/veh		66.4			48.6			53.5			260.2	
Approach LOS		E			D			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	61.3		38.4	24.8	45.3		25.5				
Change Period (Y+Rc), s	4.4	5.6		4.9	4.4	* 5.6		4.9				
Max Green Setting (Gmax), s	5.6	45.1		33.5	20.4	* 31		30.0				
Max Q Clear Time (g_c+I1), s	5.4	49.8		35.5	22.4	31.1		13.1				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			110.4									
HCM 2010 LOS			F									
Notes												
User approved volume balancing among the lanes for turning movement.												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	801	0	980	0	0	0	0	2194	508	0	1149	331
Future Volume (vph)	801	0	980	0	0	0	0	2194	508	0	1149	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1		6.1					6.1			6.4	4.0
Lane Util. Factor	0.97		0.76					0.95			0.95	1.00
Frpb, ped/bikes	1.00		1.00					0.99			1.00	0.97
Flpb, ped/bikes	1.00		1.00					1.00			1.00	1.00
Frt	1.00		0.85					0.97			1.00	0.85
Flt Protected	0.95		1.00					1.00			1.00	1.00
Satd. Flow (prot)	3433		3610					3417			3539	1536
Flt Permitted	0.95		1.00					1.00			1.00	1.00
Satd. Flow (perm)	3433		3610					3417			3539	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	871	0	1065	0	0	0	0	2385	552	0	1249	360
RTOR Reduction (vph)	0	0	0	0	0	0	0	20	0	0	0	0
Lane Group Flow (vph)	871	0	1065	0	0	0	0	2917	0	0	1249	360
Confl. Peds. (#/hr)	20		20						20			20
Turn Type	Prot		Prot					NA			NA	Free
Protected Phases	1		6					2 4			8	
Permitted Phases												Free
Actuated Green, G (s)	21.3		69.3					66.2			18.2	100.0
Effective Green, g (s)	21.3		69.3					66.2			18.2	100.0
Actuated g/C Ratio	0.21		0.69					0.66			0.18	1.00
Clearance Time (s)	6.1		6.1								6.4	
Vehicle Extension (s)	2.0		2.0								3.0	
Lane Grp Cap (vph)	731		2501					2262			644	1536
v/s Ratio Prot	c0.25		0.30					c0.85			c0.35	
v/s Ratio Perm												0.23
v/c Ratio	1.19		0.43					1.29			1.94	0.23
Uniform Delay, d1	39.4		6.7					16.9			40.9	0.0
Progression Factor	1.00		1.00					1.33			0.86	1.00
Incremental Delay, d2	99.5		0.0					130.6			426.3	0.2
Delay (s)	138.8		6.7					153.1			461.3	0.2
Level of Service	F		A					F			F	A
Approach Delay (s)		66.2			0.0			153.1			358.1	
Approach LOS		E			A			F			F	

Intersection Summary			
HCM 2000 Control Delay	178.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.6
Intersection Capacity Utilization	108.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	566	62	60	169	33	495	50	1641	118	372	1573	183
Future Volume (veh/h)	566	62	60	169	33	495	50	1641	118	372	1573	183
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	724	0	0	184	36	538	54	1784	128	404	1710	199
Adj No. of Lanes	2	1	0	0	1	1	1	2	1	2	3	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	896	470	0	73	14	206	69	1453	640	279	2326	1951
Arrive On Green	0.25	0.00	0.00	0.05	0.05	0.05	0.04	0.41	0.41	0.05	0.31	0.31
Sat Flow, veh/h	3548	1863	0	1495	293	1583	1774	3539	1560	3442	5085	2726
Grp Volume(v), veh/h	724	0	0	220	0	538	54	1784	128	404	1710	199
Grp Sat Flow(s),veh/h/ln	1774	1863	0	1788	0	1583	1774	1770	1560	1721	1695	1363
Q Serve(g_s), s	19.2	0.0	0.0	4.9	0.0	4.9	3.0	41.0	5.3	8.1	30.1	2.8
Cycle Q Clear(g_c), s	19.2	0.0	0.0	4.9	0.0	4.9	3.0	41.0	5.3	8.1	30.1	2.8
Prop In Lane	1.00		0.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	896	470	0	88	0	206	69	1453	640	279	2326	1951
V/C Ratio(X)	0.81	0.00	0.00	2.51	0.00	2.61	0.78	1.23	0.20	1.45	0.74	0.10
Avail Cap(c_a), veh/h	1135	596	0	88	0	206	101	1453	640	279	2326	1951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	35.1	0.0	0.0	47.6	0.0	43.5	47.6	29.5	18.9	47.3	29.2	5.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	712.6	0.0	740.1	20.6	108.9	0.7	204.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	0.0	0.0	19.8	0.0	48.0	1.9	41.9	2.4	11.7	14.2	2.0
LnGrp Delay(d),s/veh	37.8	0.0	0.0	760.1	0.0	783.6	68.2	138.3	19.6	251.3	29.4	5.9
LnGrp LOS	D			F		F	E	F	B	F	C	A
Approach Vol, veh/h		724			758			1966			2313	
Approach Delay, s/veh		37.8			776.8			128.7			66.2	
Approach LOS		D			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	47.0		30.2	8.3	51.7		9.8
Change Period (Y+Rc), s	4.9	6.0		4.9	4.4	* 6		4.9
Max Green Setting (Gmax), s	8.1	34.3		32.0	5.7	* 38		4.9
Max Q Clear Time (g_c+I1), s	10.1	43.0		21.2	5.0	32.1		6.9
Green Ext Time (p_c), s	0.0	0.0		1.9	0.0	5.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	177.4
HCM 2010 LOS	F

Notes
User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	79.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	589	1423	55	221	1577
Future Vol, veh/h	0	589	1423	55	221	1577
Conflicting Peds, #/hr	0	20	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	200	360	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	640	1547	60	240	1714

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	813	0	0	1567	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	4.14	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	0	~ 322	-	-	417	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	~ 311	-	-	410	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 514.5	0	3.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	410	-
HCM Lane V/C Ratio	-	-	2.059	0.586	-
HCM Control Delay (s)	-	-	$ 514.5	25.5	-
HCM Lane LOS	-	-	F	D	-
HCM 95th %tile Q(veh)	-	-	46.3	3.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	456	1173	596	245	496	251	426	779	60	270	958	418
Future Volume (veh/h)	456	1173	596	245	496	251	426	779	60	270	958	418
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.94	1.00		0.94	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	496	1275	648	266	539	273	463	847	65	293	1041	454
Adj No. of Lanes	1	2	1	1	2	1	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	1340	573	172	961	406	423	781	60	531	635	269
Arrive On Green	0.41	0.76	0.76	0.10	0.27	0.27	0.12	0.24	0.24	0.15	0.27	0.27
Sat Flow, veh/h	1774	3539	1514	1774	3539	1495	3442	3313	254	3442	2377	1007
Grp Volume(v), veh/h	496	1275	648	266	539	273	463	452	460	293	767	728
Grp Sat Flow(s),veh/h/ln	1774	1770	1514	1774	1770	1495	1721	1770	1798	1721	1770	1614
Q Serve(g_s), s	28.6	43.8	36.9	13.6	18.3	15.9	17.2	33.0	33.0	11.0	37.4	37.4
Cycle Q Clear(g_c), s	28.6	43.8	36.9	13.6	18.3	15.9	17.2	33.0	33.0	11.0	37.4	37.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		0.62
Lane Grp Cap(c), veh/h	362	1340	573	172	961	406	423	417	424	531	473	431
V/C Ratio(X)	1.37	0.95	1.13	1.54	0.56	0.67	1.10	1.08	1.08	0.55	1.62	1.69
Avail Cap(c_a), veh/h	362	1340	573	172	961	406	423	417	424	531	473	431
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	15.9	8.2	63.2	43.8	22.1	61.4	53.5	53.5	54.7	51.3	51.3
Incr Delay (d2), s/veh	169.2	4.0	63.3	271.3	2.4	8.6	71.9	68.7	68.4	0.7	290.0	319.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	30.9	21.3	24.4	19.6	9.3	7.5	12.4	24.1	24.4	5.3	56.3	54.9
LnGrp Delay(d),s/veh	210.6	19.9	71.5	334.5	46.2	30.7	133.3	122.2	121.9	55.5	341.3	370.8
LnGrp LOS	F	B	F	F	D	C	F	F	F	E	F	F
Approach Vol, veh/h		2419			1078			1375			1788	
Approach Delay, s/veh		72.8			113.4			125.8			306.5	
Approach LOS		E			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	38.1	18.0	57.9	21.6	42.5	33.0	42.9
Change Period (Y+Rc), s	4.4	5.1	4.4	4.9	4.4	5.1	4.4	4.9
Max Green Setting (Gmax), s	21.6	33.0	13.6	53.0	17.2	37.4	28.6	38.0
Max Q Clear Time (g_c+I1), s	13.0	35.0	15.6	45.8	19.2	39.4	30.6	20.3
Green Ext Time (p_c), s	1.6	0.0	0.0	7.1	0.0	0.0	0.0	17.1

Intersection Summary			
HCM 2010 Ctrl Delay			153.1
HCM 2010 LOS			F

Intersection	
Int Delay, s/veh	19.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	349	100	60	447	230	120
Future Vol, veh/h	349	100	60	447	230	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	100	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	379	109	65	486	250	130

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	379	0	995	379
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	616	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1179	-	271	668
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1179	-	250	668
Mov Cap-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	498	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	69.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	250	668	-	-	1179	-
HCM Lane V/C Ratio	1	0.195	-	-	0.055	-
HCM Control Delay (s)	99.9	11.7	-	-	8.2	0
HCM Lane LOS	F	B	-	-	A	A
HCM 95th %tile Q(veh)	9.7	0.7	-	-	0.2	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	366	80	762	108	896	40	1090	450	168	730	244
Future Volume (veh/h)	190	366	80	762	108	896	40	1090	450	168	730	244
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	207	398	87	828	117	974	43	1185	489	183	793	265
Adj No. of Lanes	2	2	0	2	1	2	1	2	1	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	283	620	134	737	647	1267	80	942	410	205	1191	511
Arrive On Green	0.08	0.22	0.22	0.21	0.35	0.35	0.05	0.27	0.27	0.12	0.34	0.34
Sat Flow, veh/h	3442	2877	622	3442	1863	2721	1774	3539	1540	1774	3539	1520
Grp Volume(v), veh/h	207	243	242	828	117	974	43	1185	489	183	793	265
Grp Sat Flow(s),veh/h/ln	1721	1770	1730	1721	1863	1360	1774	1770	1540	1774	1770	1520
Q Serve(g_s), s	8.6	18.3	18.6	31.3	6.4	43.8	3.5	38.9	38.9	14.9	28.0	20.5
Cycle Q Clear(g_c), s	8.6	18.3	18.6	31.3	6.4	43.8	3.5	38.9	38.9	14.9	28.0	20.5
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	381	373	737	647	1267	80	942	410	205	1191	511
V/C Ratio(X)	0.73	0.64	0.65	1.12	0.18	0.77	0.54	1.26	1.19	0.89	0.67	0.52
Avail Cap(c_a), veh/h	283	429	419	737	692	1333	97	942	410	209	1191	511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.5	52.1	52.3	57.4	33.2	32.8	68.3	53.6	53.6	63.8	41.5	39.0
Incr Delay (d2), s/veh	8.3	2.6	3.0	72.6	0.1	2.7	2.1	124.8	108.5	33.5	3.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	9.2	9.2	22.3	3.3	16.9	1.8	35.3	28.9	9.2	14.1	9.1
LnGrp Delay(d),s/veh	73.8	54.8	55.3	130.0	33.3	35.5	70.3	178.4	162.1	97.3	44.4	42.7
LnGrp LOS	E	D	E	F	C	D	E	F	F	F	D	D
Approach Vol, veh/h		692			1919			1717			1241	
Approach Delay, s/veh		60.6			76.1			171.1			51.9	
Approach LOS		E			E			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	46.0	38.0	38.6	13.3	56.3	18.7	57.9
Change Period (Y+Rc), s	* 6.7	7.1	* 6.7	* 7.1	* 6.7	7.1	* 6.7	7.1
Max Green Setting (Gmax), s	* 17	38.9	* 31	* 35	* 8	48.1	* 12	54.3
Max Q Clear Time (g_c+I1), s	16.9	40.9	33.3	20.6	5.5	30.0	10.6	45.8
Green Ext Time (p_c), s	0.0	0.0	0.0	7.2	0.0	13.2	0.1	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	98.1
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	144.3
Intersection LOS	F

Movement	EBU	EBT	EBR	WBU	WBL	WBT	NBU	NBL	NBR
Lane Configurations									
Traffic Vol, veh/h	0	290	20	0	110	129	0	714	90
Future Vol, veh/h	0	290	20	0	110	129	0	714	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	315	22	0	120	140	0	776	98
Number of Lanes	0	1	0	0	1	1	0	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	2
HCM Control Delay	22.9	14.5	229.7
HCM LOS	C	B	F

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2
Vol Left, %	100%	0%	0%	100%	0%
Vol Thru, %	0%	0%	94%	0%	100%
Vol Right, %	0%	100%	6%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	714	90	310	110	129
LT Vol	714	0	0	110	0
Through Vol	0	0	290	0	129
RT Vol	0	90	20	0	0
Lane Flow Rate	776	98	337	120	140
Geometry Grp	7	7	4	7	7
Degree of Util (X)	1.508	0.157	0.625	0.254	0.279
Departure Headway (Hd)	6.994	5.776	7.795	8.961	8.443
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	528	625	468	404	429
Service Time	4.694	3.476	5.795	6.661	6.143
HCM Lane V/C Ratio	1.47	0.157	0.72	0.297	0.326
HCM Control Delay	257.5	9.5	22.9	14.7	14.4
HCM Lane LOS	F	A	C	B	B
HCM 95th-tile Q	40	0.6	4.2	1	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2257	1150	155	1688	680	86
Future Volume (veh/h)	2257	1150	155	1688	680	86
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.97	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2376	1211	163	1777	716	91
Adj No. of Lanes	2	1	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2033	1235	152	2453	777	357
Arrive On Green	0.57	0.57	0.17	1.00	0.23	0.23
Sat Flow, veh/h	3632	1528	1774	3632	3442	1583
Grp Volume(v), veh/h	2376	1211	163	1777	716	91
Grp Sat Flow(s),veh/h/ln	1770	1528	1774	1770	1721	1583
Q Serve(g_s), s	77.0	77.0	11.5	0.0	27.3	6.3
Cycle Q Clear(g_c), s	77.0	77.0	11.5	0.0	27.3	6.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2033	1235	152	2453	777	357
V/C Ratio(X)	1.17	0.98	1.07	0.72	0.92	0.25
Avail Cap(c_a), veh/h	2033	1235	152	2453	884	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.45	0.45	1.00	1.00
Uniform Delay (d), s/veh	28.5	12.8	55.5	0.0	50.7	42.6
Incr Delay (d2), s/veh	81.7	21.4	68.8	0.9	13.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	60.3	48.3	8.5	0.3	14.3	2.8
LnGrp Delay(d),s/veh	110.2	34.2	124.3	0.9	63.7	42.8
LnGrp LOS	F	C	F	A	E	D
Approach Vol, veh/h	3587			1940	807	
Approach Delay, s/veh	84.6			11.2	61.3	
Approach LOS	F			B	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.9	83.5				99.4		34.6
Change Period (Y+Rc), s	4.4	* 6.5				6.5		4.4
Max Green Setting (Gmax), s	11.5	* 73				88.7		34.4
Max Q Clear Time (g_c+I1), s	13.5	79.0				2.0		29.3
Green Ext Time (p_c), s	0.0	0.0				86.1		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		59.2
HCM 2010 LOS		E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX Z

NAVAJO PFFP PROJECT EXCERPT

CITY OF SAN DIEGO
FACILITIES FINANCING PROGRAM

TITLE: **ALVARADO CANYON ROAD REALIGNMENT**

DEPARTMENT: TRANSPORTATION & STORM WATER

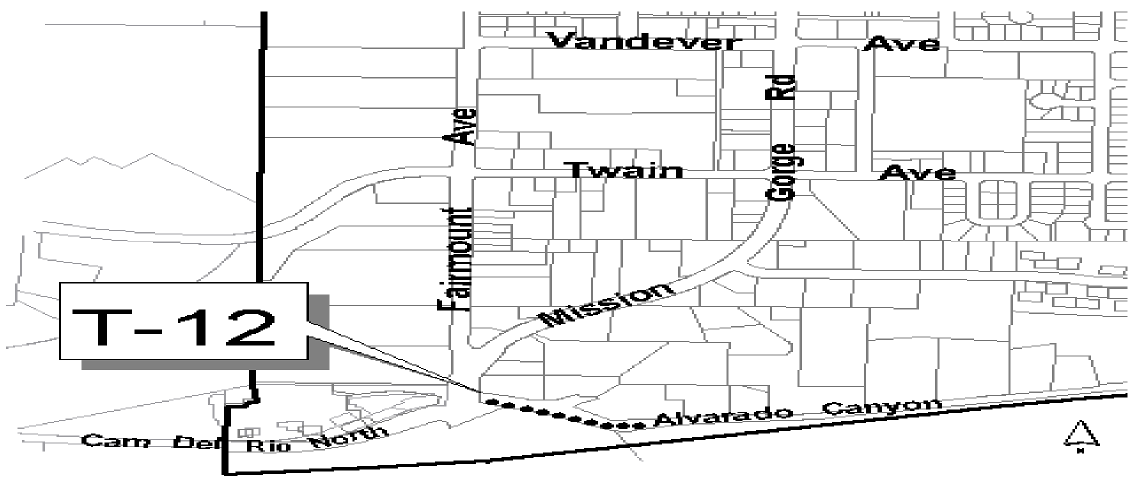
CIP/WBS#: S00894

PROJECT: T-12B
COUNCIL DISTRICT: 7
COMMUNITY PLAN: NAVAJO

DESCRIPTION: THIS PROJECT PROVIDES FOR THE REALIGNMENT OF ALVARADO CANYON ROAD FROM 380 FEET EAST OF THE FAIRMOUNT AVENUE AND CAMINO DEL RIO NORTH INTERSECTION TO THE FAIRMOUNT AVENUE AND MISSION GORGE ROAD INTERSECTION. IMPROVEMENTS FOR THIS TWO-LANE COLLECTOR STREET WILL INCLUDE A STRUCTURE OVER THE EXISTING CONCRETE DRAINAGE CHANNEL, REMOVAL OF SOME EXISTING PAVEMENT, AND TRAFFIC SIGNAL MODIFICATIONS.

JUSTIFICATION: THIS PROJECT WILL IMPROVE THE TRAFFIC FLOW AT THE INTERSTATE 8, FAIRMOUNT AVENUE AND MISSION GORGE ROAD INTERCHANGE. THIS PROJECT IS CONSISTENT WITH THE CITY'S GENERAL PLAN AND ROADWAY CLASSIFICATION REQUIREMENTS OF THE NAVAJO COMMUNITY PLAN AND IS NEEDED TO SERVE THE COMMUNITY AT FULL BUILDOUT.

SCHEDULE: PRELIMINARY ENGINEERING BEGAN IN FISCAL YEAR 2009 AND CONTINUED THROUGH FISCAL YEAR 2010. DESIGN WILL BEGIN ONCE THE NAVAJO COMMUNITY PLAN AMENDMENT IS FINALIZED AND ADDITIONAL FUNDING IS IDENTIFIED.



FUNDING:	SOURCE	EXPEN/ENCUM	CONT APPR	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
$445,068	PROP A	$445,068							
$80,654	TRANSNET	$80,654							
$18,740,000	UNIDEN								
$19,265,722	**TOTAL**	$525,722	$0	$0	$0	$0	$0	$0	$0

APPENDIX AA

MITIGATION INFEASIBILITY MEMO

Quality Infrastructure Corporation

April 30, 2018

SDSU Master Plan, Environmental Impact Report
Montezuma Road and College Avenue Traffic Mitigation, Feasibility Evaluation

Quality Infrastructure Corporation (QIC) has been requested to independently conduct a feasibility study to evaluate various mitigation measures to segments of Montezuma Road and College Avenue near the San Diego State University (SDSU) campus. QIC understands that an SDSU Master Plan Environmental Impact Report (EIR) has been prepared, and that various identified proposed improvements may be considered infeasible per CEQA guidelines.

Quality Infrastructure Corporation (QIC) is a local professional civil engineering firm with over ten years of business in San Diego County. QIC is focused on transportation planning, preliminary engineering, and final design. Our staff have experience working as City of San Diego Public Works staff, contractor employees, Caltrans District 11 staff, and consultant public works designers. During our growth and development, we have established a staff of engineers and designers who specialize in providing high-quality, cost-effective design solutions. With this current task, we have strived to use our expertise to provide a fair and reasonable evaluation of the transportation mitigation measures being considered.

The road segments being considered with this feasibility evaluation are: 1) Montezuma Road from Collwood Boulevard to 55th Street; 2) College Avenue from Del Cerro Boulevard to the I-8 westbound off-ramp; 3) College Avenue from Zura Way to Montezuma Road; and, 4) College Avenue from Montezuma Road to Cresita Drive.

According to CEQA, feasibility is defined as “capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors”. This definition of feasibility has been used to evaluate the identified mitigation measures.

Montezuma Road: Collwood Boulevard to 55th Street

Montezuma Road from Collwood Boulevard to 55th Street exists today as a four-lane roadway serving local and regional traffic, including commuters, students, and residents. The length is approximately 3200’ from Collwood Boulevard to 55th Street.

Montezuma Road traverses rolling topography with steep to moderate slopes for most of the segment. The existing road pavement width is approximately 75’ at its narrowest point. Exclusive left-turn lanes exist near intersections, and a portion of the segment includes approximately 2,500’ of sidewalk on the westbound side and approximately 1,400’ of sidewalk on the westbound side of the road. The eastbound side of the road includes a Class II bike lane, and the westbound side includes a Class II bike lane from Collwood Boulevard to 54th Street. On-street parking is not permitted for the entire segment.

The proposed mitigation measure includes adding an eastbound travel lane from Collwood Boulevard to 54th Street, with a 5' sidewalk on both sides of the road. The dimensions required for the proposed road improvements are wider than the current roadway condition. The existing road measures approximately 81' within 100' – 120' of public street right-of-way. The proposed improvements would require narrowing the existing raised landscaped median and require widening the road by 3' on both sides of the road. Road widening to implement the proposed improvements would require approximately 12,000 square feet of right-of-way acquisition (0.28 acres).

Steep slope adjacent to westbound Montezuma Road

Concrete slope adjacent to eastbound Montezuma Road

The existing road is immediately adjacent to steep slopes, and extensive earthwork, likely including retaining walls, would be required to widen Montezuma Road to mitigate impacts. Embankment construction built up and cutting into steep slopes to finish grade of the existing road would be required. A retaining wall up to 10' tall may be needed to reduce environmental impacts and right-of-way acquisition.

A project of this nature given existing conditions would be extremely difficult to construct due to the topography. The potential instability of the steep slope adjacent to the road would present design and construction challenges, and from an engineering perspective, would result in a high-risk endeavor.

Four below grade slope areas were identified and embankment built up to finish grade or retaining walls would be needed. The likely presence of native vegetation would be an important environmental concern. Resource Agency permitting for the project would be difficult if listed or endangered plants and/or animals are identified.

Additionally, a five-lane road in closer proximity to residential structures would further contribute to noise concerns, potential noise impacts, and to other social impacts.

In conclusion, constructing road improvements with these features at this location would be extremely difficult due to: 1) the cost of land acquisition, and relocation of existing utilities; 2) the extensive earthwork/retaining structure necessary; 3) social issues resulting from the proximity of the widened roadway to residential structures; and, 4) environmental concerns resulting from earthwork and/or retaining wall construction, potentially in the presence of native vegetation. Implementing this mitigation measure with these features would be extremely costly.

Based upon our evaluation of the proposed mitigation for Montezuma Road, between Collwood Boulevard and 55th Street, we conclude that implementation of the identified mitigation measure is not feasible, considering economic, environmental, and social factors.

College Avenue: Del Cerro Boulevard to I-8 westbound off-ramp

College Avenue from Del Cerro Boulevard to the I-8 westbound off-ramp exists today as a four-lane roadway serving local and regional traffic, including commuters, students traveling to and from SDSU, residents at the nearby homes, customers for nearby businesses, and others. College Avenue is approximately 1,400' in length from Del Cerro Boulevard to the I-8 westbound off-ramp.

College Avenue traverses rolling topography with steep slopes on two sides. The existing road pavement width is approximately 76' at its narrowest point. An entrance and exit ramp exist as the road approaches Interstate 8. The road includes a sidewalk on the northbound side of the road and approximately 130' of sidewalk on the southbound side of the road.

Slope adjacent to northbound College Avenue

The proposed mitigation measure includes the addition of a new 11' northbound travel lane. The dimensions for the proposed road improvements are wider than the existing roadway. The existing road measures approximately 80' within 100' – 115' of public street right-of-way. Construction of the proposed improvements would require widening the existing curb by approximately 6' and would require approximately 9,000 square feet of right-of-way acquisition (0.21 acres).

Drainage infrastructure adjacent to College Avenue

Extensive earthwork, likely including a major retaining wall, would be required for the proposed improvements. Embankment construction built up from the east slope to finish grade of the existing road would be required. A retaining wall up to 10' tall may be needed to reduce environmental impacts. Additionally, the need for extensive storm drain improvements may be required with implementation of proposed mitigation measures.

The potential instability of the steep slope adjacent to the road would present design and construction challenges, and from an engineering perspective, would result in a high-risk endeavor. In addition, impacts to native plant species are possible due to retaining wall construction and excavation activities. Resource Agency permitting for the project would be difficult if listed or endangered plants and/or animals are identified.

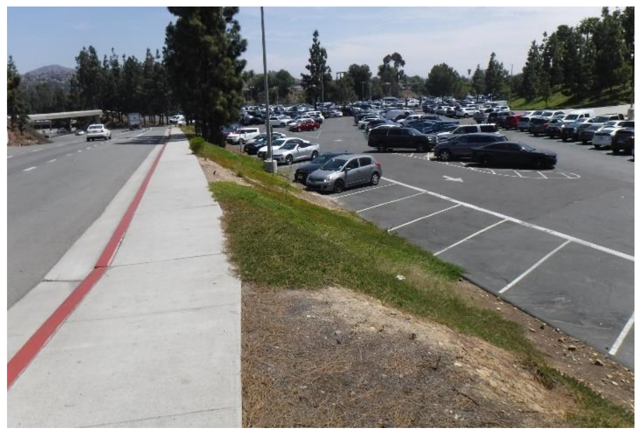
In conclusion, constructing road improvements of this nature given the existing conditions at this location would be difficult due to: 1) the cost of land acquisition to expand the right-of-way, and storm drain infrastructure improvements; 2) the extensive earthwork/retaining structure necessary; and, 3) environmental issues resulting from earthwork and/or retaining wall construction and the potential presence of native vegetation. Implementing this mitigation measure with these features would be extremely costly.

Based upon our evaluation of the proposed mitigation for College Avenue, between Del Cerro Boulevard and the I-8 westbound off-ramp, we conclude that implementation of the identified mitigation measure is not feasible, considering economic and environmental factors.

College Avenue: Zura Way to Montezuma Road

College Avenue from Zura Way to Montezuma Road exists today as a four-lane roadway serving local and regional traffic, including commuters, students, residents, customers for nearby businesses, and others. The length is approximately 1,300’ from Zura Way to Montezuma Road.

This segment of College Avenue traverses adjacent to the SDSU campus, businesses, and a steep slope separating the road and a below-grade parking lot. The existing road pavement width is approximately 70’ at its narrowest point. Exclusive left-turn lanes exist near intersections, and a portion of the segment includes approximately 570’ of sidewalk on the southbound side of the road. The northbound side of the road includes approximately 1,150’ of sidewalk and a Class II bike lane.



Slope and parking lot adjacent to northbound College Avenue

The proposed mitigation measure includes adding a 11’ northbound travel lane The dimensions for the proposed road improvements are significantly wider than the current roadway condition. The existing road measures approximately 70’-82’ within 80’-100’ of public street right-of-way., The proposed improvements would require widening the existing curb by approximately 17’ and would require approximately 20,000 square feet of right-of-way acquisition (0.46 acres). Acquiring this property would require demolition of existing commercial properties, relocation of businesses, and may conflict with parking spaces from the adjacent parking lot.

Commercial properties adjacent to northbound College Avenue

Furthermore, extensive earthwork, likely including a retaining wall and regrading, would be required to widen College Avenue. Embankment construction built up from the east slope to finish grade of the existing road would be required. A retaining wall of up to 20’ tall may be needed to reduce environmental and parking impacts. Additionally, the road crosses under a pedestrian bridge and regrading of the road may be needed to maintain standard vertical clearance.

A project of this nature is likely to face opposition from property owners and tenants.

College Avenue crossing under pedestrian bridge (looking south)

In conclusion, constructing road improvements with these features at this location would be extremely difficult due to: 1) the cost of land acquisition, demolition of commercial properties, relocation of existing businesses, and relocation of utilities; 2) the extensive earthwork/retaining structure necessary; and 3) parking impacts to the adjacent parking lot. Implementing this mitigation measure with these features would be extremely costly.

Based upon our evaluation of the proposed mitigation for College Avenue, between Zura Way and Montezuma Road, we conclude that implementation of the identified mitigation measure is not feasible, considering economic, environmental, and social factors.

College Avenue: Montezuma Road to Cresita Drive

College Avenue from Montezuma Road to Cresita Drive exists today as a four-lane roadway serving local and regional traffic, including commuters, students, residents, customers for nearby businesses, and others. The length is approximately 800' from Montezuma Road to Cresita Drive.

Private properties adjacent to southbound College Avenue

This segment of College Avenue is adjacent to apartment complexes, single-family homes and fraternity houses. The existing road pavement width is approximately 60' at its narrowest point. Existing on-street parking is allowed near Cresita Drive and the road includes sidewalks on both sides of College Avenue.

The proposed improvements include a 6' raised median on the southbound side of College Avenue. The dimensions for the proposed road improvements are significantly wider than the current roadway condition. The existing road measures approximately 60'-70' within 90' of public street right-of-way. The proposed mitigation measure would require widening the existing curb by approximately 10' and would require approximately 4,000 square feet of right-of-way acquisition (0.09 acres). Acquiring this property would require demolition and relocation of existing private properties driveways and would bring the road closer to residential structures. Additionally, existing properties adjacent to College Avenue are above the road grade, and minor retaining walls may be needed.

A project of this nature is likely to face opposition from property owners and residents. A four-lane road in closer proximity to residential structures would further contribute to noise concerns, potential noise impacts, and to other social impacts.

In conclusion, constructing road improvements with these features at this location would be difficult due to: 1) the cost of land acquisition, demolition of private properties and relocation of existing utilities; and, 2) noise and other social impacts resulting from the proximity of the road. Implementing this mitigation measure with these features would be significantly costly.

Based upon our evaluation of the proposed mitigation for College Avenue, between Montezuma Road and Cresita Drive, we conclude that implementation of the identified mitigation measure is not feasible, considering economic and social factors.

Sincerely,

Kirk Bradbury

Kirk Bradbury, PE
Principal Engineer
Quality Infrastructure Corporation

QIC

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La Mesa, CA 91942
Office: (619) 741-9400
www.qualityinfrastructure.com

BOYLE

7807 Convoy Court, Suite 200
San Diego, CA 92111-1286
TEL: (858) 268-8080
FAX: (858) 292-7432
www.boyleengineering.com

November 13, 2007

SDSU Master Plan, Environmental Impact Report
Alvarado Road and Montezuma Road Traffic Mitigation, Feasibility Evaluation

We understand that an SDSU Master Plan Final Environmental Impact Report (EIR) has been prepared, and that several identified traffic mitigation measures may be considered infeasible per CEQA guidelines. We have been requested to independently evaluate the feasibility of implementing the mitigating measures to segments of Alvarado Road and Montezuma Road, near the SDSU campus.

Boyle Engineering Corporation has over 60 years of experience in providing professional engineering services in San Diego County. We have provided transportation planning and design services for road widening and extension projects for many public agency clients. With this current endeavor, we have strived to use our experience and expertise to provide a fair and reasonable evaluation of the transportation mitigation measures being considered.

The road segments being considered with this feasibility evaluation are: 1) Montezuma Road from Fairmount Avenue to Collwood Boulevard and 2) Alvarado Road from East Campus Drive to 70th Street.

Section 3.14 Transportation/Circulation and Parking of the EIR identifies the mitigation measures considered for each of the two evaluated road segments. In order to fully mitigate the horizon year impact to Montezuma Road, from Fairmount Avenue to Collwood Boulevard, the current four-lane roadway would require widening to City six-lane Major road standards. For Alvarado Road, the current two-lane road would need to be widened to City four-lane Collector road standards in order to fully mitigate horizon year impacts. Below, each of these road segments is examined, and the feasibility of implementing the identified mitigation is evaluated.

According to CEQA, feasibility is defined as ‘capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors’. This definition of feasibility has been used to evaluate the identified mitigation measures.

MONTEZUMA ROAD: Fairmount Avenue to Collwood Boulevard

Montezuma Road from Fairmount Avenue to Collwood Boulevard exists today as a four-lane roadway serving local and regional traffic, including commuters, students, and residents. The length is approximately 3100’ from Fairmount Avenue to Collwood Boulevard. Montezuma Road is classified as a four-lane Major road in the College Area Community Plan.

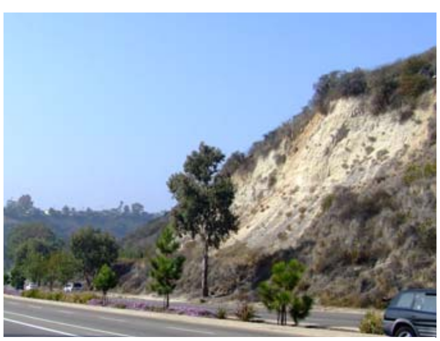
Montezuma Road traverses rolling topography through a canyon with steep slopes on all sides. The existing road pavement width is 78’ at its narrowest point. Auxiliary lanes exist at the ramp approaches near Fairmount Avenue, and a portion of the segment includes about 800’ of sidewalk.

Per the 2002 San Diego Street Design Manual, a six-lane Major road requires a curb-to-curb width of 112’ within 140’ of public right-of-way. These standard dimensions for the fully mitigated road are significantly wider than the current conditions, which include the 80’ road width within 120’ of right-of-way. Road widening to fully mitigate the SDSU Master Plan horizon year impacts would require approximately 186,000 SF of right-of-way acquisition (4.3 acres).

Southern slope adjacent Montezuma Road

Extensive earthwork, likely including major retaining walls, would be required to widen Montezuma Road to fully mitigate impacts. Embankment construction built up from the south slope to finish grade of the existing road and/or cutting into a steep slope on the north side of Montezuma Road would be required. Retaining walls up to 20’ tall may be needed to reduce right-of-way acquisition requirements and environmental impacts.

Montezuma Road connects to Fairmount Avenue via a partial loop interchange at the west end of the road segment. Widening Montezuma Road would require: 1) widening the bridge structure to add an additional westbound lane connecting to southbound Fairmount Avenue; 2) adding an additional lane on the westbound to northbound ramp; and 3) adding an additional lane on the northbound to eastbound ramp.



Northern Slope adjacent Montezuma Road

Constructing a project with these features at this location would be extremely difficult due to several factors. These factors include: 1) the cost of land acquisition to expand the right-of-way; 2) the extensive earthwork/retaining structures necessary; and 3) the cost of widening the bridge structure. In addition, the potential instability of the steep slopes would present significant engineering challenges and from an engineering perspective, would create a high risk endeavor. Significant environmental impacts are possible due to the widening within the adjacent protected open space. Resource Agency permitting for the project will likely be challenging if listed or endangered plants or animals are identified.

To quantitatively evaluate the economic feasibility to fully mitigate impacts, an order of magnitude cost estimate was developed. Considering major capital costs with normal contingencies added, it was estimated that constructing a six-lane Montezuma Road between Fairmount Avenue and Collwood Boulevard will cost $15,377,000. On a $/SF of pavement cost basis, this is $123/SF. For comparative purposes, a typical road widening project costs approximately $15 to $20/SF.

Based upon our evaluation of the feasibility of a fully mitigated Montezuma Road, between Fairmount Avenue and Collwood Boulevard, we conclude that implementation of the identified mitigation measure is not feasible, considering economic, physical, and environmental factors.

ALVARADO ROAD: East Campus Drive to 70th Street

Alvarado Road from East Campus Drive to 70th Street exists today as a two-lane roadway serving students traveling to and from SDSU, residents at the adjacent condominium complexes, hospital and medical building patrons, customers for nearby businesses, and others. Alvarado Road is approximately 4000’ in length from East Campus Drive to Reservoir Drive continuing on for 3250’ to 70th Street, totaling approximately 7250’ in length. Alvarado Road is classified as a three-lane Collector road in the College Area Community Plan.

From East Campus Drive to the east, Alvarado Road is located immediately adjacent to the eastbound Interstate 8/College Boulevard entrance ramp, and proceeds to serve as a frontage road to Interstate 8. The road crosses under the MTS trolley tracks and continues adjacent the tracks to the intersection at Reservoir Drive. Beyond Reservoir Drive, easterly to 70th Street, Alvarado Road traverses a corridor adjacent the trolley tracks to the north and medical buildings/ condominiums to the south, all with narrow setbacks from the roadway.

Alvarado Road with structure approximately 40’ setback from existing right-of –way (looking east)

Alvarado Road crossing under rail bridge (looking east)

Per the 2002 San Diego Street Design Manual, a four-lane Collector road has a curb-to-curb width of 82’ within 110’-122’ of public right-of-way. These standard dimensions for the fully mitigated road are significantly wider than the existing roadway which measures approximately 42’ within 50’ of right-of-way. Road widening to fully mitigate the SDSU Master Plan horizon year impacts would require approximately 399,000 square feet (SF) of right-of-way acquisition (9.1 acres). Acquiring this property would eliminate a large amount of parking for the Alvarado Medical Park, create the need to demolish residential structures, as well as require the elimination of approximately 150 on-street existing parking spaces. Relocation of residences and/or commercial properties would be necessary as well.

Furthermore, the MTS trolley grade-separated crossing restricts the road width due to the existing column spacing of bridge structure. Per the 2002 San Diego Street Design Manual, a four-lane Collector has a design speed of 35 mph and a minimum horizontal radius of 610'. Aligning the widened road to fit between the bridge columns would be difficult to achieve while maintaining the minimum design standards.

Alvarado Road crossing under rail bridge (looking west)

Constructing a project of this nature given the existing conditions is likely to be extremely costly and would result in further environmental issues. A four-lane road in close proximity to inhabited structures would further contribute to other environmental impacts.

A comparative cost estimate was attempted for Alvarado Road widening in the same way as was the Montezuma Road widening. In order to achieve the required right-of-way width, nine residential multi-unit structures of a condominium community would have to be purchased, demolished, and the residents relocated at project expense. Portions of the land acquisition associated with widening could not be quantitatively accounted for without extensive research beyond the scope of this investigation. However, we expect the $/SF for improvements to Alvarado Road would substantially exceed the $123/SF estimated for Montezuma Road due to the large amount of residential property needed for acquisition.

Based upon our evaluation of the feasibility of a fully mitigated Alvarado Road, we conclude that implementation of the identified mitigation measure is not feasible, considering economic, environmental, physical constraints, and social factors.

In conclusion, it is our professional opinion, for the reasons described in this letter, that implementation of the subject roadway improvements is infeasible.

Boyle Engineering Corporation

Kirk F. Bradbury

Kirk Bradbury, PE
Principal Engineer
Attached: Montezuma Road Cost Estimate, 11/13/07

SDSU Master Plan
Environmental Impact Report
Montezuma Road Traffic Mitigation-Cost Estimate

24 foot Road Widening Costs	QUANTITY	UNIT	2007 UNIT PRICE	COST	Comment	Length ft	Width ft	Depth ft
Cut export	33,168	CY	$30	$995,040	Excavation to widen ROW into cliffside	3100	20	15
Roadway Excavation	6,700	CY	$25	$167,500	Excavation due to added lanes	10050	12	1.5
AC Pavement and Base	120,600	SF	$5	$603,000	18 inch section (6" AC and 12"AB)	10050	12	1.5
AC Overlay	241,200	SF	$2	$482,400	2" overlay existing roadway	10050	24	0.17
Curb/Gutter	10,050	LF	$18	$175,875		10050		
Sidewalk	60	CY	$425	$25,500	Remove and replace existing SW	650	5	0.5
Storm Drains (per LF road)	*10% of Earthwork Cost*			$208,221				
Masonry Retaining Wall	55,280	SF	$80	$4,422,400	3100 feet of wall averaging 17.8 feet tall	3100	17.8	na
Structural Backfill	20,437	CY	$45	$919,667	The 10' width of fill behind ret wall	3100	17.8	10
Structure Widening	4,800	SF	$150	$720,000	Bridge widening by one lane	400	12	na
Traffic Control	*5% of Construction Costs*			$435,980				
Misc. Items	*15% of Construction Costs*			$1,307,940	(Includes striping, signage, lighting, guardrail, fencing, etc)			
Construction Contingency	*35% of Construction Cost*			$3,051,861				
ROW acquisition	186,179	SF	$10	$1,861,790	15 width to the north and 20' min 70' max to the south (determined graphically)	3100	60	na
TOTAL				**$15,377,174**				
New Roadway	125,400 SF							

Price per Square Foot of Roadway	**$123 /SF**

APPENDIX BB

ADAPTIVE SIGNAL CONTROLS – USDOT BROCHURE

FAQs

Where are adaptive signal control technologies most effective?

Adaptive signal control technologies are best suited for arterials that experience highly variable or unpredictable traffic demand for which multiple signal timing solutions are necessary during a typical time-of-day period.

How well does adaptive signal control technology improve system performance?

Many studies have shown that adaptive signal control improves average performance metrics (travel time, control delay, emissions, and fuel consumption) by 10 percent or more. In systems with extremely outdated signal timing, and under saturated conditions, the improvement can be 50 percent or more. Improvement might not be as dramatic in areas where traffic demand is stable and predictable during typical time-of-day periods, performance is regularly monitored, and signal timing is well maintained.

How widely are these technologies used?

Adaptive signal control technologies are widely used in the United Kingdom, Asia, and Australia. In the United States, adaptive signal control technologies are being used on less than one percent of all signalized intersections. The cost of hardware can be an issue, but other barriers include the expertise necessary to configure and maintain the system, a lack of active performance measurement, and myths about the benefits of adaptive signal control technology.

How do I plan to implement adaptive signal control technology?

As with any traffic operations strategy, it is essential that a signal operator identify performance outcomes they wish to achieve; determine their current needs, requirements, and long-range possibilities for their system; identify and pursue regional collaboration and integration; insert into agency plans all the resources necessary to successfully deploy and maintain the system throughout its lifecycle; and monitor performance of the deployed system.

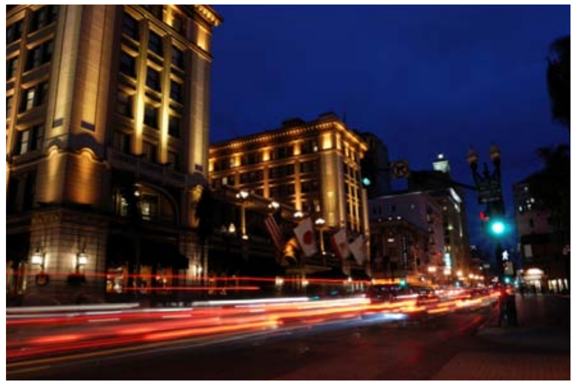
Where can I go for assistance in this planning process?

Contact your FHWA Division Office, who can help you identify experts in planning, operation, and technical issues.

Contact Information

For training or more information on this Every Day Counts Initiative, please contact your local FHWA Division Office.

To learn more about EDC, visit:
http://www.fhwa.dot.gov/everydaycounts



Traffic flows smoothly through green lights.

About Every Day Counts

Every Day Counts is designed to identify and deploy innovation aimed at shortening project delivery, enhancing the safety of our roadways, and protecting the environment.

innovation ingenuity Every Day Counts imagination invention

innovation ingenuity Every Day Counts imagination invention

ASCT

Adaptive Signal Control Technologies

U.S. Department of Transportation
Federal Highway Administration

What are Adaptive Signal Control Technologies?

The variability and unpredictability of traffic demand on arterial systems often outpace the ability of local and State agencies to update signal timings so that signalized intersections operate efficiently and do not cause congestion and delays to motorists and pedestrians. The 2007 National Traffic Signal Report Card rated the Nation's traffic signal management and operations practices with a letter grade of "D" and estimated that poor traffic signal timing contributes to as much traffic congestion and more than 295 million vehicle-hours of delay on major roadways alone. Conventional signal systems do not use pre-programmed, daily signal timing schedules that do not monitor system performance, nor can they adjust automatically to accommodate traffic patterns that are different from the peak periods during which they were designed to operate. Adaptive signal control technologies adjust when green lights start and end to accommodate current traffic patterns to promote smooth flow and ease traffic congestion. The main benefits of adaptive signal control technology over conventional signal systems are that it can:

- Automatically adapt to unexpected changes in traffic conditions.
- Improve travel time reliability.
- Reduce congestion and fuel consumption.
- Prolong the effectiveness of traffic signal timing.
- Reduce the complaints that agencies receive in response to outdated signal timing.
- Make traffic signal operations proactive by monitoring and responding to gaps in performance.

Adaptive Control Software Lite (ACSLite) is a specific adaptive signal control technology developed by the FHWA through a public-private partnership. ACSLite takes advantage of typical signal system architecture and works with existing control, detection, and communications configurations to cost-effectively deliver adaptive control that is easy-to-deploy and produces comparable performance to traditional adaptive systems.

How Does It Work?

By receiving and processing data from sensors to optimize and update signal timing settings, adaptive signal control technologies can determine when and how long lights should be green. Adaptive signal control technologies help improve the quality of service that travelers experience on our local roads and highways.

The process is simple. First, traffic sensors collect data. Next, traffic data is evaluated and signal timing improvements are developed. Finally, the adaptive signal control technology implements signal timing updates. The process is repeated every few minutes to keep traffic flowing smoothly. Traditional signal retiming might only repeat this process every 3 to 5 years.

The traditional signal timing process is time-consuming and requires substantial amounts of manually collected traffic data. Traditional time-of-day signal timing plans do not accommodate variable and unpredictable traffic demands. This results in customer complaints, frustrated drivers, excess fuel consumption, increased delays, and degraded safety. Customer complaints is the most frequently cited performance measure in operations surveys conducted by the FHWA. In the absence of complaints, months or years might pass before inefficient traffic signal timing settings are updated. With adaptive signal control technologies, information is persistently collected and signal timing is updated continually.

A wide variety of adaptive signal control technologies are available to operate in varied environments.

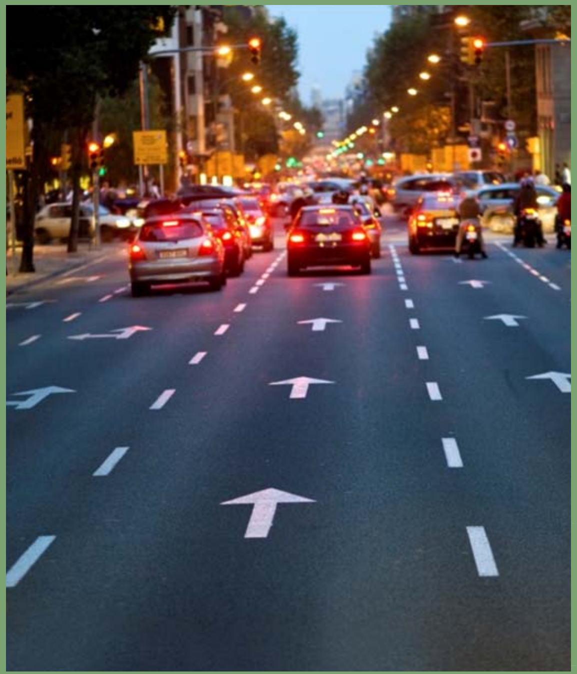
Why Adaptive Signal Control Technologies?

- Adaptive signal control technologies deliver improved service to road users.
  - Outdated traffic signal timing currently accounts for more than 10 percent of all traffic delays. On average, adaptive signal control technologies improve travel time by more than 10 percent. In areas with particularly outdated signal timing, improvements can be 50 percent or more.
  - Adaptive signal control technologies also react to unexpected events, such as crashes and special events. By adjusting traffic signal timing in real-time to reflect actual conditions on the road, travelers enjoy a more reliable trip.
  - Studies indicate that crashes could be reduced by up to 15 percent through improved signal timing. Adaptive signal control technology can reduce the intersection congestion that causes many crashes.
- Adaptive signal control technologies solve problems for signal operators.
  - Performance management and acquiring the information necessary to measure performance are challenges facing many transportation agencies. Adaptive signal control technologies capture a rich set of data that signal operators can use to monitor their performance.
  - By solving traffic problems as they occur, adaptive signal control can reduce citizen complaints and frustration. Adaptive signal control technology is a proactive step that signal operators can take to improve service.
- Adaptive signal control technologies provide value.
  - The costs of congestion and delay to road users are substantial, and adaptive signal control technology delivers benefits to users that far outweigh its cost.
  - Adaptive signal control technologies also provide value directly to signal operators. By extending the effectiveness of traffic signal timing plans, implementing adaptive signal control technologies can yield direct savings by reducing the frequency of manually retiming signals.

ACS Lite and Alternative Adaptive Traffic Signal Control Technologies

ACSLite was developed to improve progression and phase utilization for small scale arterial systems of 30 or fewer traffic signals, producing smoother flow and fewer traffic delays. Large scale adaptive signal systems can handle hundreds of traffic signals, are typically fully integrated into central systems, and operate on a second-by-second basis. ACSLite makes timing updates every few minutes while large scale systems are capable of making timing updates every cycle. The Lite in ACSLite implies that it has less of a communications and detection burden, and utilizes empirical methods that do not need to be calibrated, thereby making it less complex to operate and maintain.

Like other systems, ACSLite operates in real time, adjusting signal timing to accommodate changing traffic patterns and ease traffic congestion. However, ACSLite works with conventional control equipment, communications, and traffic sensors from a range of manufacturers, making it a cost-effective and flexible alternative.



When adaptive signal control technologies are used, overall travel times decrease.

In the United States, several adaptive systems are available from multiple vendors. Agencies should evaluate their needs, system requirements and operations, and maintenance capabilities through a system engineering process to evaluate if and which adaptive signal control technology will work best for their situation. Each system has specific requirements, and each will produce improved levels of performance that are consistent with agency commitment to management and operations programs.

Split Cycle Offset Optimization Technique (SCOOT) is the most widely deployed adaptive system in existence. It was developed in the United Kingdom. The Sydney Coordinated Adaptive Traffic System (SCATS) was developed in Australia, and matches traffic patterns to a library of signal timing plans and scales split plans over a range of cycle times. Another effective system is the Real Time Hierarchical Optimized Distributed Effective System (RHODES), which uses a peer-to-peer communications approach to communicate traffic volumes from one intersection to another in real time. There are many others in existence and in development.

Adaptive signal control technologies can reduce stop time at intersections.

Responses to Comments Materials

TABLE A
PROJECT INGRESS / EGRESS TRAFFIC VOLUME COMPARISON

Intersection	Existing (2007 Master Plan)		Existing (DAA)		Δ		%	
	In	Out	In	Out	In	Out	In	Out
4. 55th Street / Montezuma Road	1,617	977	1,323	884	-294	-93	-18%	-10%
5. Campanile Drive / Montezuma Road	449	407	625	504	176	97	39%	24%
9. College Avenue / Canyon Crest Drive *(west leg)*	1,304	602	680	518	-624	-84	-48%	-14%
9. College Avenue / Canyon Crest Drive *(east leg)*	873	692	921	711	48	19	5%	3%
10. College Avenue / Zura Way	850	574	570	529	-280	-45	-33%	-8%
Total	***5,093***	***3,252***	***4,119***	***3,146***	***-974***	***-106***	***-19%***	***-3%***
Average	***835***		***727***		***-108***		***-13%***	

TABLE B–1
PROJECT LOCAL DISTRIBUTION COMPARISON – AM PEAK HOUR (CAMPUS INBOUND)

Corridor	Existing (2007 Master Plan)		Existing (DAA)	
College Avenue[a]	1,843*	66%	1,217*	68%
Montezuma Road[b]	942*	34%	585*	32%

Footnotes:

a. College Avenue corridor includes intersection #9 SBR and SBL; intersection #10 SBL.

b. Montezuma Road corridor includes intersection #4 EBL; intersection #5 EBL.

TABLE B–2
PROJECT LOCAL DISTRIBUTION COMPARISON – PM PEAK HOUR (CAMPUS OUTBOUND)

Corridor	Existing (2007 Master Plan)		Existing (DAA)	
College Avenue[a]	1,205*	73%	1,074*	66%
Montezuma Road[b]	448*	27%	553*	34%

Footnotes:

a. College Avenue corridor includes intersection #9 WBR and EBL; intersection #10 WBR.

b. Montezuma Road corridor includes intersection #4 SBR; intersection #5 SBR.

Parking Permits

	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall2012	Fall 2013	Fall 2014	Fall 2015
Student Permits	18609	17014	16997	15484	15507	15328	14850	14858	14509

Source: SDSU Facilities Planning, Design and Construction (April 2018)

24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 1. Remington Road just west of 55th Street

Orientation: *East-West*

Date of Count: *Tuesday, December 13, 2016*

Analysts: *DASH*

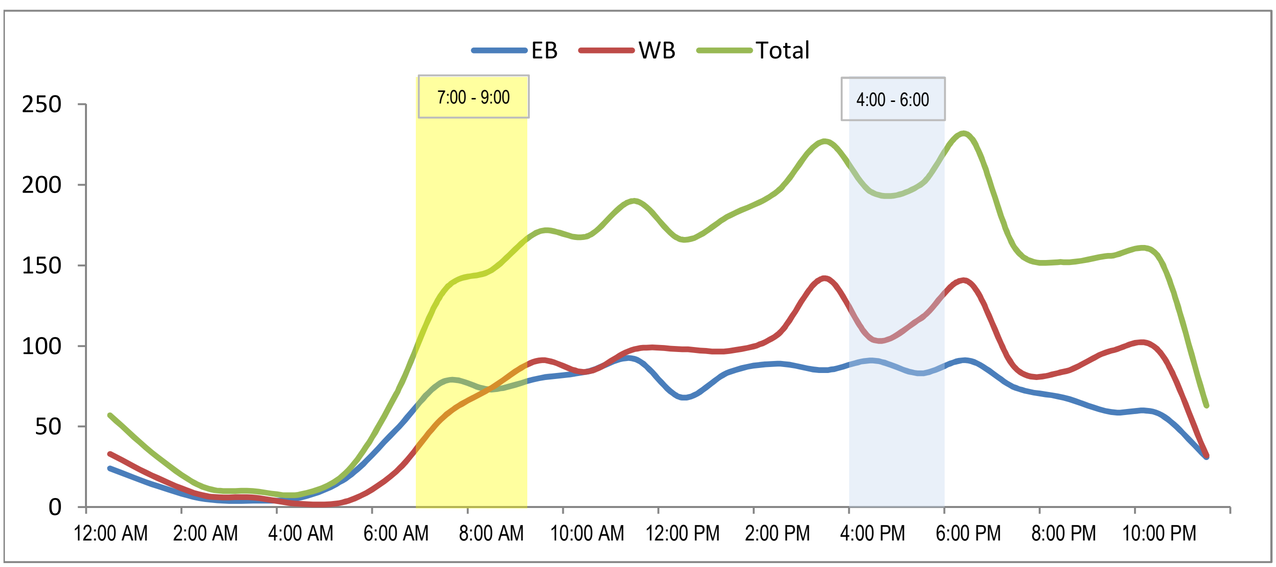
Weather: *Sunny*

AVC Proj. No: *16-0608*

24 Hour Segment Volume										3,103
Time			Hourly Volume			Time			Hourly Volume	
			EB	WB	Total				EB	WB	Total

Time			EB	WB	Total	Time			EB	WB	Total
12:00 AM	-	1:00 AM	24	33	57	12:00 PM	-	1:00 PM	68	98	166
1:00 AM	-	2:00 AM	13	18	31	1:00 PM	-	2:00 PM	84	97	181
2:00 AM	-	3:00 AM	5	7	12	2:00 PM	-	3:00 PM	89	107	196
3:00 AM	-	4:00 AM	4	6	10	3:00 PM	-	4:00 PM	85	142	227
4:00 AM	-	5:00 AM	6	2	8	4:00 PM	-	5:00 PM	91	104	195
5:00 AM	-	6:00 AM	19	4	23	5:00 PM	-	6:00 PM	83	117	200
6:00 AM	-	7:00 AM	48	22	70	6:00 PM	-	7:00 PM	91	140	231
7:00 AM	-	8:00 AM	78	56	134	7:00 PM	-	8:00 PM	74	86	160
8:00 AM	-	9:00 AM	73	74	147	8:00 PM	-	9:00 PM	68	84	152
9:00 AM	-	10:00 AM	80	91	171	9:00 PM	-	10:00 PM	59	97	156
10:00 AM	-	11:00 AM	84	84	168	10:00 PM	-	11:00 PM	58	97	155
11:00 AM	-	12:00 PM	92	98	190	11:00 PM	-	12:00 AM	31	32	63
Total			**526**	**495**	**1,021**	**Total**			**881**	**1,201**	**2,082**

24-Hour	EB	Volume	1,407	24-Hour	WB	Volume	1,696



24 Hour Segment Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136

Location: 3. 55th Street btw Lindo Paseo to Montezuma Road

Orientation: *North-South*

Date of Count: *Tuesday, December 13, 2016*

Analysts: *DASH*

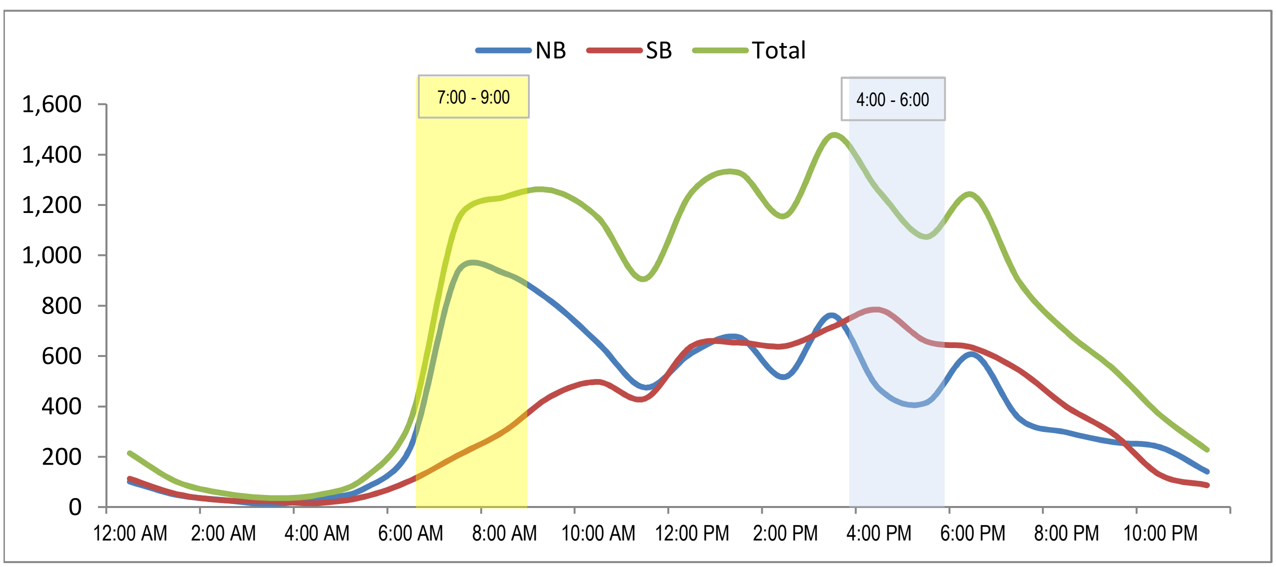
Weather: *Sunny*

AVC Proj. No: *16-0608*

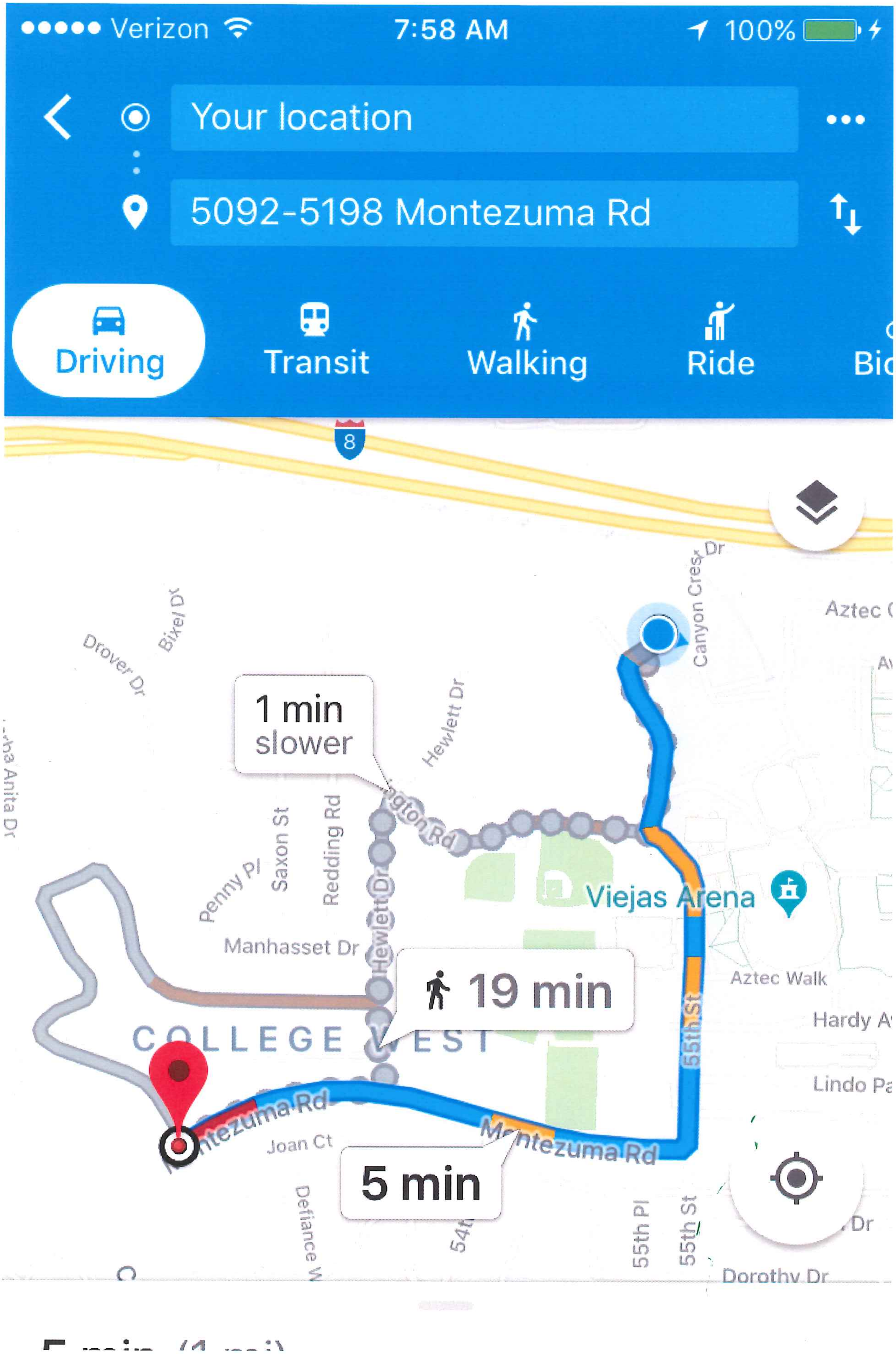
24 Hour Segment Volume: 18,108

Time	Hourly Volume NB	SB	Total	Time	Hourly Volume NB	SB	Total
12:00 AM - 1:00 AM	101	113	214	12:00 PM - 1:00 PM	612	639	1,251
1:00 AM - 2:00 AM	49	52	101	1:00 PM - 2:00 PM	675	653	1,328
2:00 AM - 3:00 AM	28	27	55	2:00 PM - 3:00 PM	517	640	1,157
3:00 AM - 4:00 AM	13	23	36	3:00 PM - 4:00 PM	762	715	1,477
4:00 AM - 5:00 AM	32	16	48	4:00 PM - 5:00 PM	470	784	1,254
5:00 AM - 6:00 AM	73	41	114	5:00 PM - 6:00 PM	414	659	1,073
6:00 AM - 7:00 AM	240	106	346	6:00 PM - 7:00 PM	607	633	1,240
7:00 AM - 8:00 AM	933	205	1,138	7:00 PM - 8:00 PM	351	542	893
8:00 AM - 9:00 AM	929	302	1,231	8:00 PM - 9:00 PM	297	399	696
9:00 AM - 10:00 AM	817	441	1,258	9:00 PM - 10:00 PM	258	291	549
10:00 AM - 11:00 AM	652	497	1,149	10:00 PM - 11:00 PM	238	128	366
11:00 AM - 12:00 PM	475	431	906	11:00 PM - 12:00 AM	141	87	228
Total	**4,342**	**2,254**	**6,596**	**Total**	**5,342**	**6,170**	**11,512**

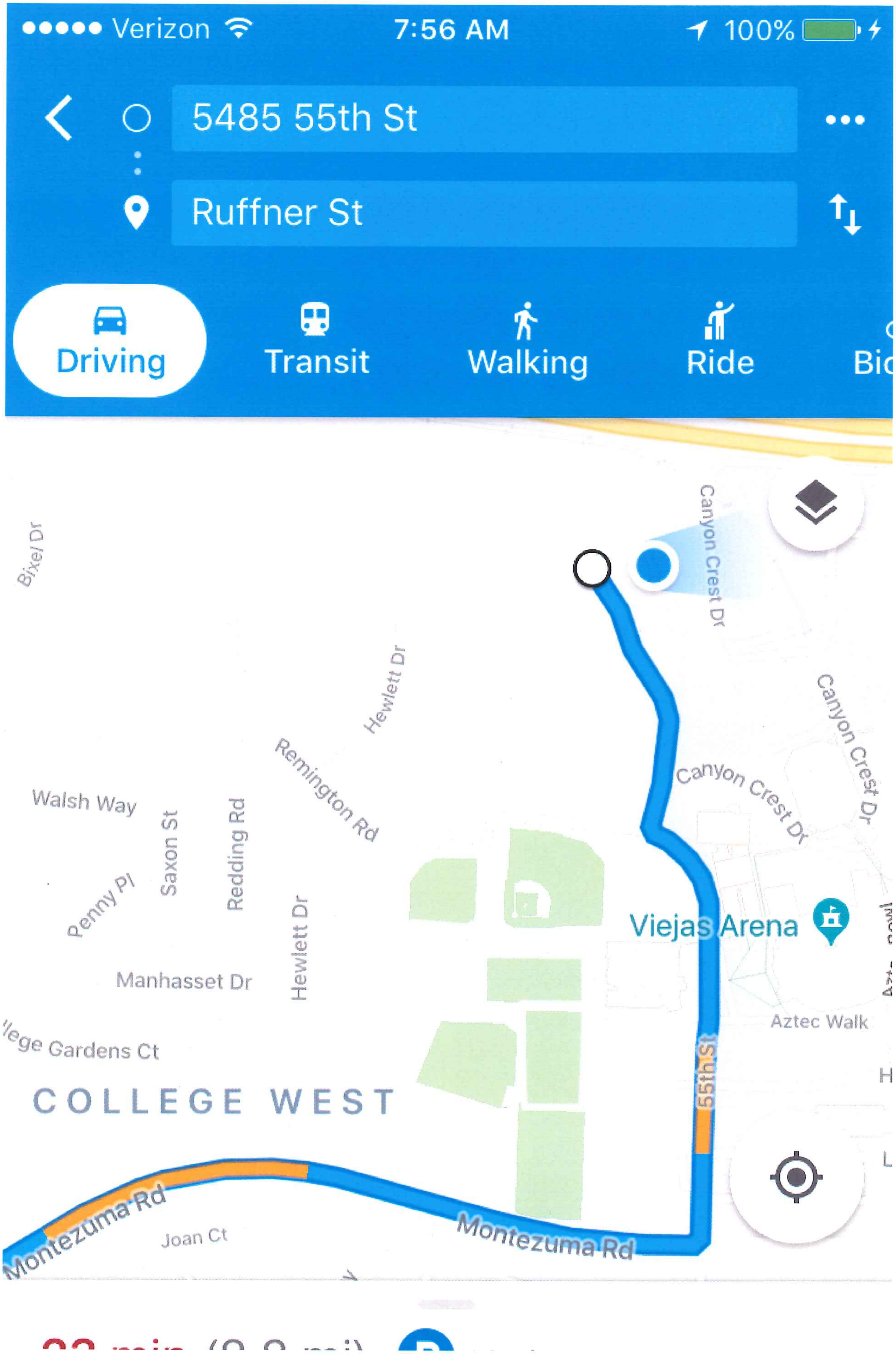
24-Hour NB Volume	9,684	24-Hour SB Volume	8,424



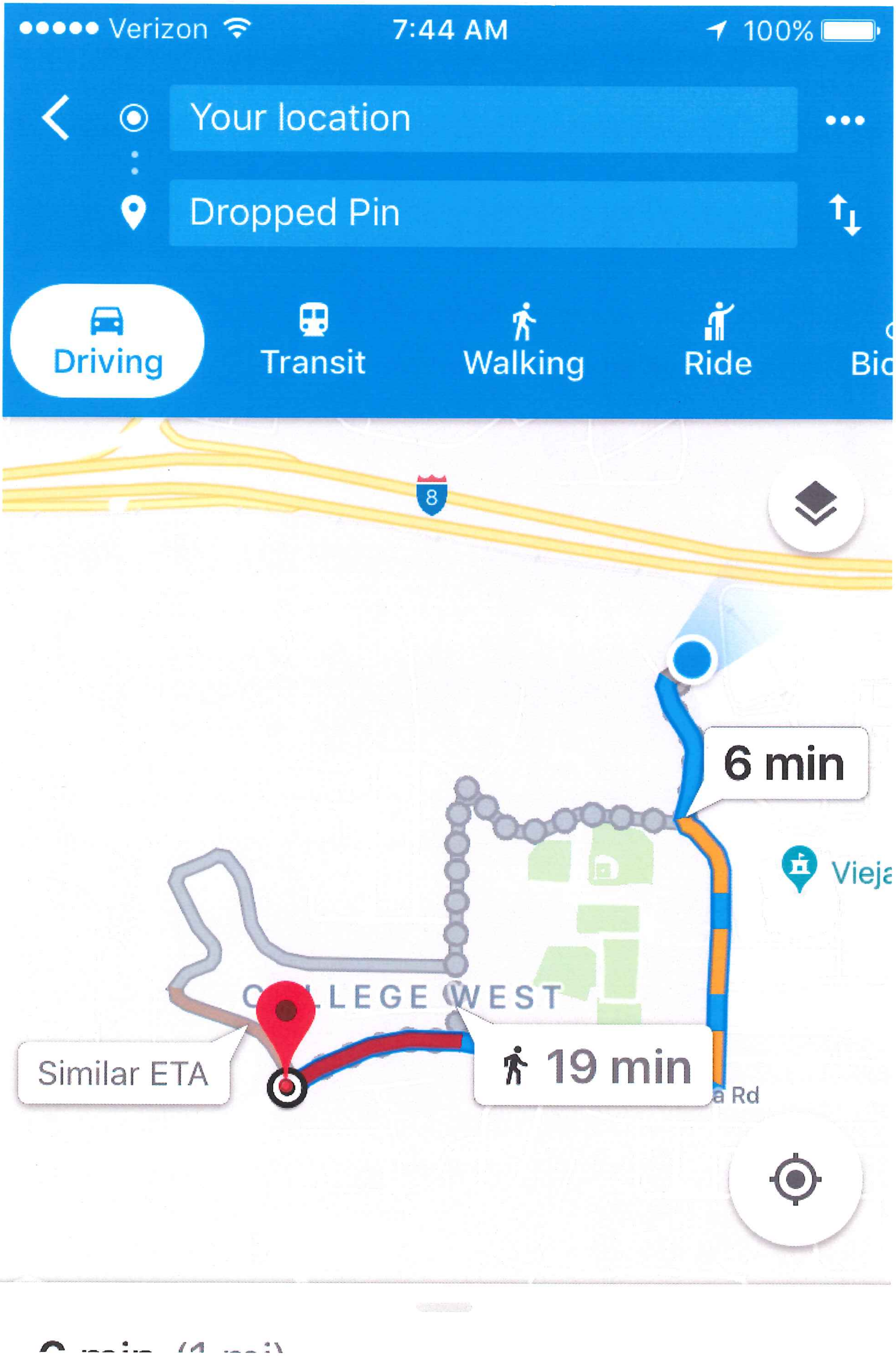
Thursday, March 8th



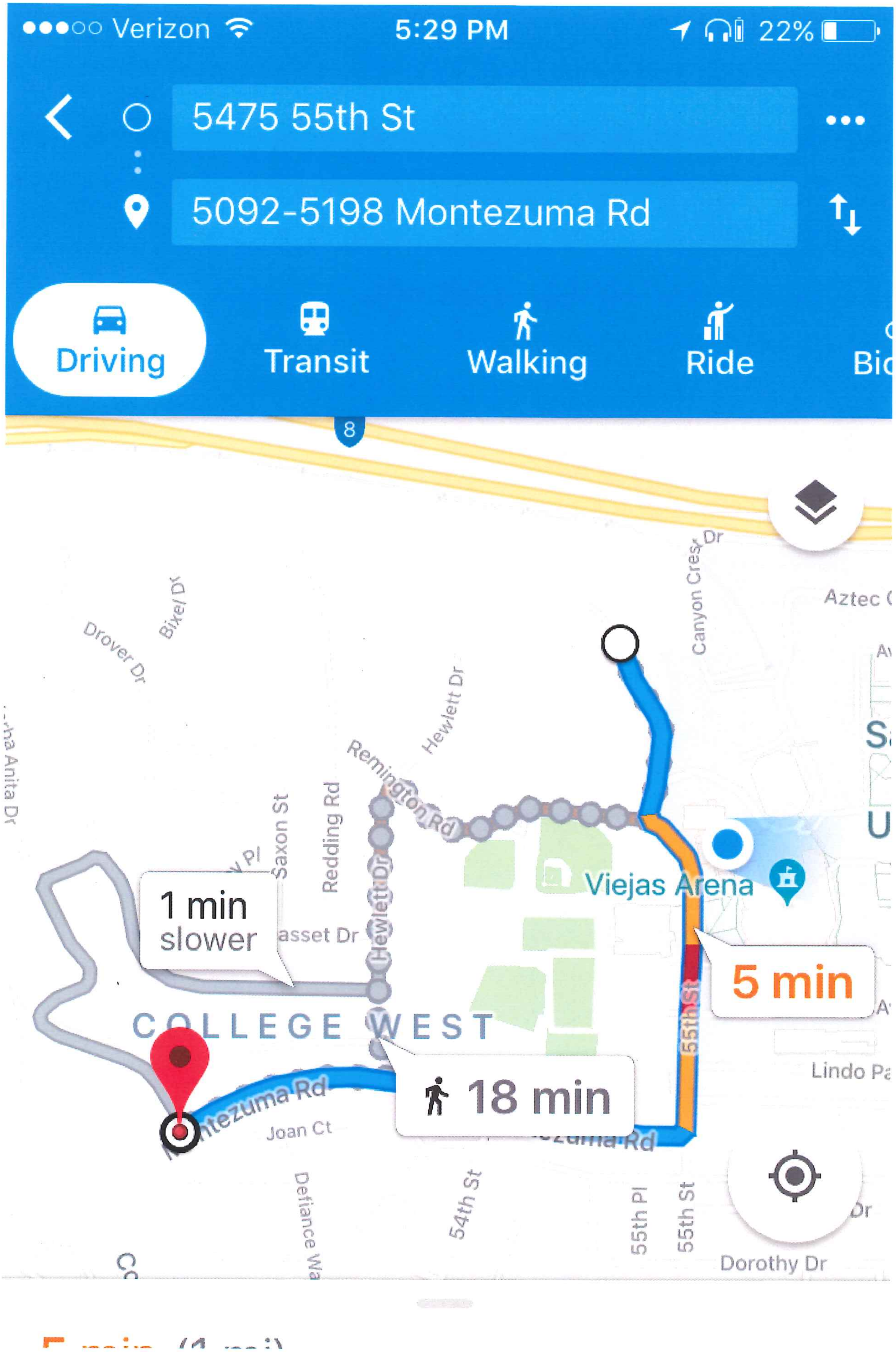
Friday, March 9th

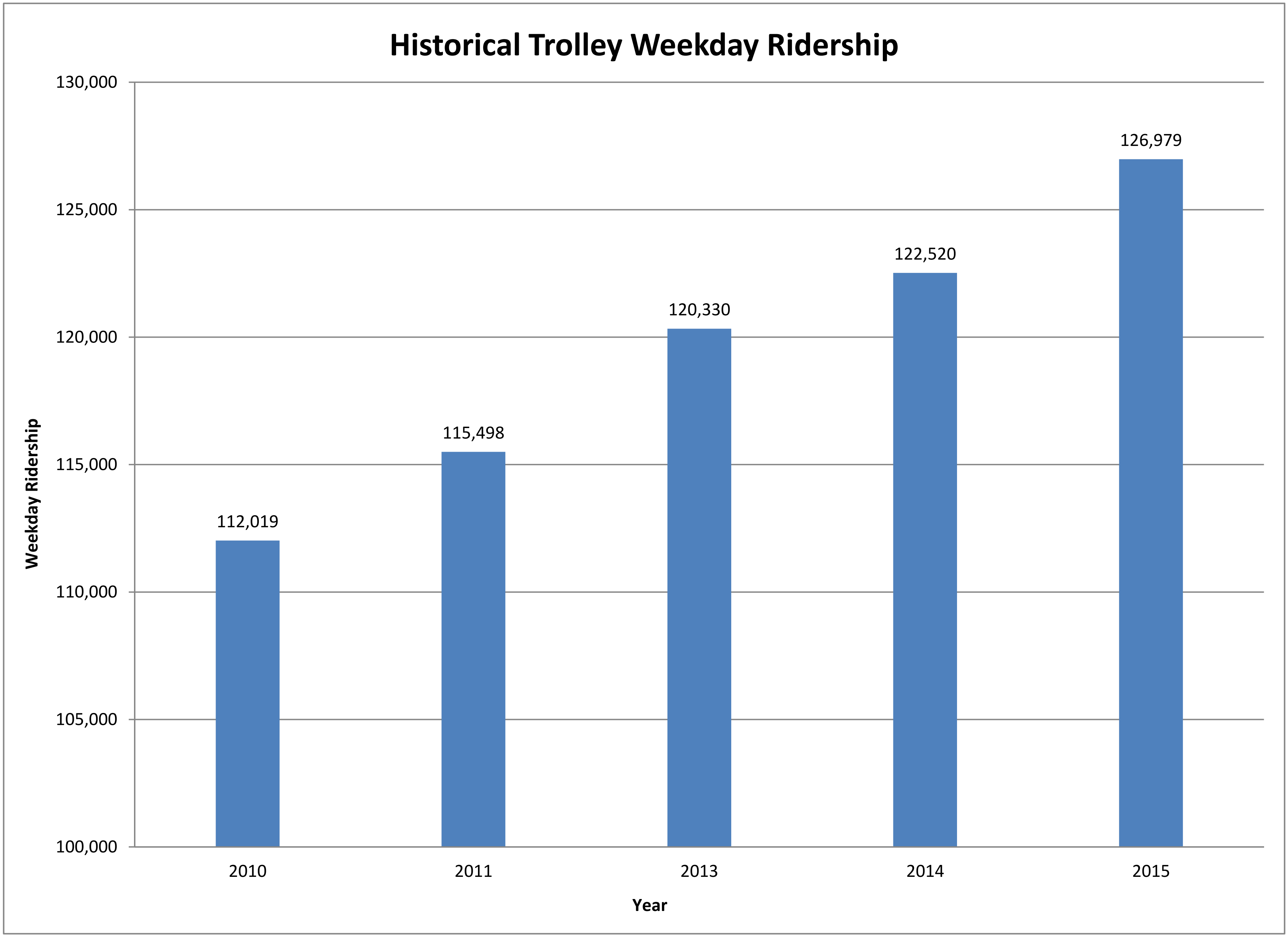


Monday, March 12th



Monday, March 12th




Historical Trolley Weekday Ridership
130,000
125,000
120,000
115,000
110,000
105,000
100,000
Weekday Ridership
112,019
115,498
120,330
122,520
126,979
2010
2011
2013
2014
2015
Year

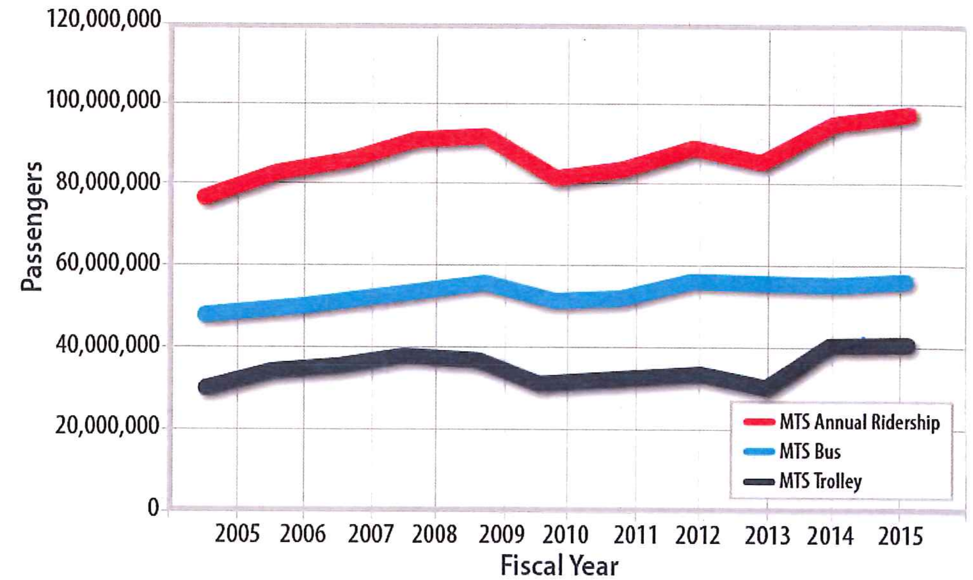
Community Impact and Performance Report

2016

RIDERSHIP

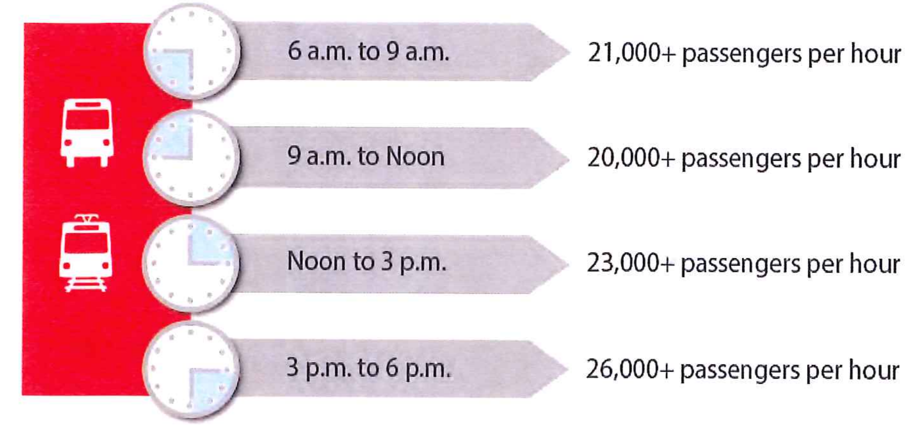
How Many People Ride?

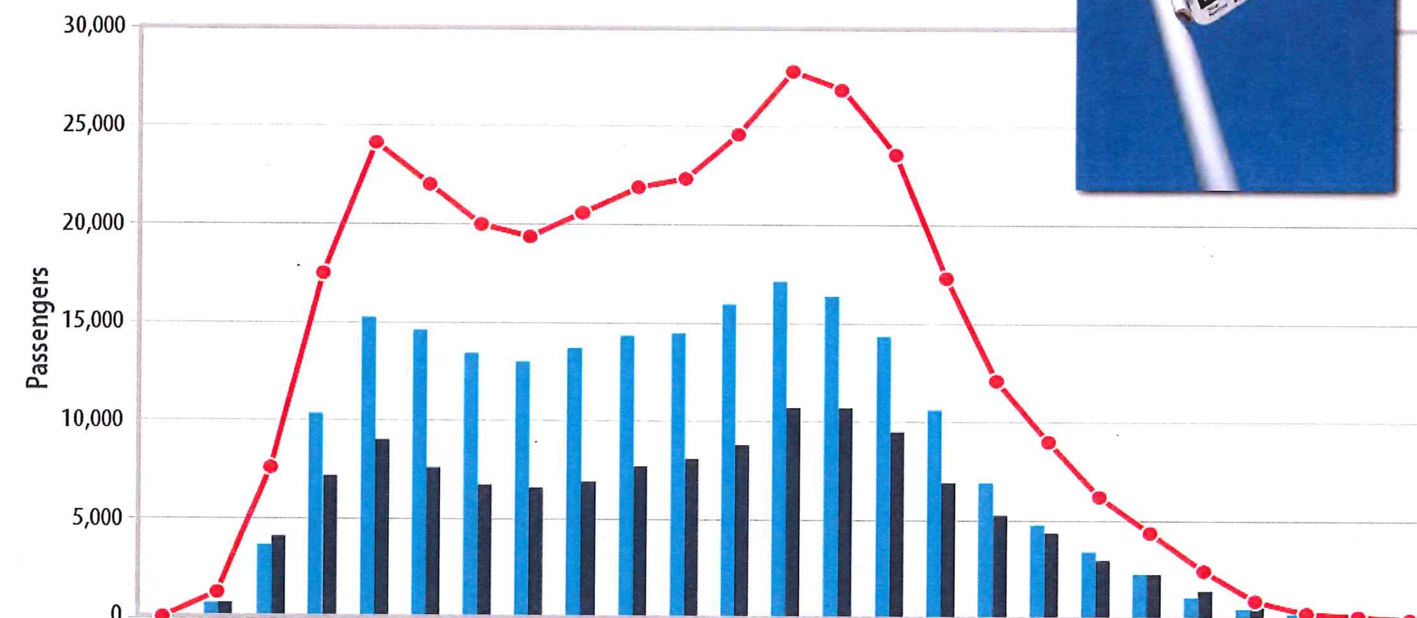
MTS ridership has been steadily growing, particularly in the last two years. MTS broke a ridership record in both FY 2014 and FY 2015, which means more people than ever before are using public transit as their choice for transportation.
More service, higher frequencies and better amenities have all contributed to gains in ridership.



When do People Ride?

Public transportation isn't used just during the peak periods.
From morning through evening, MTS vehicles are highly used.

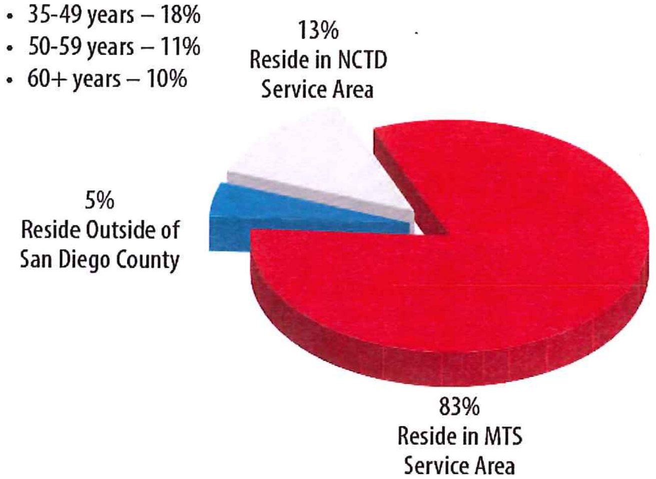




	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	12pm	1am	2am	3am
Bus	-	596	3,650	10,320	15,280	14,530	13,450	12,970	13,700	14,400	14,440	16,010	17,200	16,420	14,310	10,560	6,842	4,720	3,337	2,186	1,034	398	145	64	4
Trolley	4	611	4,067	7,098	8,999	7,563	6,677	6,492	6,887	7,596	8,023	8,759	10,700	10,620	9,431	6,873	5,232	4,295	2,901	2,143	1,356	477	117	-	-
TOTAL	4	1,207	7,717	17,420	24,280	22,090	20,130	19,470	20,590	22,000	22,460	24,777	27,900	27,040	25,750	17,430	12,070	9,015	6,238	4,328	2,390	876	262	64	4

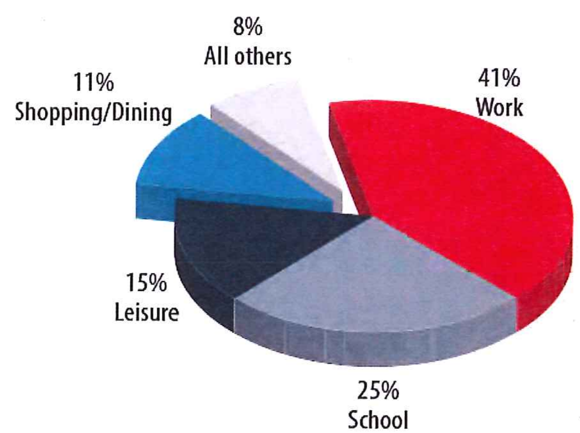
Who is Riding MTS?

- 13-18 years – 11 %
- 19-24 years – 27%
- 25-34 years – 23%
- 35-49 years – 18%
- 50-59 years – 11%
- 60+ years – 10%



Where are People Going?

Work, school and leisure are the top three purposes for rider trips.



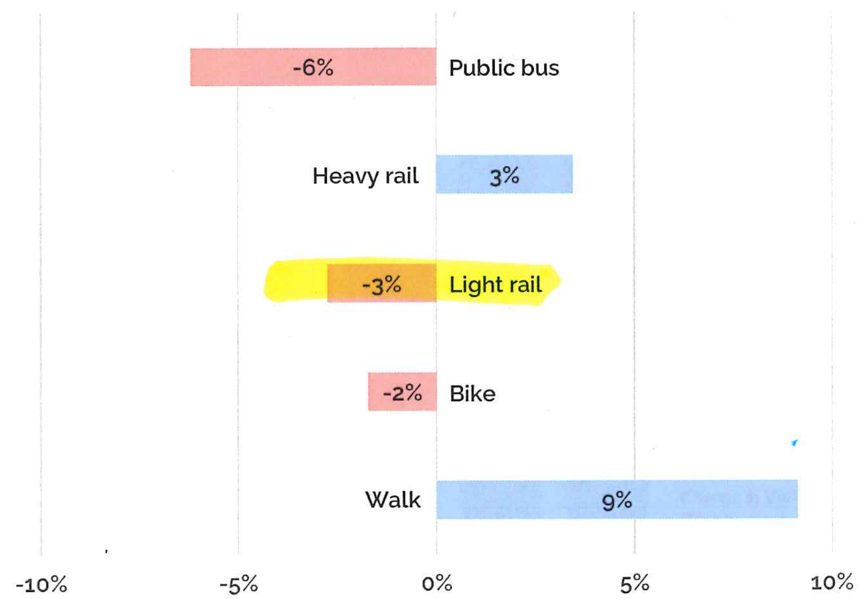
(Source: MTS Passenger Satisfaction Survey)

6. Impacts of Ride-Hailing on Transit Use

Another important policy question that these results address is the extent to which ride-hailing complements or substitutes for public transit services. We address this question with a more nuanced approach based on the premise that not all "public transit" services are created equal. Some are more frequent, reliable, and operate in environments where they may be the most convenient choice, while others are not. In short, the question of whether ride-hailing competes with or complements transit depends on the circumstances. Survey respondents were asked whether they use different public transit services, including bus, heavy rail, and light rail, more or less after they began using ride-hailing. Results are displayed in Figure 12 below.

On the whole, the majority of respondents indicated that there was no change in their transit use. However, based on the results of those who did change their behavior, we find that shared mobility likely attracts Americans in major cities away from bus services and light rail (6% and 3% net reduction in use, respectively), and may serve as a complementary mode for commuter rail (3% net increase in use). As compared with previous studies that have suggested shared mobility services complement transit services, we find that based on the type of transit service in question the substitutive versus complementary nature of ride-hailing services varies.

Figure 12. Changes in transit use, biking, and walking after adoption of ride-hailing services



Survey question: "Since you started using on-demand mobility services such as Uber and Lyft, do you find that you use the following transportation options more or less?"

TABLE A
EXISTING + TOTAL PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Existing			Existing + Total Project		
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C
Remington Road								
West of 55th Street	2-lane Collector *(no fronting property)*	10,000	3,110	A	0.311	3,210	A	0.321
55th Street								
Remington Road to Montezuma Road	4-lane Collector	30,000	18,110	C	0.604	19,300	C	0.643

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table
b. Level of Service.
c. Volume to Capacity ratio.

TABLE B
NEAR-TERM (YEAR 2022) + PROJECT SEGMENT OPERATIONS

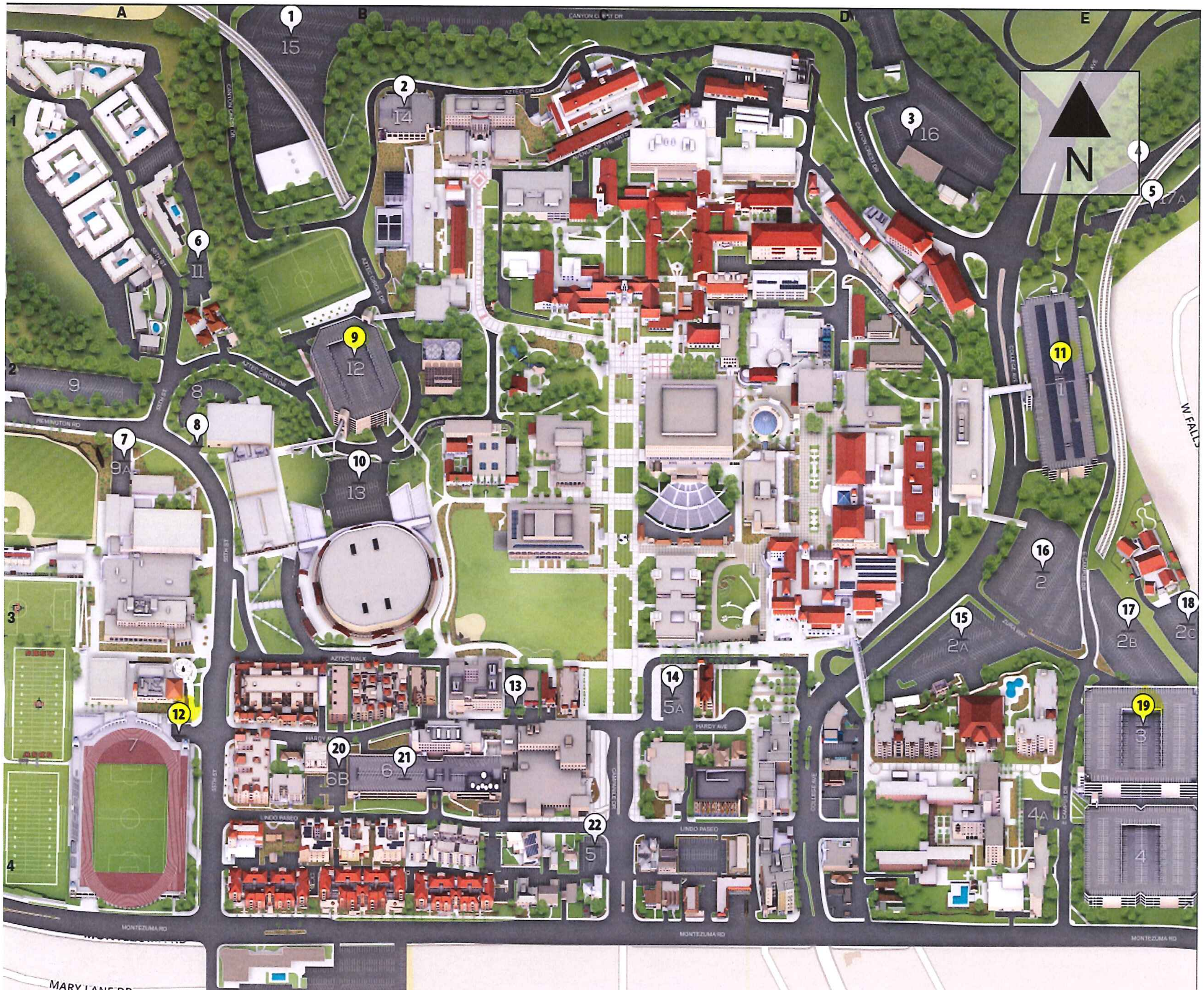
Segment	Functional Classification	LOS E Capacity [a]	Near-Term (Year 2022)			Near-Term (Year 2022) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Remington Road										
West of 55th Street	2-lane Collector *(no fronting property)*	10,000	3,339	A	0.334	3,349	A	0.335	0.001	No
55th Street										
Remington Road to Montezuma Road	4-lane Collector	30,000	21,035	D	0.701	21,145	D	0.705	0.004	No

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table
b. Level of Service.
c. Volume to Capacity ratio.

TABLE C
HORIZON YEAR (YEAR 2035) + PROJECT SEGMENT OPERATIONS

Segment	Functional Classification	LOS E Capacity [a]	Horizon Year (Year 2035)			Horizon Year (Year 2035) + Total Project			V/C Increase	Sig?
			Volume	LOS [b]	V/C [c]	Volume	LOS	V/C		
Remington Road										
West of 55th Street	2-lane Collector *(no fronting property)*	10,000	7,749	D	0.775	7,849	D	0.785	0.010	No
55th Street										
Remington Road to Montezuma Road	4-lane Collector	30,000	23,655	D	0.789	24,845	D	0.828	0.039	No

Footnotes:
a. Capacities based on City of San Diego's Roadway Classification & LOS table
b. Level of Service.
c. Volume to Capacity ratio.



SAN DIEGO STATE UNIVERSITY

B1	1	PK15
B1	2	PK14
D1	3	PK16
E1	4	PK17B
E1	5	PK17A
A2	6	PK11
A2	7	PK 9A
A2	8	PK 8
B2	9	PK12
B2	10	PK13
E2	11	PK 1
A3	12	PK 7
C3	13	PK 6A
C3	14	PK 5A
E3	15	PK 2A
E3	16	PK 2
E3	17	PK 2B
E3	18	PK 2C
E3	19	PK 3
B4	20	PK 6B
B4	21	PK 6
C4	22	Zip Car PK 5

03/14/2018 06:55 PM

SDSU Student Housing Demand and Supply Projections

		Notes
Existing beds in 2016	*4,850*	
Currently planned to add by 2019	2,250	NSRH, tripling, Alberts College
Total projected in 2019	*7,100*	
Additional entitled capacity from PLV master plan	1,016	At design capacity, does not include densifying
Subtotal currently entitled capacity	*8,116*	
Additional entitled capacity from 2007 MP	2,176	At design capacity, does not include densifying
Total entitled capacity including 2007 Campus Master Plan	*10,292*	
Office of Housing Administration's projected demand at 35,000 FTE/44,826 HC	9,617	
Total beds projected and entitled to add 2016 to MP Enrollment	*5,066*	

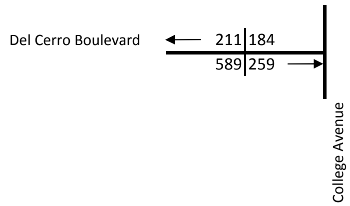
Source: SDSU Facilities Planning, Design and Construction (March 2018)

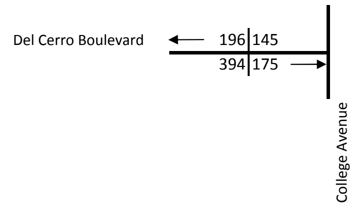
LINSCOTT LAW & GREENSPAN engineers

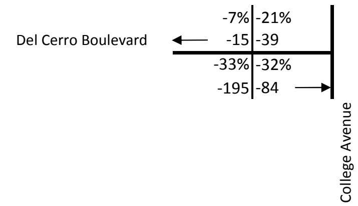
Figure A

Del Cerro Traffic Counts (2006)

INTERSECTION	DIRECTION	Existing Traffic Volumes (2007 CAMPUS MASTER PLAN)						Existing Traffic Volumes (2018 CAMPUS MASTER PLAN Update)						Δ Comparison 2018 & 2007					
		Ram	**R**pm	Tam	**T**pm	**L**am	**L**pm	**R**am	**R**pm	Tam	**T**pm	**L**am	**L**pm	**R**am	**R**pm	Tam	**T**pm	**L**am	**L**pm
6. College Avenue / Del Cerro Boulevard	**S**b	22	25	823	567	70	195	19	12					-3	-13				
	Wb	64	102	104	43	523	325			98	26					-6	-17		
	Nb	225	385	494	761	85	116					79	107					-6	-9
	Eb	190	87	281	104	118	68	217	100	62	35	115	40	27	13	-219	-69	-3	-28







Average
-27%

EDUCATION LOCAL LA TIMES

Cal State turned away 32,000 students because campuses were too full to accommodate them. Now, trustees will focus on how to fix that

By JOY RESMOVITS
MAR 20, 2018 | 5:00 AM

Rebecca Eisen, right, chairwoman of the Cal State University Board of Trustees, listens to CSU Chancellor Timothy P. White speak during a meeting in July at the chancellor's office in Long Beach. (Allen J. Schaben / Los Angeles Times)

California is raising and educating more and more qualified Cal State applicants — but the system can't put all of them on the campuses where they want to be.

Trustees of the public university system will focus on the problem during their two-day meeting in Long Beach.

Cal State campuses are so oversubscribed that 32,000 fully qualified students were left out in the cold last fall because the locations or programs they wanted could not accommodate them.

Six of the system's 23 campuses — Fresno, Fullerton, Long Beach, San Diego, San Jose and San Luis Obispo — are in such high demand that each of their programs has more qualified applicants than can be accommodated by current space and staffing levels.

Meanwhile, the system, according to administrators, is strapped for cash, to the point where trustees are considering raising tuition for the second year in a row. The state funds a smaller piece of Cal State's costs than it used to. Gov. Jerry Brown's 2018-2019 budget proposal included a $92 million increase for Cal State, but it was $171 million less than what the system's trustees said they needed.

Cal State currently has to work within the budget framework Brown shaped last year, when he gave the university an additional $20 million to boost enrollment. University officials have until May to come up with a way to redirect applications from campuses with no more space to those that still have room, and to give local students priority.

Trustees are expected to evaluate plans to do both at their meeting.

The redirection proposal would have the enrollment system inform eligible applicants rejected or wait-listed from campuses because of oversubscription that they have the opportunity to apply to other campuses. Such students would be sent surveys asking for their first- and second-choice campuses with remaining open slots.

For about a month, the system would send text message and email reminders to applicants to respond. Those who do not answer after that time would automatically be admitted to an alternate campus.

The trustees also are slated to discuss new degree programs, which offer a window into how Cal State campuses try to evolve with the economy. In a memo, the chancellor's office described Cal State as "an engine of social mobility, educating many students who are the first in their families to attend college."

Graduates' mid-career salaries, the memo states, are on average more than $8,000 higher than those of graduates from other public universities. The system awards about 100,000 bachelor's degrees each year.

About 3.4 million CSU alumni are in California's workforce, and the system responds to the state's changing needs. The chancellor's office received 23 proposals for new programs this year, and has approved 17. Four are in computer sciences, three are in business and four are in health professions. Sixty percent of all the state's nursing degrees are earned at Cal State.

Three campuses want to create new construction management programs because that field, the memo says, is one of the state's 50-fastest growing professions. New programs would also address the growing need for substance abuse counselors.

On Wednesday morning, the trustees also plan to announce new presidents for Cal State Bakersfield and Cal State Dominguez Hills.

A livestream of the meeting's open sessions can be viewed here.

Joy.Resmovits@LATimes.com

@Joy_Resmovits

Joy Resmovits

Joy Resmovits is reporter who covers education for the Los Angeles Times. Before that, she spent four years as the Huffington Post's education reporter. In 2014-15, she was a Columbia University Spencer Fellow. Her writing previously appeared in the Wall Street Journal, the Forward and the New York Daily News. She serves on the board of trustees for the Columbia Daily Spectator and the Education Writers Assn.'s journalist advisory board.

College Area Business District

April 12, 2018

President Sally Roush
Office of the President
San Diego State University
5500 Campanile Drive
San Diego CA 92182

Dear President Roush:

The College Area Economic Development Corporation (commonly known as the College Area Business District) supports San Diego State University's (SDSU) Master Plan update, which modifies the traffic mitigation efforts for any future building development on campus.

Having SDSU in close proximity of the College Area Business District has and will continue to be the economic driver for the businesses in and around the campus. Given this, the College Area Business District is willing to continue to work cooperatively with SDSU on positive economic development efforts including alternative modes of transportation to and from the campus.

SDSU has demonstrated its commitment to promoting alternative modes of transportation such as mass transit, ridesharing, biking and walking. With the MTS Trolley Station in a central location on campus, cooperative agreements with ridesharing companies and most recently, dockless bicycle companies, SDSU proves to be doing much to mitigate traffic near its bustling campus.

The College Area Business District not only supports these efforts by SDSU to mitigate traffic, but also commits to working more closely and cooperatively with the University on promoting alternative modes of transportation. The effects of these efforts will only bolster the economic growth of the surrounding business corridors.

Sincerely,

Paul W Russo

Paul Russo
Board President

4704 College Avenue, San Diego CA 92115
Phone: 619-582-1093 | http://collegeareabid.com