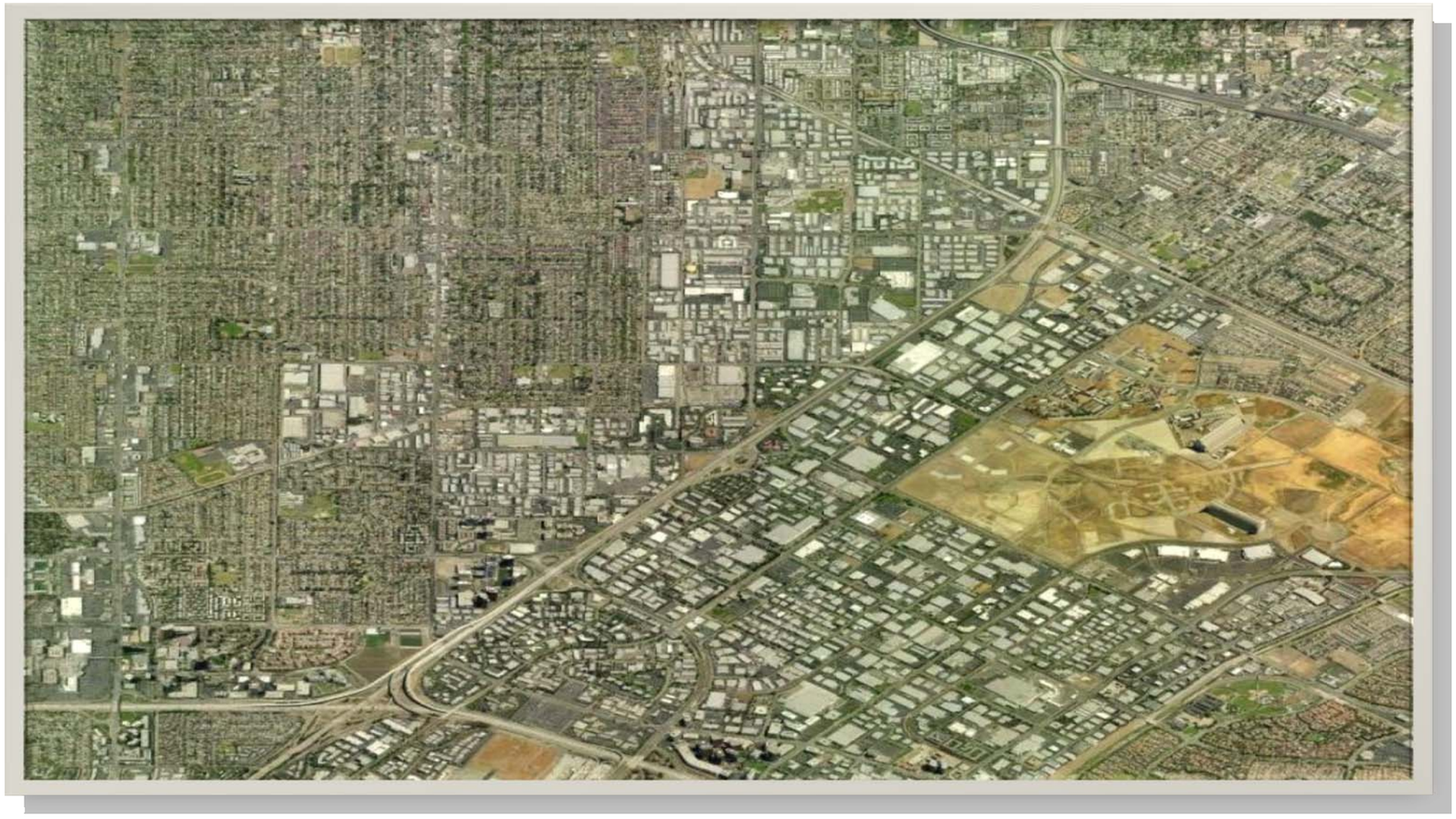
STATE ROUTE 55 (SR-55) Between I-405 and I-5 PR/ED

Revised Final Traffic Volume Report



August 2015

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1. INTRODUCTION

The Orange County Transportation Authority (OCTA), in cooperation with California Department of Transportation (Caltrans) District 12 and the Cities of Irvine, Santa Ana and Tustin, is leading the effort of preparation of the Project Report and Environmental Document (PR/ED) for the proposed improvements to the State Route 55 Freeway (SR-55) between Interstate 405 (I-405) to the south and Interstate 5 (I-5) to the north in Orange County. As part of this project, the traffic volume report was developed to summarize the existing traffic volumes and future year (e.g., design year 2040 and opening year 2020) traffic forecasts of the study area, and more importantly to support development/refinement of the project alternatives.

This report is an updated version based on a previous version of Traffic Volume Report approved by Caltrans in November 2013. The major difference is that this updated version was prepared assuming all the projects categorized as "Preferred Plan" in the 2010 Long Range Transportation Plan (LRTP) are included in the Design Year 2040 baseline conditions, which was discussed and concurred by the PDT.

Study Area

According to the RFP, the project limits are on SR-55 from north of I-405 (PM 6.29) to south of I-5 connectors (PM 10.32). However, in order to capture the effects of traffic flow downstream and upstream of the project limit, the study area for traffic operations analysis was extended beyond I-405 in the south to Paularino Avenue and beyond I-5 in the north to 4th Street/Irvine Boulevard.

The study locations for traffic analysis and traffic demand forecasts are listed below, and those locations are evaluated under all project alternatives.

Freeway Segments

All the freeway HOV and mixed-flow lanes on SR-55 between Paularino Avenue and 4th Street/Irvine Boulevard, including the freeway-to-freeway connectors from and to I-405 and I-5.

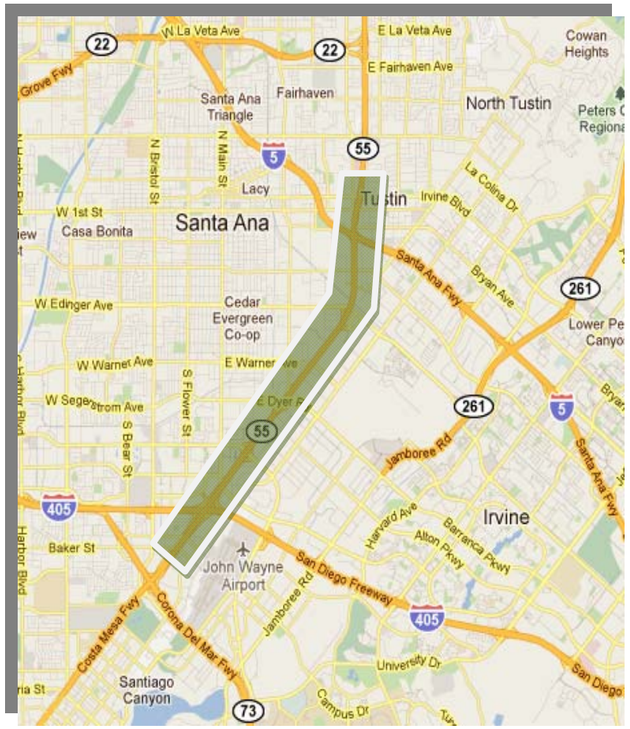
Freeway Ramps

All the on- and off- ramps (including the freeway-to-freeway connectors) at the study interchanges of Paularino Avenue, I-405, MacArthur Boulevard, Dyer Road, Edinger Avenue, McFadden Avenue, I-5, and 4th Street/Irvine Boulevard.

Ramp Intersections

1. NB SR-55 Ramps/Paularino Ave
2. SB SR-55 Ramps/Paularino Ave
3. NB SR-55 Ramps/MacArthur Blvd
4. SB SR-55 Ramps/MacArthur Blvd
5. NB SR-55 Ramps/Dyer Rd
6. Grand Ave/Dyer Rd
7. SB SR-55 Ramps/Dyer Rd
8. SB SR-55 Off-ramp/Grand Ave
9. NB SR-55 Ramps/Edinger Ave/Del Amo Ave
10. SB SR-55 Ramps/Edinger Ave/Auto Mall
11. NB SR-55 Ramps/McFadden Ave
12. SB SR-55 Ramps/McFadden Ave
13. NB SR-55 Ramps/4th St/Irvine Blvd
14. SB SR-55 Ramps/4th St/Irvine Blvd

In addition, 12 local intersections were identified for evaluation under two project alternatives (Alternatives 3 and 4) which assume the McFadden design variation improvement. The detailed descriptions of each project alternative are presented in Section 3. Since the McFadden design variation improvement would remove the direct access from the McFadden Avenue on-ramp to southbound I-5 and northbound SR-55, this improvement would potentially result in traffic diversion to nearby local roadways such as Newport Avenue and Red Hill Avenue. To identify potential impacts to local roadways, the following 12 local intersections (#15 through #26) have been identified for traffic operations analysis based on discussion with the City of Tustin, OCTA, and Caltrans.



15. NB I-5 On-ramp/Newport Ave
16. SB I-5 Off-ramp/Newport Ave
17. Walnut Avenue/Newport Ave
18. Sycamore Ave/Newport Ave
19. Edinger Ave/Newport Ave
20. El Camino Real/Red Hill Ave
21. NB I-5 Ramps/Red Hill Ave
22. SB I-5 Ramps/Red Hill Ave
23. Nisson Rd/Red Hill Ave
24. Walnut Ave/Red Hill Ave
25. Sycamore Ave/Red Hill Ave
26. Edinger Ave/Red Hill Ave

Analysis Scenarios

This traffic volume report contains the AM and PM peak hour traffic volumes for the above study locations and daily traffic volumes for the study freeway mainline segments for the following analysis scenarios:

- Existing Conditions (Year 2011)
- Design Year (2040) Conditions under Five (5) Project Alternatives (assuming ***McFadden NB Ramps Design Variation for Alternatives 3 and 4***):
    - No Build Alternative
    - Build Alternative 1
    - Build Alternative 2
    - Build Alternative 3
    - Build Alternative 4
- Opening Year (2020) Conditions under Five (5) Project Alternatives (assuming ***McFadden NB Ramps Design Variation for Alternatives 3 and 4***):
    - No Build Alternative
    - Build Alternative 1
    - Build Alternative 2
    - Build Alternative 3
    - Build Alternative 4

Report Organization

The remainder of this report contains four sections. Section 2 presents the existing (2011) traffic data collection from different sources and traffic volumes for the study locations. Section 3 lays out the project alternatives with a description of the key characteristics of each alternative. Section 4 describes the methodology used to develop the traffic forecasts for Design Year 2040 and presents the 2040 traffic forecasts for each of the project alternatives. Section 5 describes the methodology used to develop the traffic forecasts for Opening Year 2020 presents the 2020 traffic forecasts for each of the project alternatives. Section 2 (existing traffic data) and Section 3 (project alternatives) were reviewed and approved by Caltrans in November 2013 as part of the previous version of the Traffic Volume Report. Since then, the project development team including OCTA, Caltrans, and local agencies has discussed and recently concurred to update the traffic volume forecasts assuming the projects categorized as the "Preferred Plan" in the 2010 LRTP are included in the 2040 baseline conditions. Sections 4 and 5 contain the updated traffic volume forecasts, which will be used for the traffic operations analysis once approved by Caltrans.

2. EXISTING TRAFFIC VOLUMES

Existing traffic volumes were collected in 2011 from various sources, including Caltrans, PeMS (Freeway Performance Measurement System), OCTA, and field data. The intersection turning movement counts were collected from the field in Spring 2011 when schools are in session.

Freeway mainline and freeway-to-freeway ramp traffic volumes (i.e., AM/PM peak period traffic volumes and ADT) were collected from PeMS and Caltrans. SR-55 is one of the highly congested corridors in Orange County, and two of the top twenty bottlenecks of District 12 are located in the study area as identified in the 2009 Mobility Performance Report (MPR 2009). The over-saturation condition along SR-55 results in traffic fluctuation on a daily basis; therefore, in order to ensure the statistical significance of the freeway traffic data, multi-weekday freeway mainline traffic data were obtained from PeMS for extensive review prior to use for this traffic volume report.

A three-week (May 2 – May 20, 2011 with normal traffic pattern and schools in session) weekday (e.g., Tuesday, Wednesday, and Thursday) traffic data were collected from PeMS for all the freeway mainline segments on both directions of SR-55 between Paularino Avenue and 17th Street. The AM and PM peak hour traffic volumes were compared across the nine days at each freeway segment to identify any potential outliers that have abnormal traffic pattern. Table 1 shows the AM and PM peak hour PeMS traffic volumes and travel speeds by day by location along northbound SR-55, and the southbound data is summarized in Table 2.

Table 1
Existing (2011) SR-55 Northbound Freeway Mainline Peak Hour Traffic Counts and Speeds (MPH)

Location	3-May Tues	4-May Wed	5-May Thurs	10-May Tues	11-May Wed	12-May Thurs	17-May Tues	18-May Wed	19-May Thurs
AM Peak Hour									
South of Paularino Ave	6,898/40	6,640/49	6,875/51	6,936/50	6,935/41	6,961/47	5,724/43	7,038/54	7,025/53
@ MacArthur Blvd	7,798/54	7,811/57	7,360/52	7,762/55	7,705/53	7,351/45	7,726/58	7,580/63	7,642/60
@ Dyer Rd	7,398/60	7,522/63	7,222/63	7,456/61	7,580/62	7,348/60	7,388/63	6,706/69	6,727/68
@ Edinger Ave	7,766/57	7,754/62	7,734/66	7,857/61	7,713/59	8,058/56	6,731/42	7,860/62	7,922/67
@ McFadden Ave/I-5	5,505/59	5,557/60	5,713/60	5,686/59	5,587/59	5,797/59	4,884/55	5,704/58	5,736/55
@ 4th St/Irvine Blvd	6,249/66	6,069/65	6,187/66	6,228/66	6,172/66	6,284/66	5,648/66	6,306/68	6,283/69
PM Peak Hour									
South of Paularino Ave	4,478/63	4,563/64	4,602/64	4,395/65	4,521/65	4,460/50	4,148/67	4,280/66	4,350/59
@ MacArthur Blvd	3,456/10	3,858/11	4,082/12	3,907/11	3,652/10	3,741/12	6,932/43	5,391/29	4,866/22
@ Dyer Rd	4,620/16	5,253/18	5,409/19	5,374/20	5,216/17	4,934/16	6,932/43	6,891/32	6,745/28
@ Edinger Ave	7,258/58	6,749/32	6,811/37	7,070/40	7,058/42	5,939/25	7,587/56	7,682/59	7,179/41
@ McFadden Ave/I-5	6,412/58	6,053/47	5,910/46	6,016/46	5,986/48	5,466/36	6,480/50	6,483/47	6,056/45
@ 4th St/Irvine Blvd	7,828/48	7,426/29	7,365/28	7,637/38	7,575/37	6,931/25	8,128/55	8,245/53	7,710/41

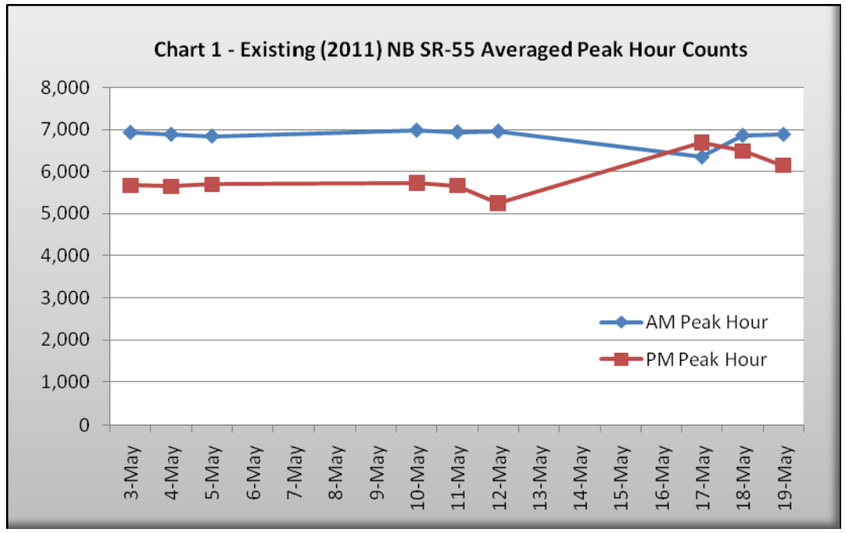
Note: 6,898/40 = peak hour traffic counts/peak hour travel speeds (mph)
Source: PeMS, 2011.

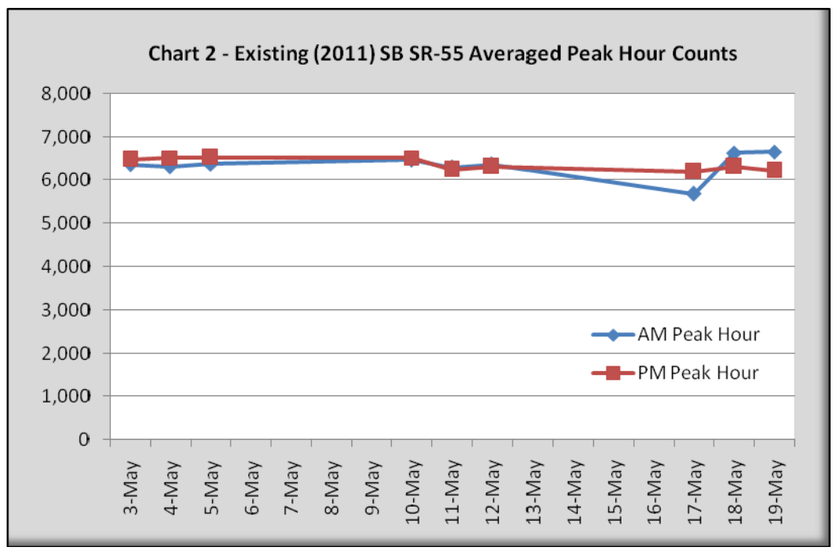
Table 2
Existing (2011) SR-55 Southbound Freeway Mainline Peak Hour Traffic Counts and Speeds

Location	3-May Tues	4-May Wed	5-May Thurs	10-May Tues	11-May Wed	12-May Thurs	17-May Tues	18-May Wed	19-May Thurs
AM Peak Hour									
@ 4th St/Irvine Blvd	3,686/15	3,684/18	3,349/12	3,836/26	3,860/22	3,901/23	3,469/15	4,012/35	3,936/18
@ McFadden Ave/I-5	5,281/27	5,221/26	5,162/23	5,517/33	5,543/29	5,594/28	5,076/25	5,858/42	5,613/28
@ Edinger Ave	8,050/54	7,857/40	7,900/42	8,178/47	8,193/46	8,367/52	7,431/43	8,522/56	8,506/55
@ Dyer Rd	7,927/66	7,784/71	8,182/71	7,927/66	7,198/72	7,287/73	7,120/65	8,192/74	8,230/74
@ MacArthur Blvd	7,120/64	7,127/63	7,334/63	7,153/64	6,755/67	6,758/68	6,131/62	6,966/68	7,095/67
South of Paularino Ave	6,087/66	6,215/66	6,333/66	6,200/65	6,210/65	6,291/66	4,888/37	6,239/65	6,547/63
PM Peak Hour									
@ 4th St/Irvine Blvd	3,912/72	3,945/73	3,906/52	3,925/62	3,959/65	3,972/69	3,869/62	3,987/52	3,991/51
@ McFadden Ave/I-5	5,847/52	5,877/57	5,715/56	5,814/61	5,902/54	5,850/61	5,624/56	5,558/58	5,695/60
@ Edinger Ave	7,210/63	7,322/61	7,080/44	7,259/59	7,433/61	7,428/60	7,289/66	7,658/67	7,362/66
@ Dyer Rd	7,807/64	7,484/71	7,906/70	7,807/64	6,951/75	7,074/73	7,272/69	7,394/76	7,168/76
@ MacArthur Blvd	6,941/50	7,280/49	7,420/52	7,306/39	6,260/69	6,326/67	6,019/64	6,087/68	5,957/64
South of Paularino Ave	7,149/63	7,207/58	7,153/61	6,963/53	6,957/53	7,211/60	7,091/60	7,182/55	7,148/58

Note: 3,686/15 = peak hour traffic counts/peak hour travel speeds (mph)
Source: PeMS, 2011.

Charts 1 and 2 below compare the averaged peak hour volumes by day along northbound and southbound SR-55, respectively. As shown, the AM and PM peak hour traffic volumes are consistent on most days, except that a significant variation occurred on May 17, 2011 with the averaged peak hour volumes lower or higher than other days by 10-15 percent. Therefore, the traffic counts on May 17 were considered as the outlier and excluded from the existing traffic volume data.

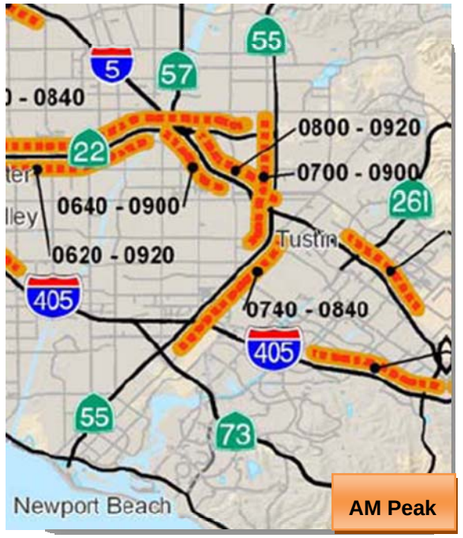


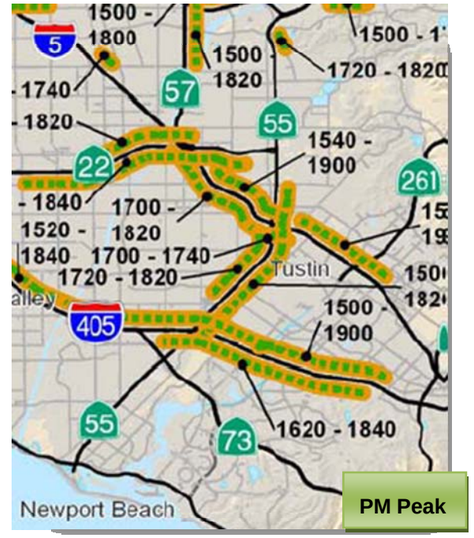


Existing Freeway Demand Volumes

In many cases traffic counts refer to the constrained traffic volumes that get through transportation facilities such as freeways and arterials. Under over-saturated conditions, traffic demand would not be adequately accommodated by roadways, and the part of the traffic demand that could get through is typically referred as constrained volumes or traffic counts.

The existing SR-55 freeway traffic volumes obtained from PeMS and described above are constrained volumes rather than traffic demand, due to the over-saturated condition along the SR-55 study corridor. The 2008 State Highway Congestion Monitoring Program (2008 HICOMP) has identified that the congested segments along SR-55 are between south of Paularino Avenue and 4th Street in the northbound direction and between SR-22 and MacArthur Boulevard in the southbound direction (see below).





In addition, OCTA conducted a FREQ study on the SR-55 corridor in 2006 to evaluate the operational conditions and identify hotspots, bottlenecks, and geometric features along this corridor. The study indicates the following operational characteristics along SR-55 in 2006:

- In the northbound direction, a significant congestion and slower speeds occurred at MacArthur Boulevard, Dyer Road, and Edinger Avenue during the AM peak period. During the PM peak period, the congestion level was more severe with major congestion occurring from MacArthur Boulevard off-ramp all the way to the McFadden off-ramp. There were two distinct bottlenecks during the PM peak period – at the Dyer Road on-ramp and McFadden Avenue on-ramp.

- In the southbound direction, a significant congestion occurred at McFadden Avenue and extended back to Chapman Avenue during the AM peak period. There were two distinct bottlenecks during the AM peak period – at the I-5 southbound on-ramp and Edinger Avenue interchange. In the PM peak period, the congestion level was relatively little.

A three-week (May 2 – May 20, 2011 with normal traffic pattern and schools in session) weekday (e.g., Tuesday, Wednesday, and Thursday) travel speeds were also obtained from PeMS for all the study freeway mainline segments to identify the existing congestion level along SR-55. Table 3 shows the averaged travel speeds for each freeway mainline segment during the AM and PM peak periods. In addition, Fehr & Peers conducted multiple GPS travel time surveys along the SR-55 study corridor during the AM and PM peak periods in Spring 2011, and the survey results are similar to the speeds shown in Table 3. The GPS travel time and speed data collected by Fehr & Peers along with the travel time data to be provided by Caltrans will be presented in detail in the Traffic Operations Report.

Compared to the 2008 HICOMP and 2006 OCTA FREQ Study, the travel speed data collected in 2011 (from PeMS and on the field) indicates marginally improved operations along the SR-55 study corridor with higher travel speeds. This was also confirmed by comparing the 2006 and 2011 speed data obtained from PeMS for the same location during the same time period. For example the PeMS data shows that the AM peak period vehicle speed along NB SR-55 at Dyer Road was 64 mph in 2011; however in 2006, the speed was reported to be 49 mph. The marginally improved operations in 2011, compared to 2006 and 2008, are primarily due to the reduced travel demand along the corridor. For example, the PeMS data shows the weekday ADT on NB SR-55 at Dyer Road was reported to show a reduction from 2006 through 2011, with 110,980 vehicles in 2006, 106,260 in 2008, and 105,790 in 2011. Compared to 2006, the 2011 ADT at this location decreased by approximately 5 percent.

Table 3
Existing (2011) SR-55 Freeway Mainline Peak Period Travel Speeds (MPH)

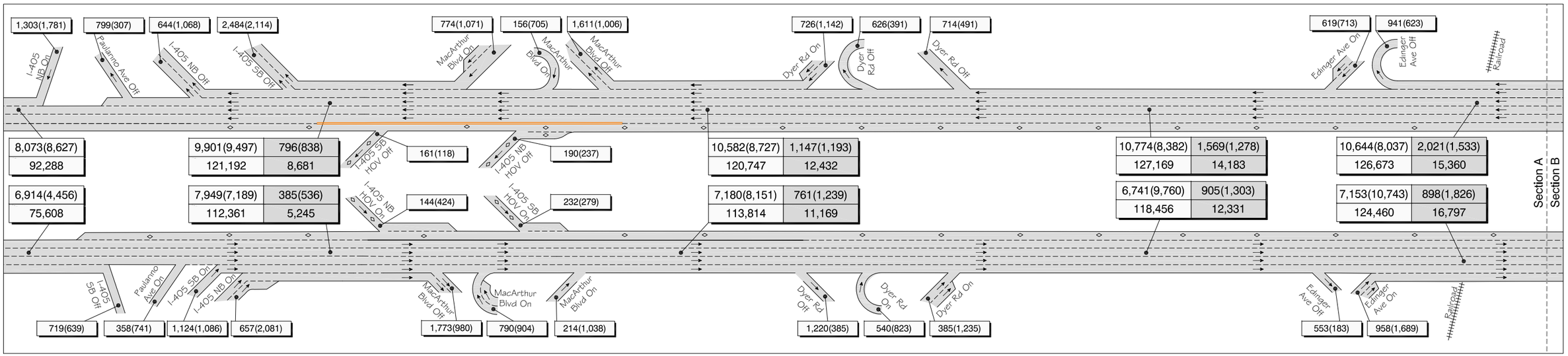
Location	AM Peak Period				PM Peak Period			
	Northbound		Southbound		Northbound		Southbound	
@ Paularino Ave	50		65		60		58	
@ MacArthur Blvd	54		66		14		59	
@ Dyer Rd	64		71		20		69	
@ Edinger Ave	61		47		34		53	
@ McFadden Ave/I-5	59		26		43		55	
@ 4th St/Irvine Blvd	66		16		31		61	
@ SR-22	-		68		-		68	

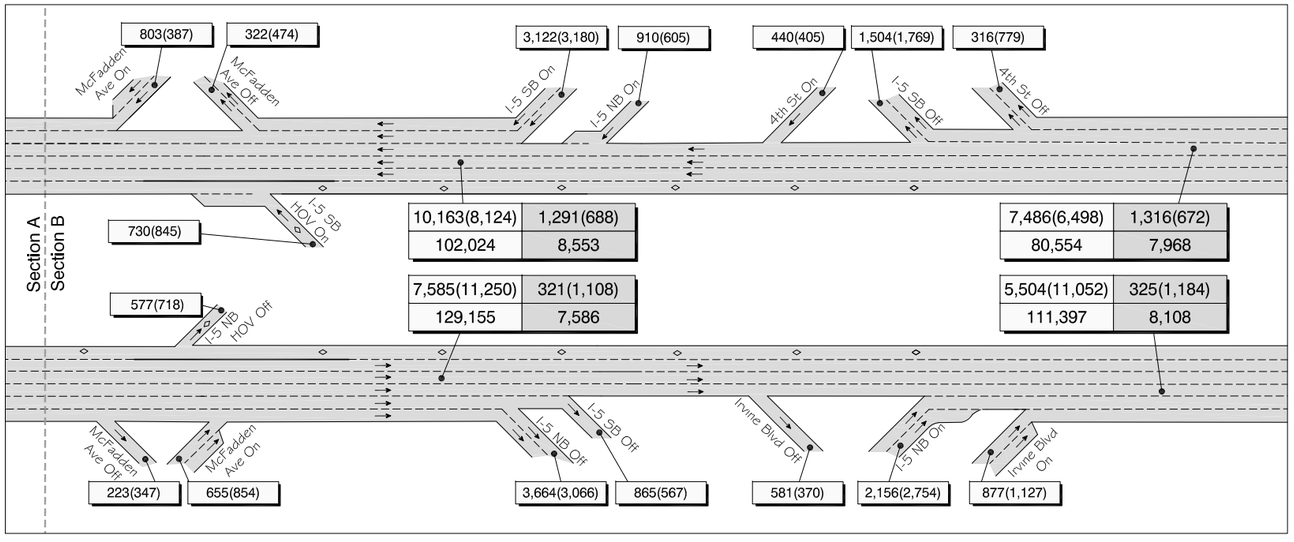
Note: Red=0-20 mph; Orange=20-35 mph; Yellow=35-45 mph; Light Green=45-55 mph; Green=>=55 mph.
Source: PeMS, 2011.

During the AM peak period, SR-55 northbound traffic experiences some congestion and travels a little over 50 mph between Paularino Avenue and MacArthur Boulevard, picks up a higher speed over 60 mph through Dyer Road and Edinger Ave, slows down near McFadden Avenue and I-5, and then is back to travel at free-flow speeds north of the I-5 off-ramp. In the southbound direction, traffic travels at free-flow speeds before SR-22, slows down significantly to less than 25 mph between 17th Street and McFadden Avenue due to the I-5/McFadden bottleneck, picks up a higher speed after Edinger Avenue, and is back to travel at free-flow speeds after Dyer Road.

In the PM peak period, heavy congestion occurs on northbound SR-55. Vehicles travel at free-flow speeds south of Paularino. After Paularino, SR-55 northbound traffic experiences significant delay until Dyer Road with a travel speed lower than 20 mph, picks up a higher speed between 35 and 45 mph through Edinger Avenue and I-5 area, and travels slowly at lower than 35 mph north to 4th Street. The southbound traffic moves pretty well with a travel speed of over 55 mph along most of the corridor except for some slow-down between McFadden Avenue and Edinger Avenue.

In order to determine the existing traffic demand along SR-55, the traffic counts at locations beyond the beginning of the congested segments were used to identify the traffic demand for both directions of SR-55. In another word, the freeway traffic counts on northbound SR-55 south of Paularino were used as entering traffic demand for the northbound direction, and the freeway counts on southbound SR-55 north of SR-22 were used as entering traffic demand for the southbound direction. The freeway traffic demand at the remaining segments was calculated using volume balancing from the entering traffic demand. Figure 1A shows the existing (2011) peak hour and daily traffic volumes for freeway mainline segments and ramps. The ramp intersection peak hour turning movements are displayed in Figure 1B.



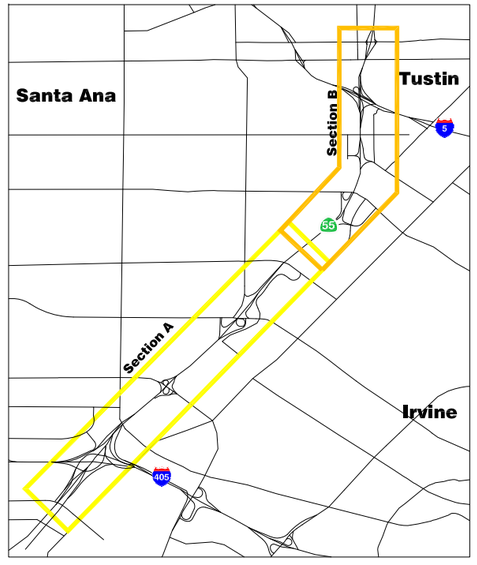


N

NOT TO SCALE

LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes



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SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - EXISTING CONDITIONS (YEAR 2011)

FIGURE 1-A

FEHR & PEERS

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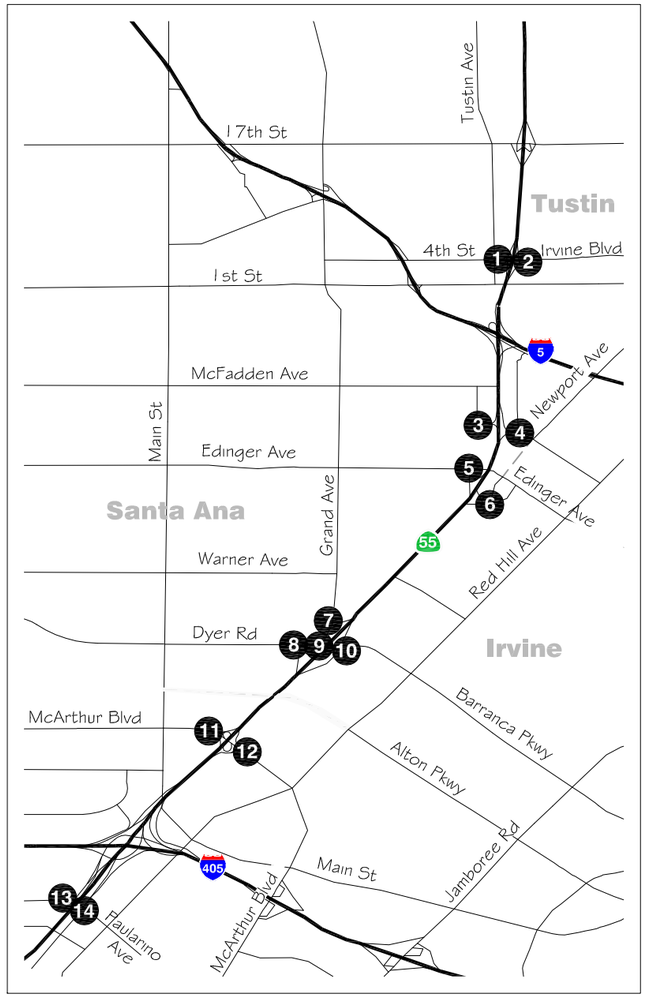
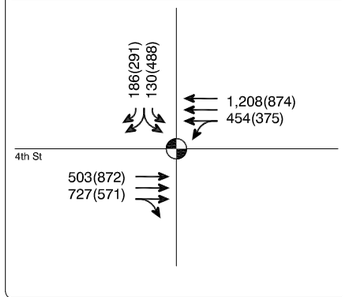


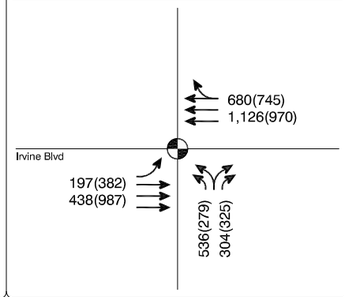
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

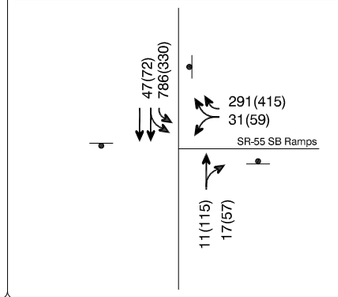
1. SR-55 SB Ramps/4th St



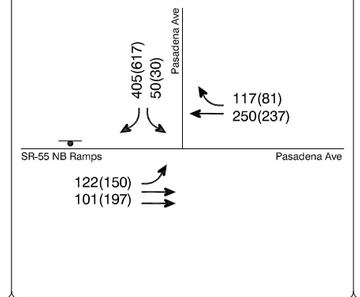
2. SR-55 NB Ramps/Irvine Blvd



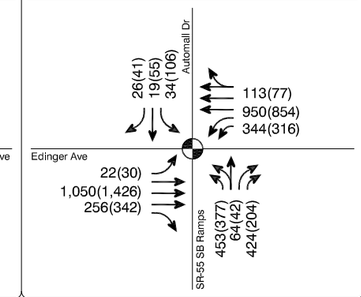
3. Tustin Village Way/SR-55 SB Ramps



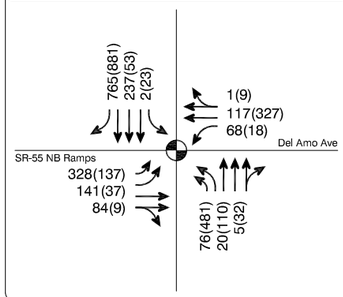
4. Pasadena Ave/SR-55 NB Ramps .



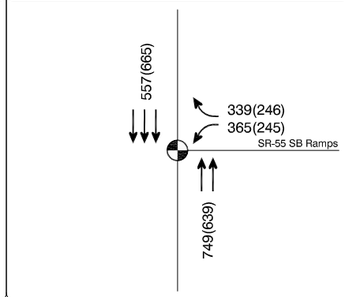
5. Automall Dr/SR-55 SB Ramps/Edinger Av



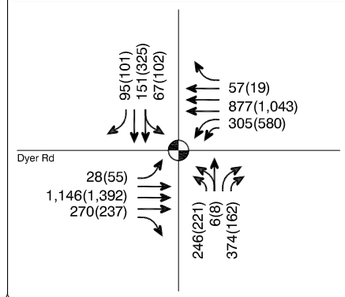
6. Newport Ave/SR-55 NB Ramps



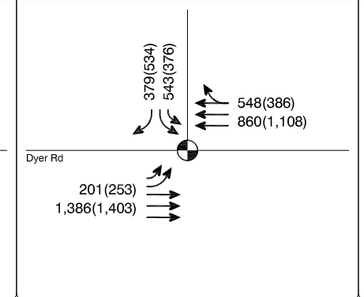
7. S Grand Ave/SR-55 SB Ramps



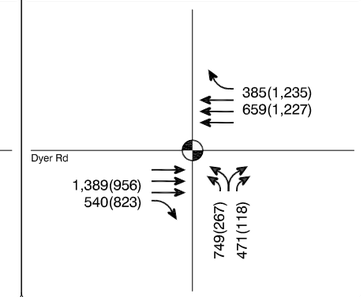
8.SR-55 SB Ramps/Dyer Rd



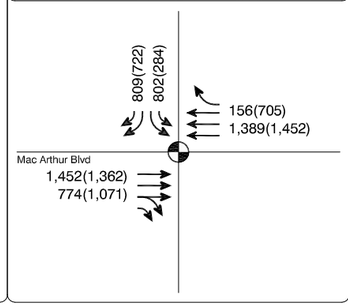
9. S Grand Ave/Dyer Rd



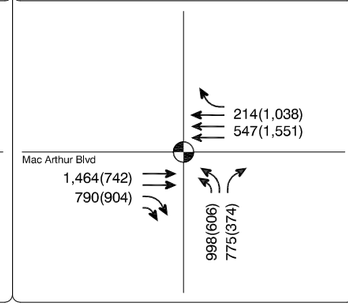
10. SR-55 NB Ramps/Dyer Rd



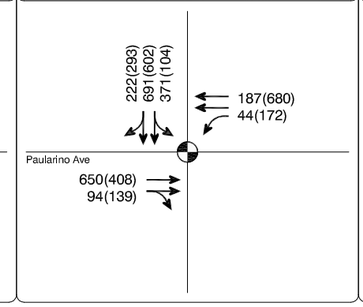
11. SR-55 SB Ramps/MacArthur Blvd



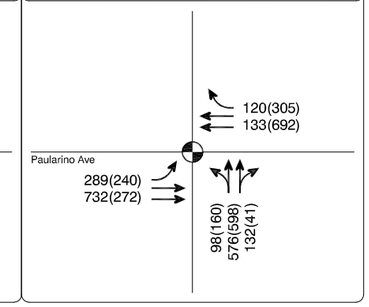
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - EXISTING CONDITIONS (YEAR 2011)

FIGURE 1-B

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3. PROJECT ALTERNATIVES

Five project alternatives have been identified for evaluation in the PR/ED stage by the Project Team including OCTA, Caltrans, Cities of Irvine, Santa Ana, and Tustin, and the HDR consulting team. The project alternatives are described below and illustrated in Exhibits A through E.

No Build Alternative

The No Build Alternative maintains existing conditions and proposes no changes or improvements to SR-55 between the project limits.

The layout of the No Build Alternative is shown in Exhibit A.

Build Alternative 1 (Additional Auxiliary Lanes)

Build Alternative 1 proposes a new auxiliary lane in the northbound direction at two locations:

- between the MacArthur Boulevard and Dyer Road interchanges
- between the Dyer Road and Edinger Avenue interchanges

In the southbound direction, a general-purpose lane would be created between the southbound I-5 connector and the east Dyer Road off-ramp, and the existing auxiliary lane between the McFadden Avenue and Edinger Avenue interchanges would be restored. Additionally, the transition length for merging between the existing southbound HOV lane on SR-55 and the southbound I-5/SR-55 Connector HOV lane would be extended past Edinger Avenue.

The layout of Build Alternative 1 is shown in Exhibit B.

Build Alternative 2 (One New General Purpose Lane)

Build Alternative 2 proposes to create one general-purpose lane in the northbound and southbound directions.

In the northbound direction, two existing auxiliary lanes would be restored between the northbound I-405 connector and the MacArthur Boulevard interchange, and between the Edinger Avenue and McFadden Avenue interchanges.

In the southbound direction, the existing auxiliary lane between the McFadden Avenue and Edinger Avenue interchanges would be restored. Additionally, the transition length for merging between the existing southbound HOV lane on SR-55 and the southbound I-5/SR-55 Connector HOV lane would be extended past Edinger Avenue.

The layout of Build Alternative 2 is shown in Exhibit C.

Build Alternative 3 (One New General Purpose Lane and Additional Auxiliary Lanes)

Build Alternative 3 proposes to add one general-purpose lane in the northbound and southbound directions and restore existing auxiliary lanes.

Additionally, in the northbound direction, new auxiliary lanes would be constructed at two locations:

- between the MacArthur Boulevard and Dyer Road interchanges
- between the Dyer Road and Edinger Avenue interchanges

The restored auxiliary lane between the Edinger Avenue and McFadden Avenue interchanges would be extended to the northbound I-5 connector and the northbound McFadden on-ramp would be restricted to the northbound I-5 connector only. As a result, access from the McFadden on-ramp to northbound SR-55 and southbound I-5 would be eliminated.

In the southbound direction, the transition length for merging between the existing southbound SR-55 HOV lane and the southbound I-5/SR-55 HOV connector would be extended past Edinger Avenue.

The layout of Build Alternative 3 is shown in Exhibit D.

Build Alternative 4 (One New HOV Lane and Additional Auxiliary Lanes)

Build Alternative 4 proposes to add a second HOV lane in each direction between the I-405 and I-5 HOV direct connectors.

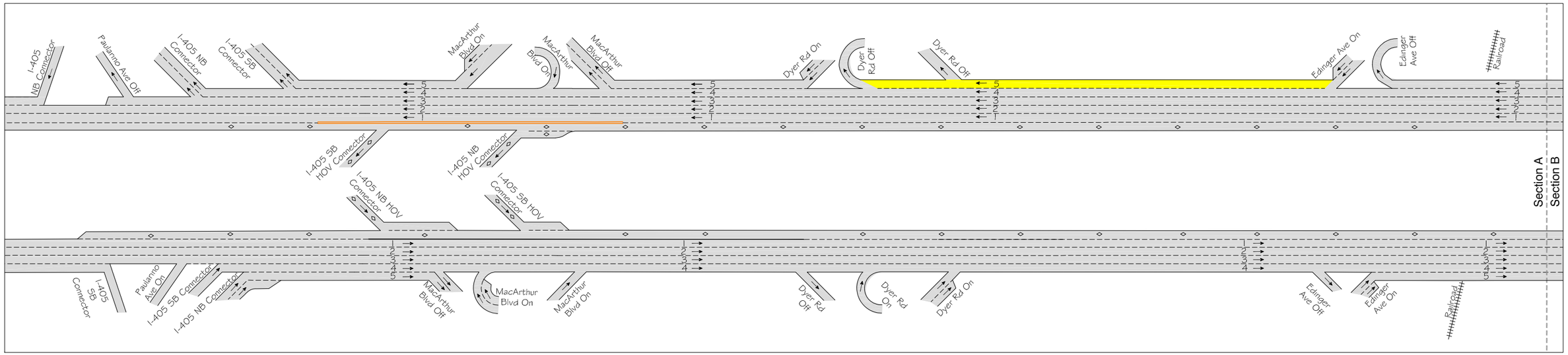
Additionally, in the northbound direction, a new auxiliary lane would be constructed at three locations:

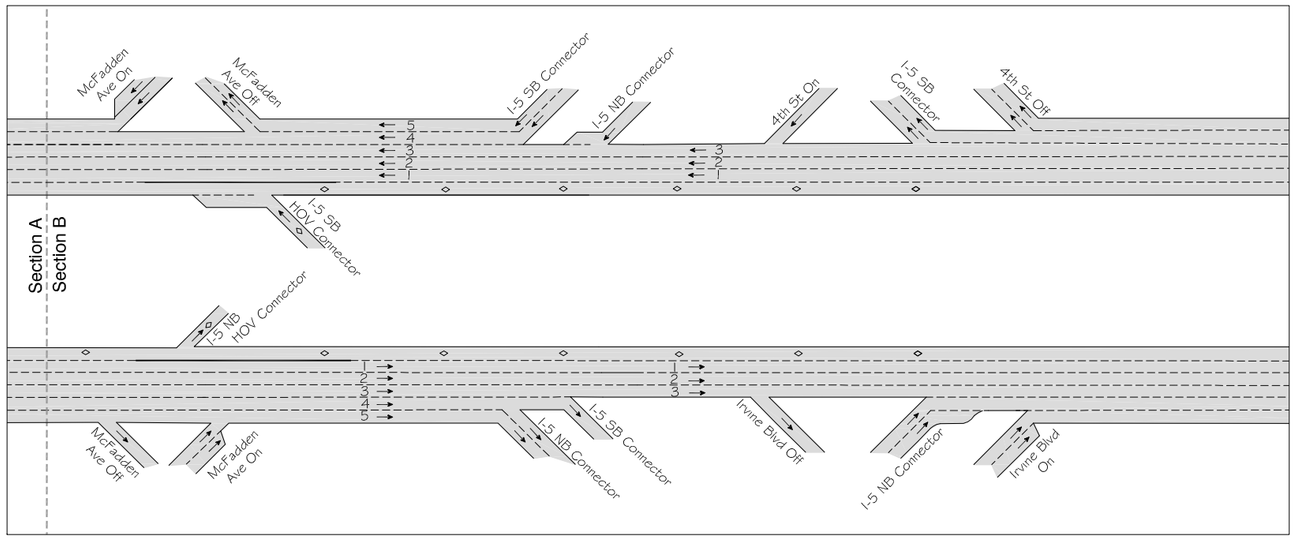
- between the MacArthur Boulevard and Dyer Road interchanges
- between the Dyer Road and Edinger Avenue interchanges
- from just south of the Tustin Overhead to the northbound I-5 connector

The northbound McFadden on-ramp would be restricted to the northbound I-5 connector only. As a result, access from the McFadden on-ramp to northbound SR-55 and southbound I-5 would be eliminated.

In the southbound direction, a general-purpose lane would be created between the southbound I-5 connector and east Dyer Road off-ramp. The existing auxiliary lane between the McFadden Avenue and Edinger Avenue interchanges would be restored.

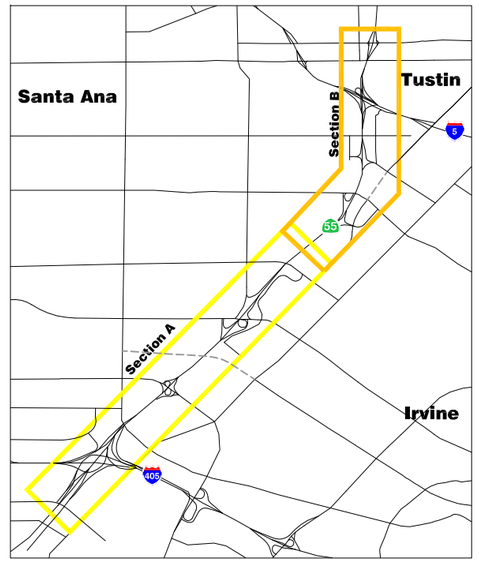
The layout of Build Alternative 4 is shown in Exhibit E.





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- ▬ - Improvements by Other Project Completed in 2012
- ▬ - HOV Limited Access



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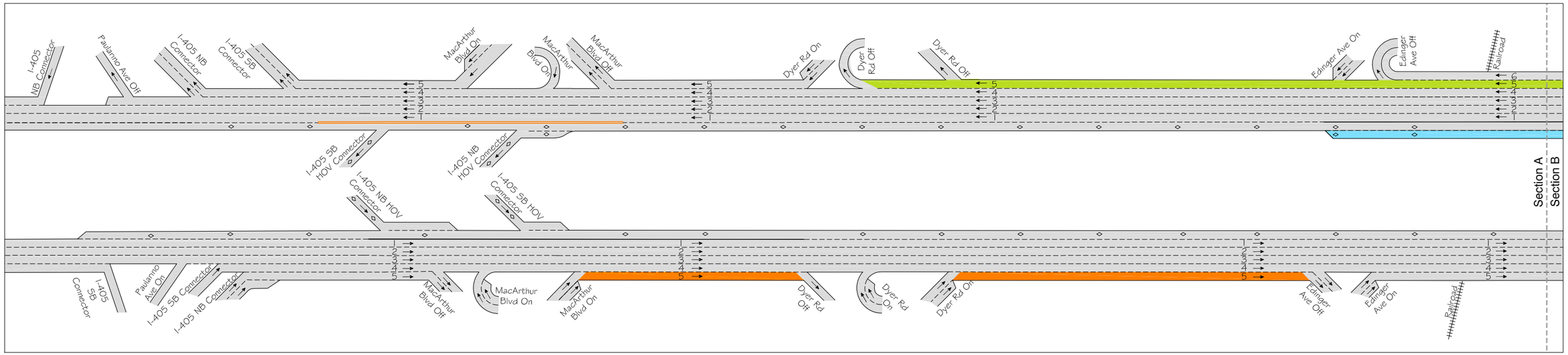
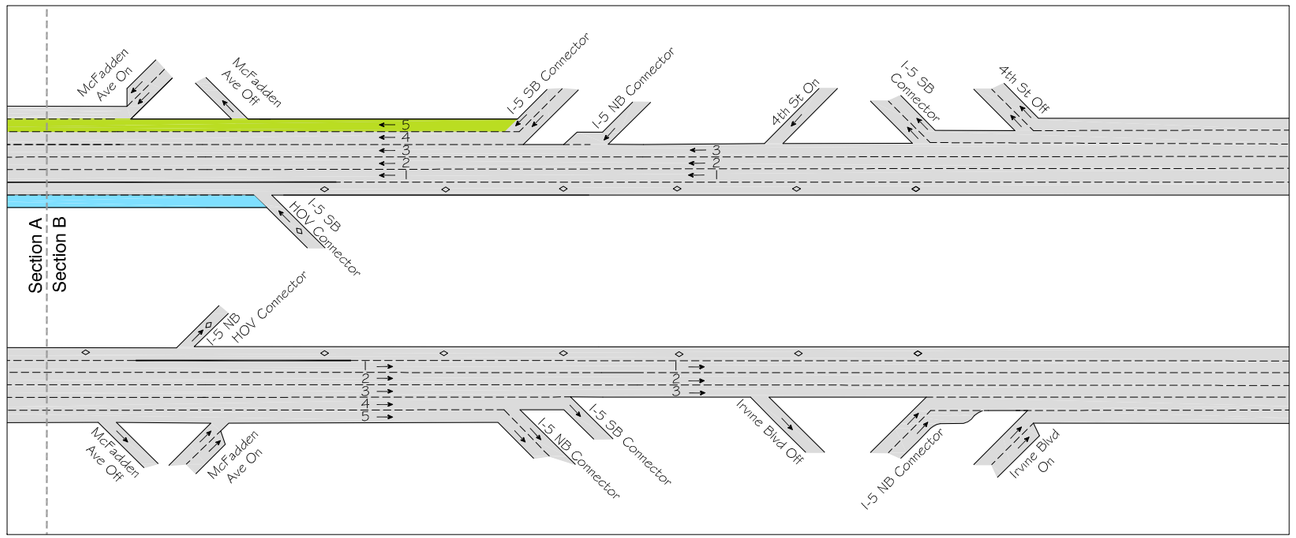
NO BUILD ALTERNATIVE

EXHIBIT A





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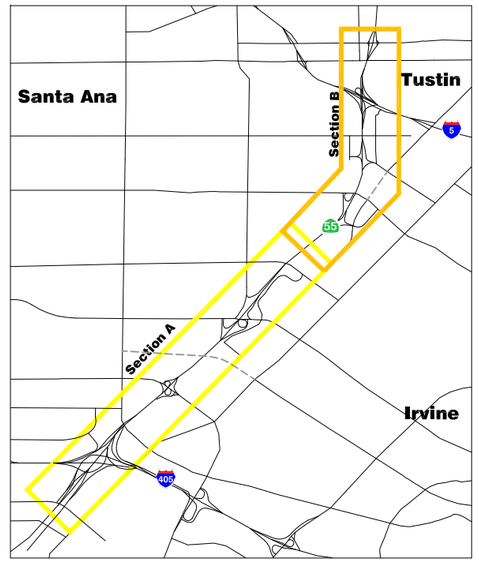
LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - HOV Limited Access



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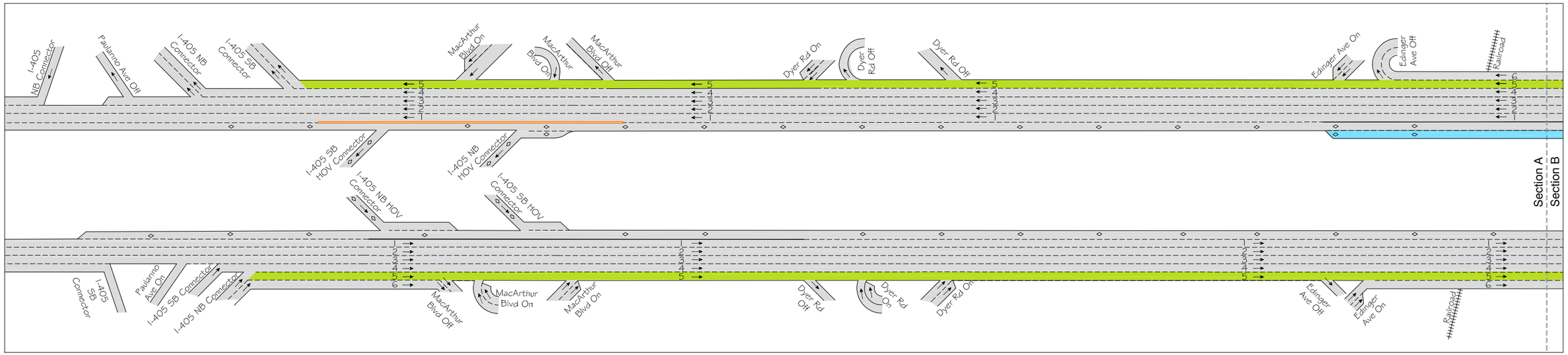
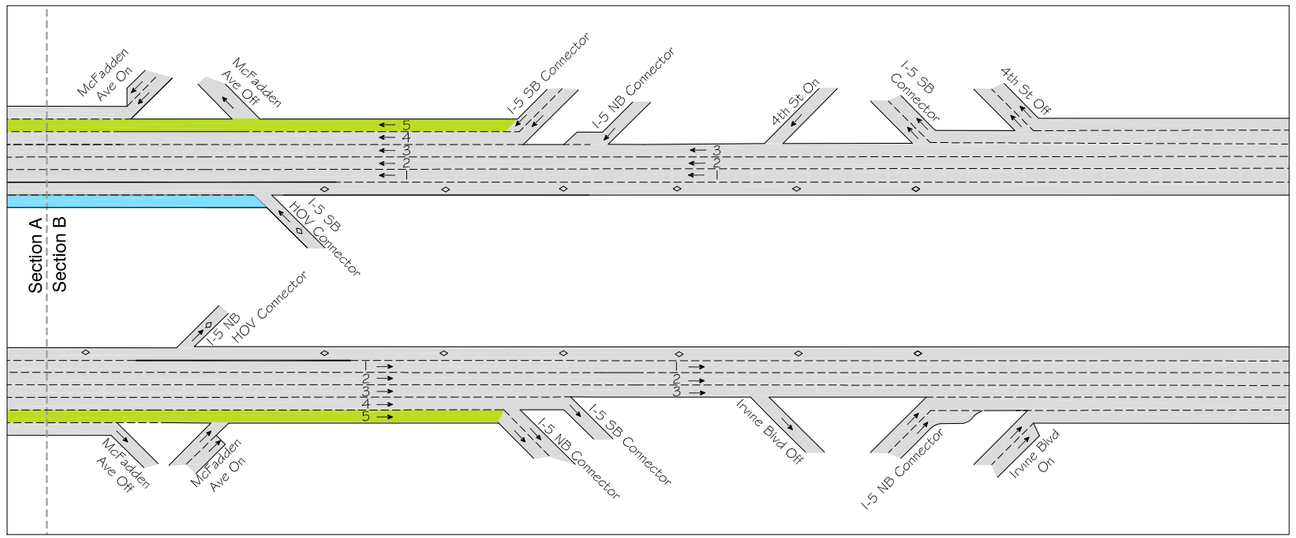
BUILD ALTERNATIVE 1 (NEW AUXILIARY LANE)

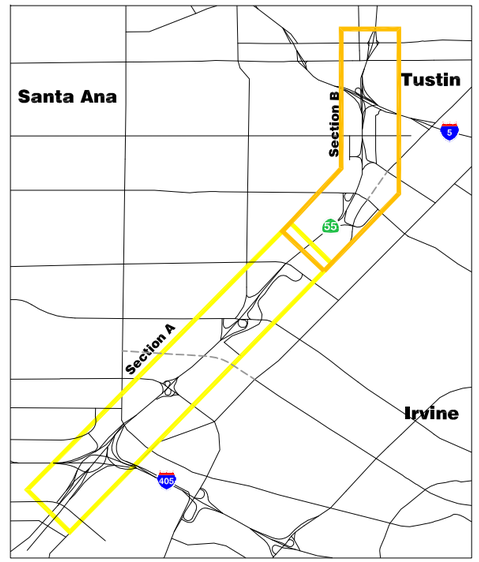
EXHIBIT B





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- ▬ - Proposed General Purpose Lane
- ▬ - Proposed HOV Lane
- ▬ - HOV Limited Access



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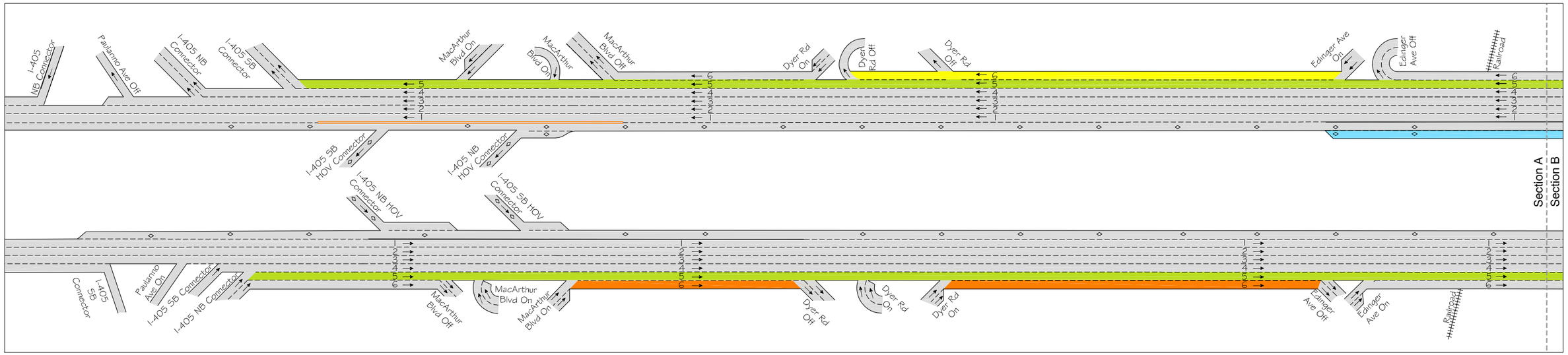
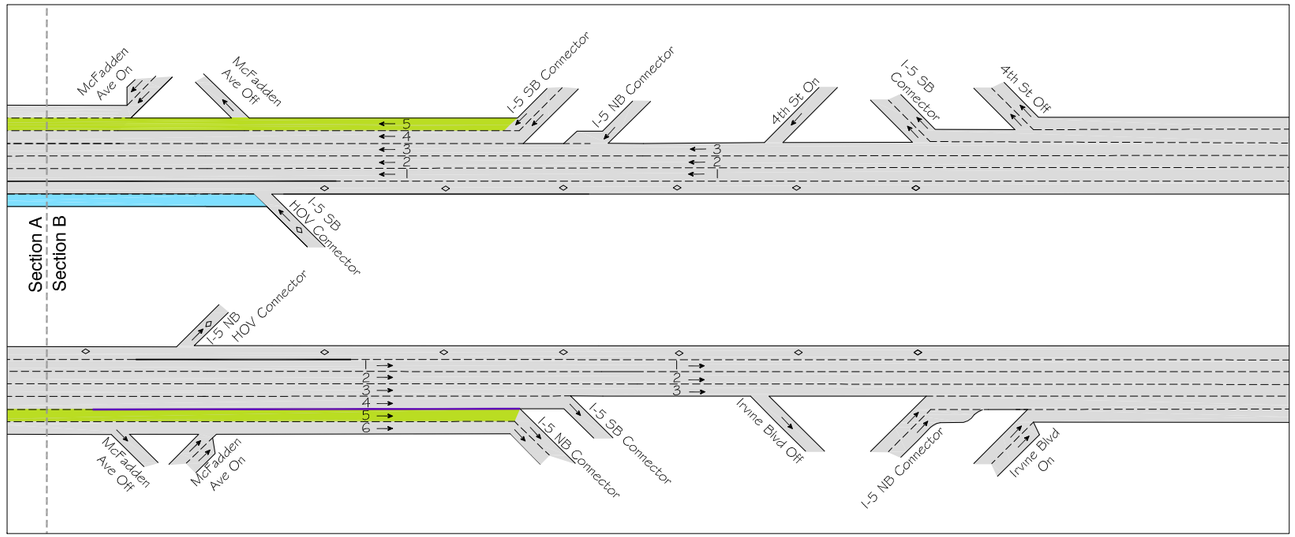
BUILD ALTERNATIVE 2 (NEW GENERAL PURPOSE LANE)

EXHIBIT C





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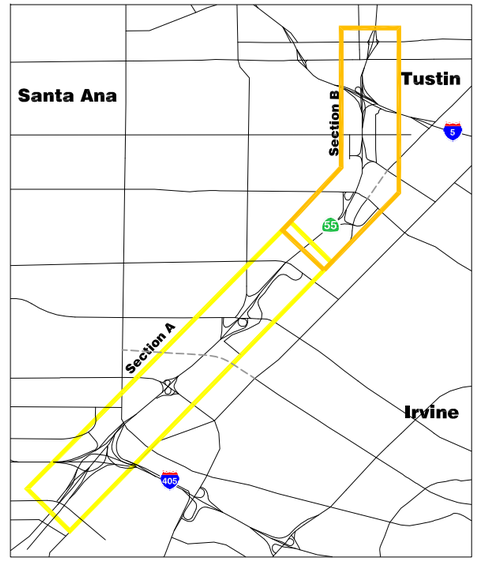
LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - Improvements by Other Project Completed in 2012
- - HOV Limited Access



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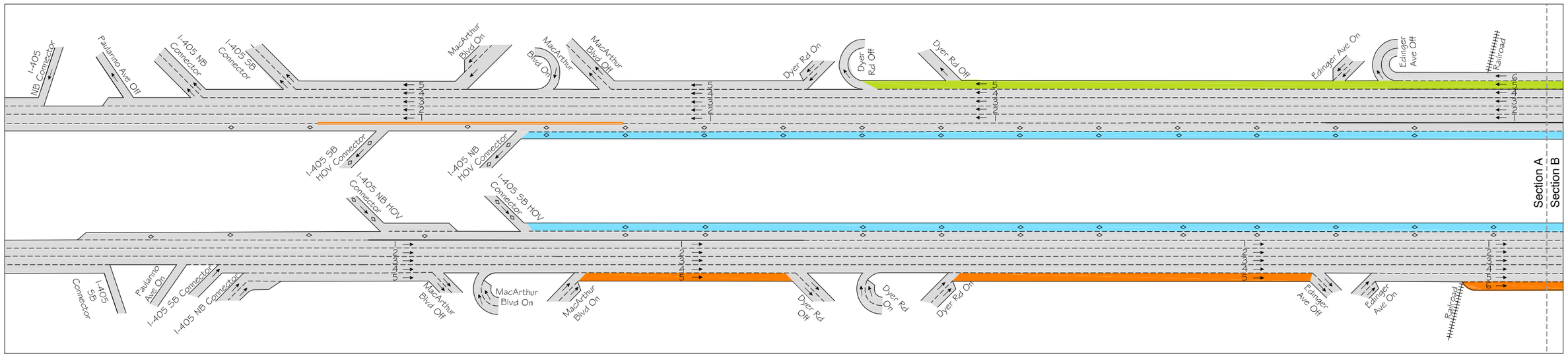
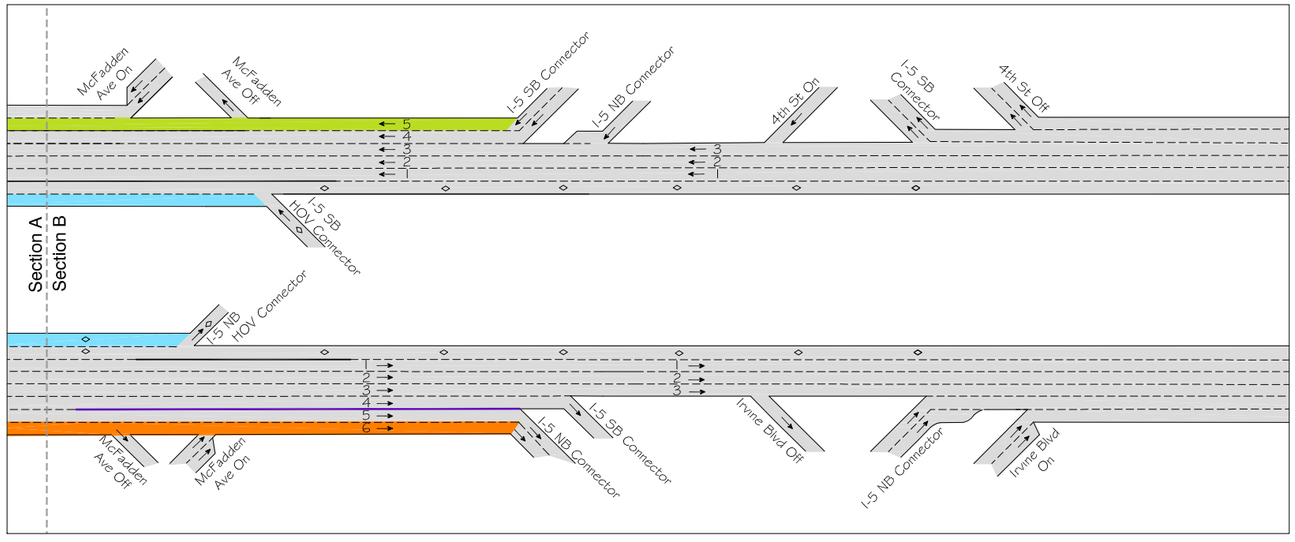
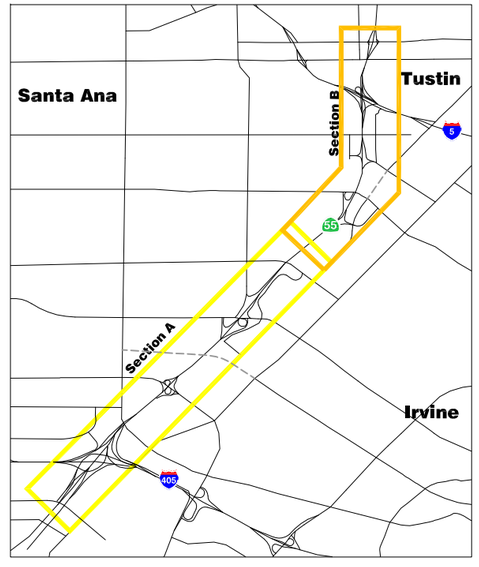
BUILD ALTERNATIVE 3
(NEW GENERAL PURPOSE LANE + NEW AUXILIARY LANE)
EXHIBIT D





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - HOV Limited Access



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Jun 29, 2015 MKAO
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BUILD ALTERNATIVE 4
(NEW GENERAL PURPOSE LANE + NEW HOV LANE)
EXHIBIT E

4. DESIGN YEAR 2040 TRAFFIC DEMAND FORECASTS

Year 2040 has been identified as the Design Year for the SR-55 project per discussion with Caltrans and OCTA. This section presents the traffic forecasting methodologies and resulted peak hour and daily traffic volume forecasts for the study locations identified in the previous section of the report.

Traffic Forecasting Methodology

The most current version of OCTAM (v3.4) was used to develop the Design Year 2040 traffic forecasts. Both the Base Year (2010) and Future Year (2035) models were reviewed and concurred with the OCTA Modeling Section prior to development of the specific future year models for the SR-55 project.

Per recent discussion and concurrence made by the PDT, the 2010 LRTP projects categorized under the "Preferred Plan" (see Appendix for the project list) are assumed to be completed by Year 2040 and included in the 2040 baseline conditions. The key arterial improvements within the study area include the Newport Avenue extension and the Alton Avenue overcrossing, and other major freeway projects in the study area include: I-5 HOV project (between SR-55 and SR-57), I-5 improvement project (between SR-55 and I-405), I-405 improvement project (between SR-73 and I-605), I-405 improvement project (between SR-55 and I-5), and SR-55 improvement project (between I-5 and SR-22).

It should be noted that based on discussions with OCTA and Caltrans District 12, the HOV drop-down ramps at Alton Parkway, Von Karman Avenue and Bear Street were removed from the Future Year Model.

The Future Year (2035) model was then developed in coordination with the OCTA Modeling Section for each of the five project alternatives identified in Section 3 to generate the ADT and AM/PM peak period traffic volumes. Based on the raw model volumes from the Base Year (2010) and Future Year (2035) models, the ADT and peak hour traffic volumes were developed using the difference method contained in the National Cooperation Highway Research Program (NCHRP) Report 255: *Highway Traffic Data for Urbanized Area Project Planning and Design* (Transportation Research Board, December 1982). Since the current OCTAM future model reflects Year 2035 conditions, the Design Year 2040 were developed by applying the five-year growth to the 2035 forecasts using a calculated annual growth rate between existing and the 2035 traffic forecasts.

For the SR-55 mainline segments, the Design Year 2040 traffic demand was developed using the methodologies described above for the entering locations – south of Paularino Avenue in the northbound direction and north of 4th Street in the southbound direction. Then the traffic forecasts at the two locations were balanced downstream to develop the traffic volumes for other study freeway mainline segments.

McFadden Avenue On-Ramp Volume Splits

One key element for traffic forecasts under Alternatives 3 and 4 is to determine the percentages of traffic splits from the McFadden Avenue on-ramp to downstream destinations including northbound I-5 connector, southbound I-5 connector, and northbound SR-55. To obtain the traffic split data at the McFadden Avenue on-ramp, a three-day video survey was conducted on weekdays in September 2013 when schools were in session during the AM and PM peak periods.

The survey results indicate under existing conditions, a majority of the traffic using the McFadden Avenue on-ramp is traveling to northbound I-5, and the remaining traffic would split between southbound I-5 and northbound SR-55. As shown below, the percentages of the McFadden Avenue on-ramp traveling to northbound I-5, southbound I-5, and northbound SR-55 are 45%, 28%, and 27% in the AM peak period. In the PM peak period, the percentage stays the same as 45% to northbound I-5, decrease to 20% to southbound I-5, and increase to 35% to northbound SR-55.

	AM Peak Period	PM Peak Period
McFadden On-ramp to Northbound I-5	45%	45%
McFadden On-ramp to Southbound I-5	28%	20%
McFadden On-ramp to Northbound SR-55	27%	35%

The traffic splits at the McFadden Avenue on-ramp under the future year conditions were estimated based on the traffic pattern changes identified in the OCTAM models. In the Year 2040 conditions, the percentages of trips from the McFadden Avenue on-ramp to northbound SR-55 and northbound I-5 would increase by approximately 3 percent during the AM peak period and by approximately 4 percent in the PM peak period.

With the limited access at the McFadden Avenue on-ramp, most of the traffic would be diverted to use Newport Avenue and Red Hill Avenue. Traffic intended to travel to northbound SR-55 would mainly shift to use Newport Avenue and Red Hill Avenue to get onto northbound I-5 first and then connect to northbound SR-55, while a small part of the traffic would use Edinger Avenue and Dyer Road on-ramps to get onto northbound SR-55, and very few would use MacArthur Boulevard and Irvine Boulevard on-ramp to access northbound SR-55. For traffic intended to travel to southbound I-5, most of them would get onto southbound I-5 using the Red Hill Avenue on-ramp. These traffic pattern changes are consistent with the roadway connectivity, local street capacity/congestion conditions, as well as the commuter expectations

Traffic Forecasting Results

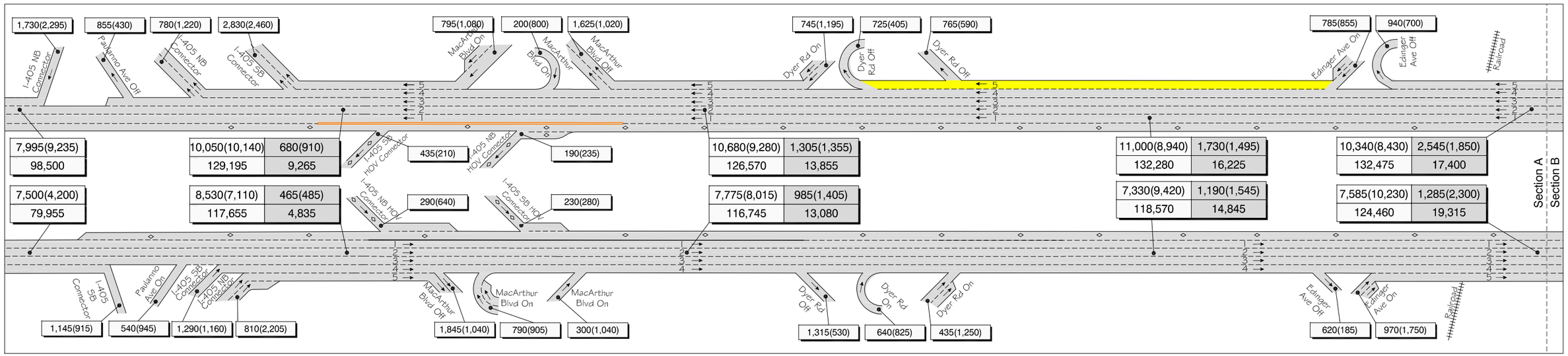
The Design Year (2040) traffic volume forecasts (including the ADT and AM/PM peak hour volumes for freeway mainline and HOV segments, AM/PM peak hour volumes for on- and off-ramps, and AM/PM peak hour turning movement volumes at ramp terminal intersections) were developed under each of the five alternatives. In addition, the AM/PM peak hour turning movement volumes were developed for the 12 local intersections under Alternatives 3 and 4 in comparison to the No Build Alternative, which are used to identify potential impacts to local streets related to the McFadden Avenue on-ramp limited access proposed under Alternatives 3 and 4.

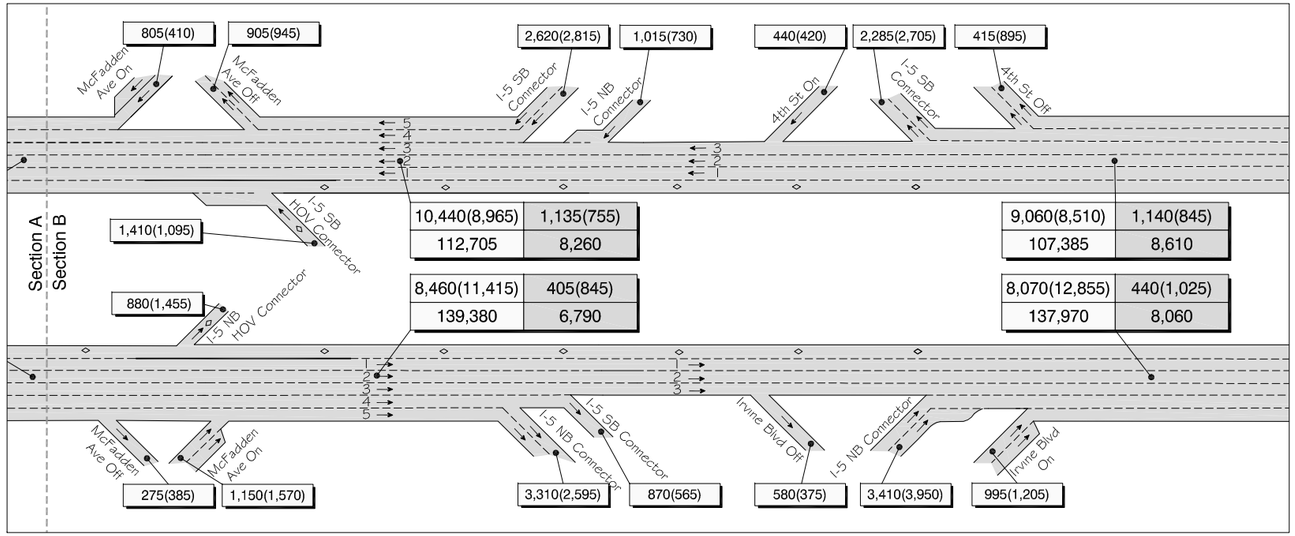
Figures 2A/2B through 6A/6B display the 2040 traffic forecasts for freeway mainline/HOV segment/ramps and study ramp terminal intersections for the following project alternatives.

- No Build Alternative (Figure 2A & 2B)
- Build Alternative 1 (Figure 3A & 3B)
- Build Alternative 2 (Figure 4A & 4B)
- Build Alternative 3 (Figure 5A & 5B)
- Build Alternative 4 (Figure 6A & 6B)

In addition, the 2040 traffic forecasts at the study local intersections are shown in Figures 2C, 5C, and 6C under the following project alternatives.

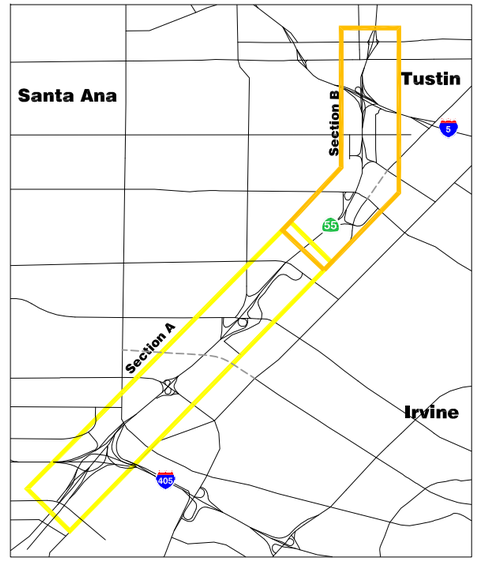
- No Build Alternative (Figure 2C)
- Build Alternative 3 (Figure 5C)
- Build Alternative 4 (Figure 6C)





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed Future Improvements by Other Projects
- - HOV Limited Access



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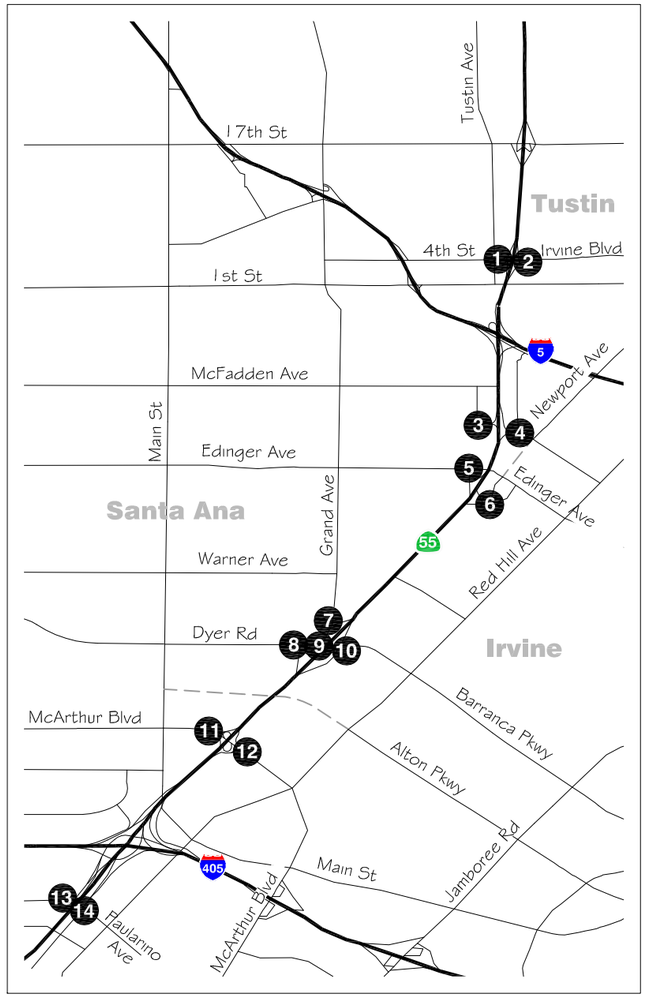
REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - DESIGN YEAR 2040 - NO BUILD ALTERNATIVE

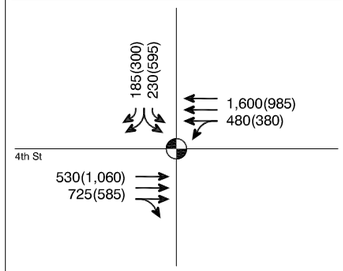
FIGURE 2-A



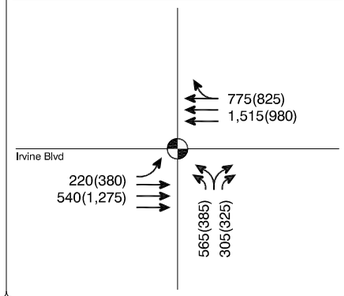
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

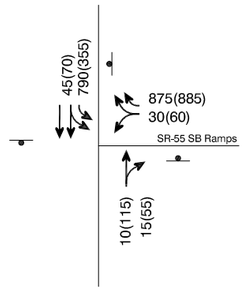
1. SR-55 SB Ramps/4th St



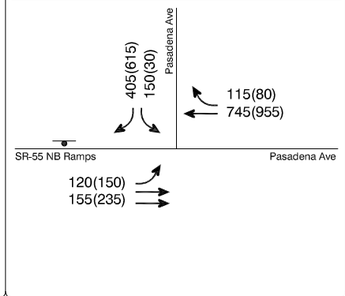
2. SR-55 NB Ramps/Irvine Blvd



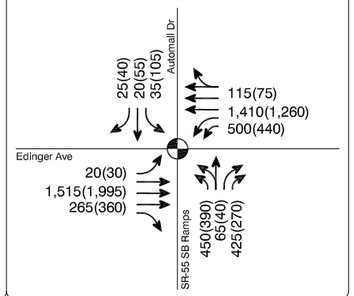
3. Tustin Village Way/SR-55 SB Ramps



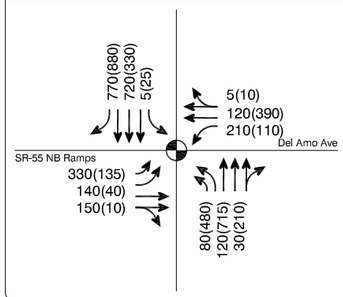
4. Pasadena Ave/SR-55 NB Ramps .



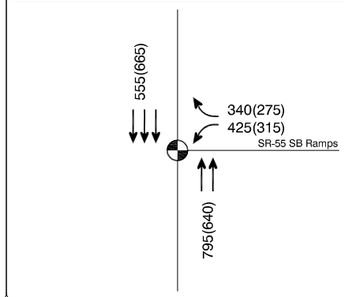
5. Automall Dr/SR-55 SB Ramps/Edinger Av



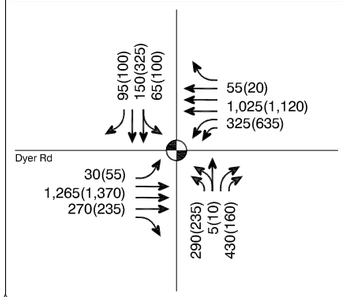
6. Newport Ave/SR-55 NB Ramps



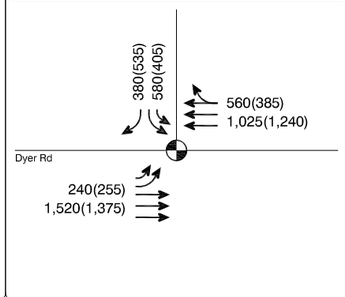
7. S Grand Ave/SR-55 SB Ramps



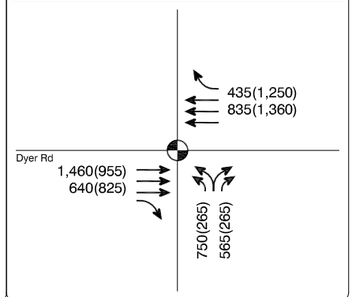
8. SR-55 SB Ramps/Dyer Rd



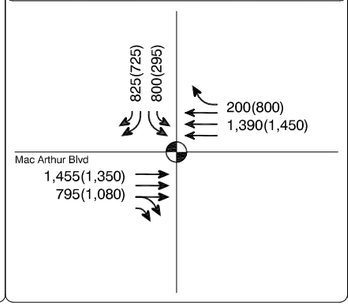
9. S Grand Ave/Dyer Rd



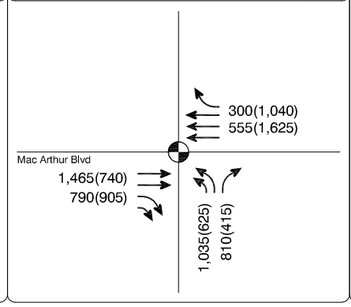
10. SR-55 NB Ramps/Dyer Rd



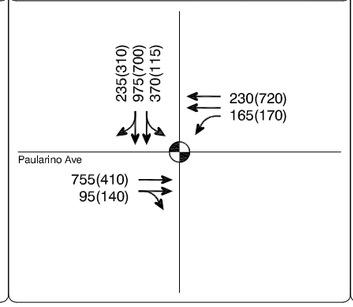
11. SR-55 SB Ramps/MacArthur Blvd



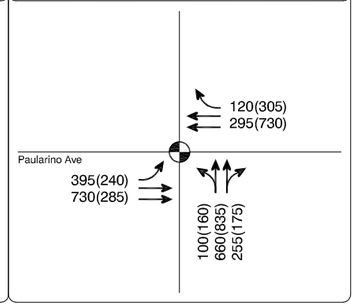
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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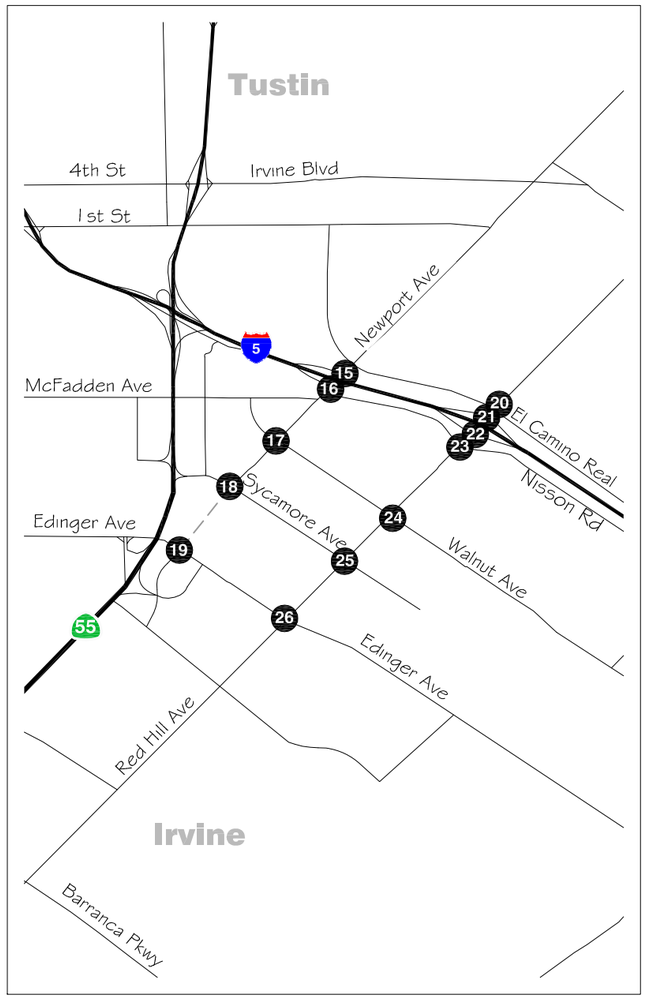
REVISED DRAFT

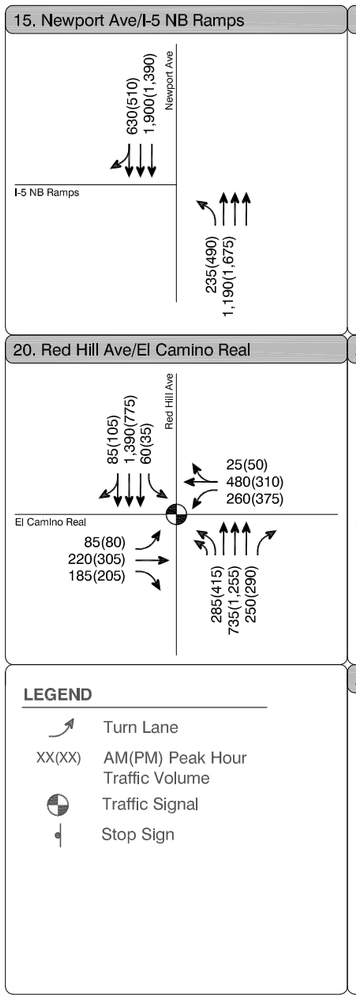
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - NO BUILD ALTERNATIVE

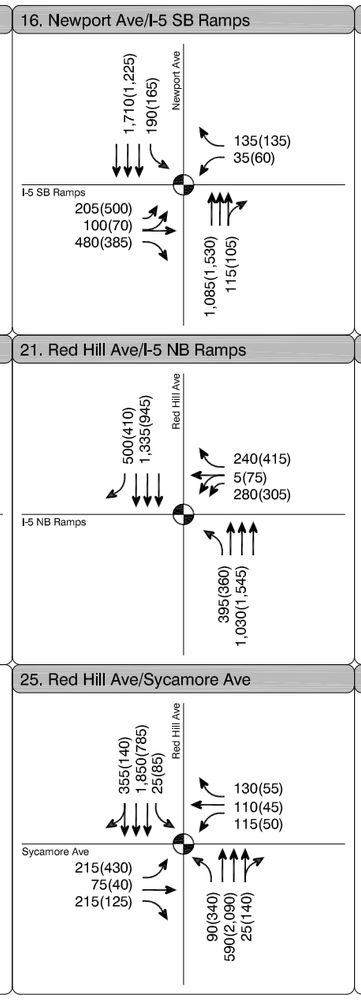
FIGURE 2-B

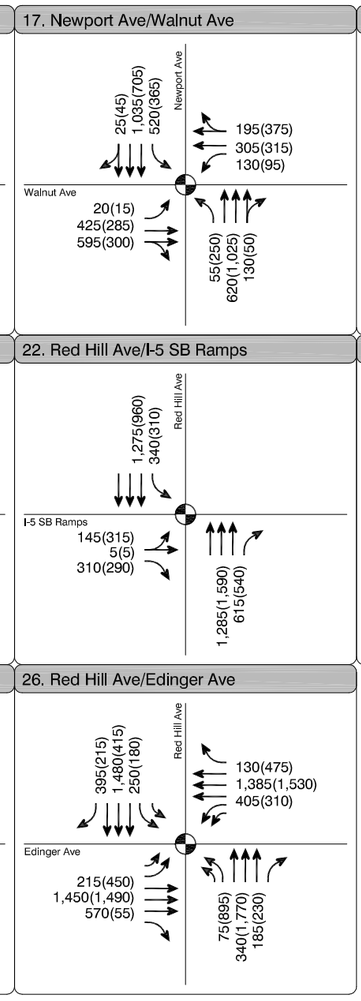
FEHR & PEERS

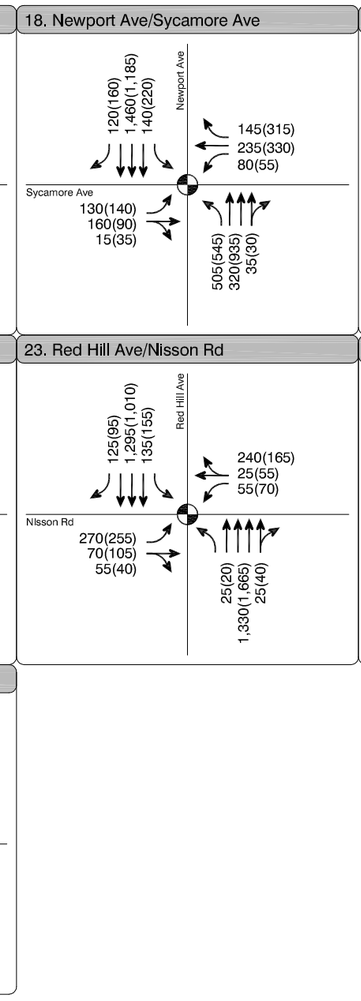
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3BALT3-3BALT4 (WAS OLD 17B-18B)\Int_Vols2040_RampCl.dwg

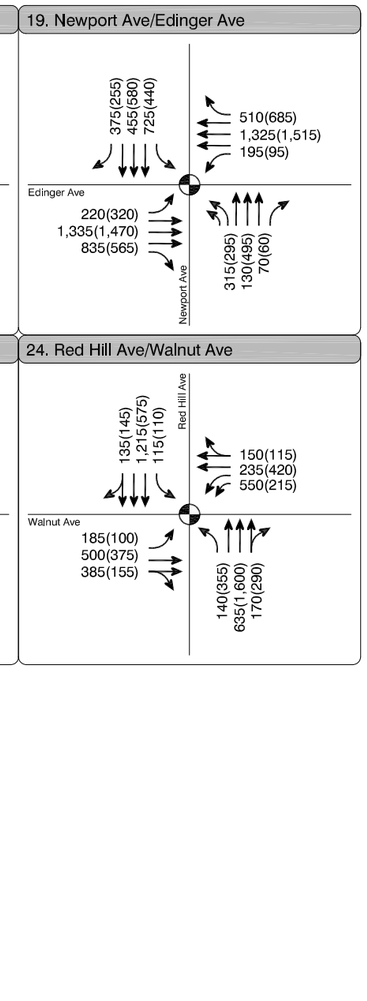












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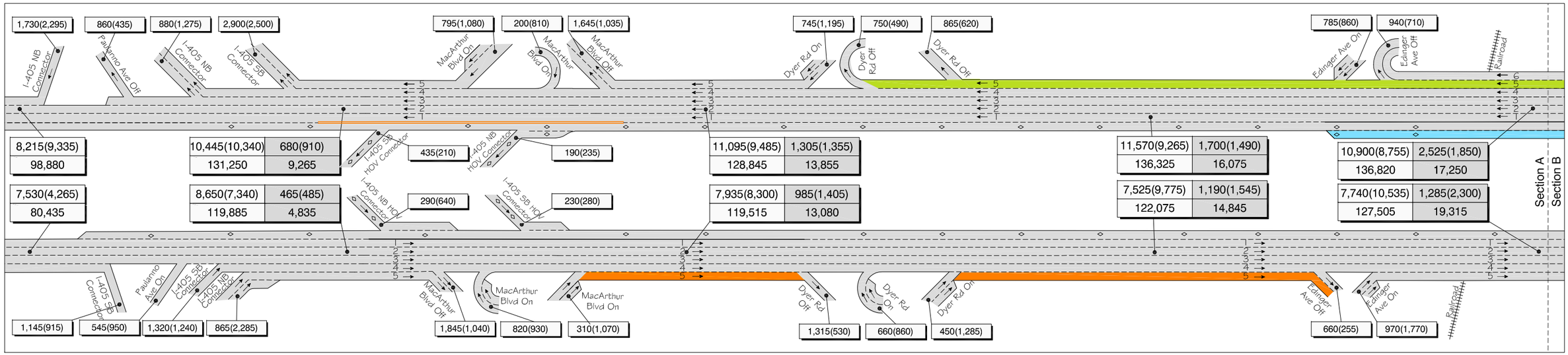
REVISED DRAFT

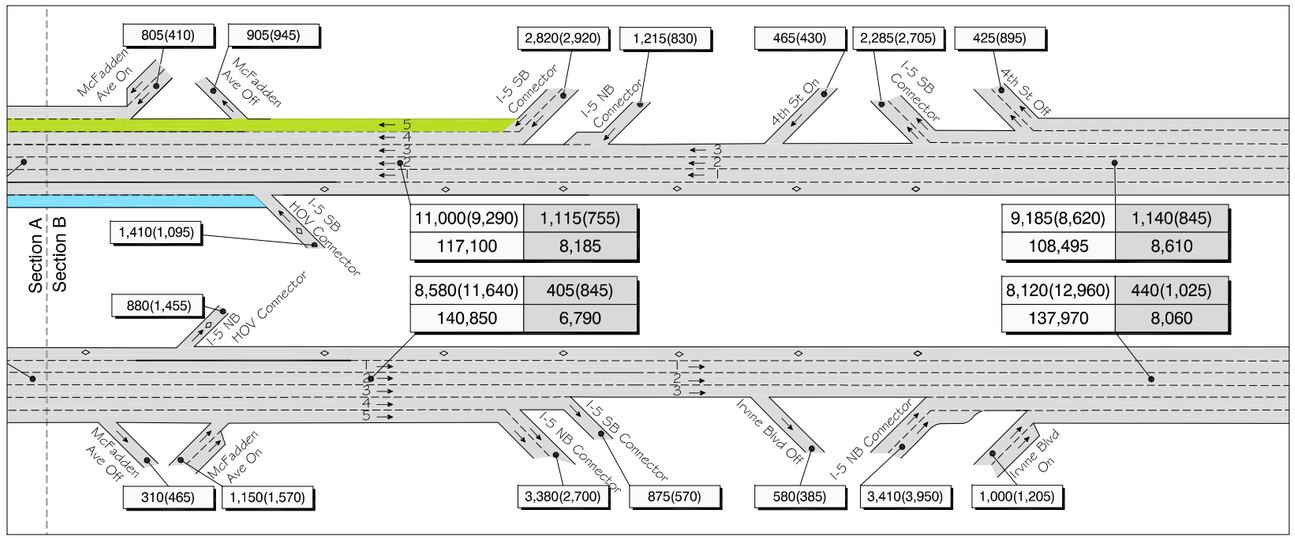
FEHR & PEERS

LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - NO BUILD ALTERNATIVE

FIGURE 2-C

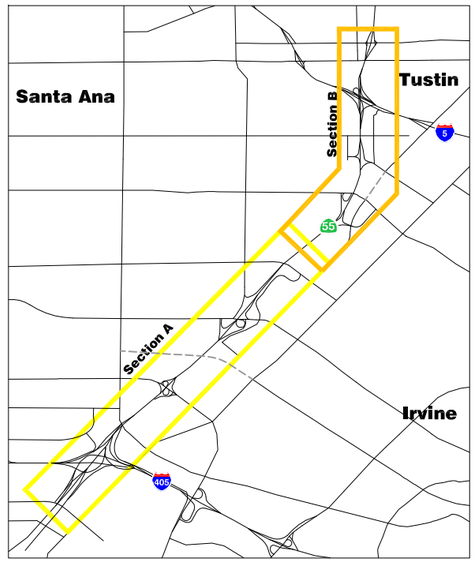
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3DALT3-ALT4 & 3EALT3-ALT4 (WAS OLD19-22)\LocalInt_Vols_2040.dwg





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - HOV Limited Access



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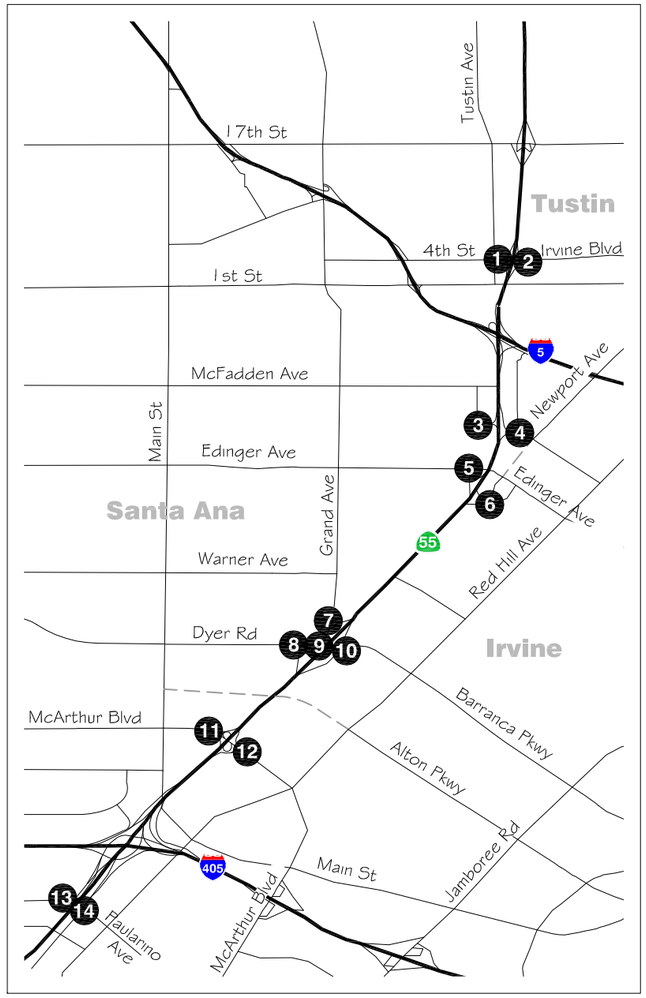
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F3-A-BUILD ALT1 (AKA F3-A)\F3-A-BUILD ALT1 (AKA F3-A)-FreewayVol.dwg

REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 1

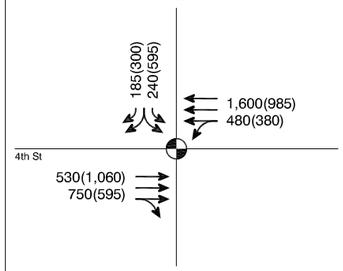
FIGURE 3-A



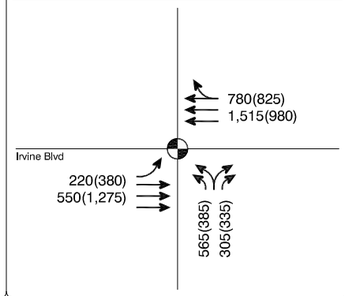
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

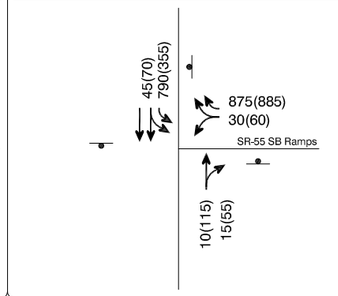
1. SR-55 SB Ramps/4th St



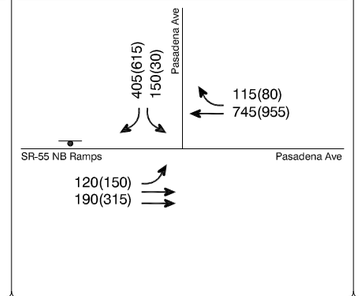
2. SR-55 NB Ramps/Irvine Blvd



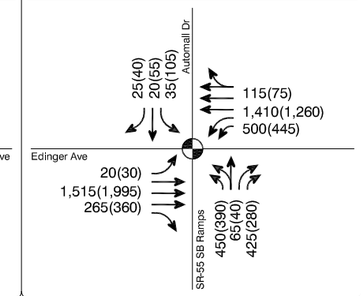
3. Tustin Village Way/SR-55 SB Ramps



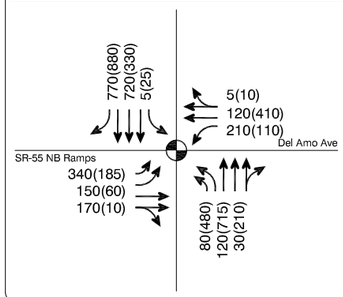
4. Pasadena Ave/SR-55 NB Ramps .



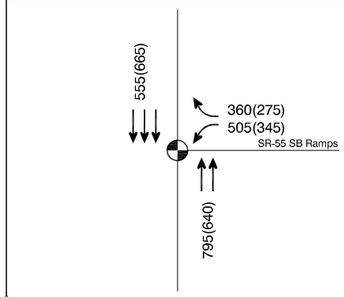
5. Automall Dr/SR-55 SB Ramps/Edinger Av



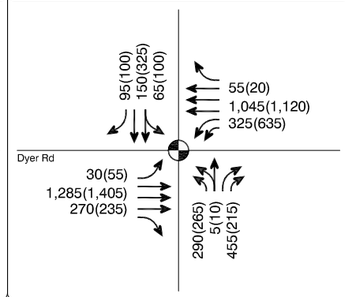
6. Newport Ave/SR-55 NB Ramps



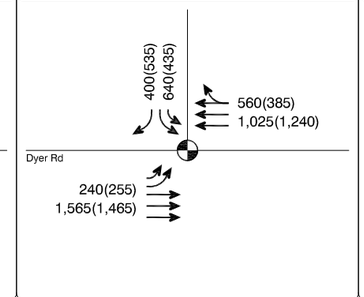
7. S Grand Ave/SR-55 SB Ramps



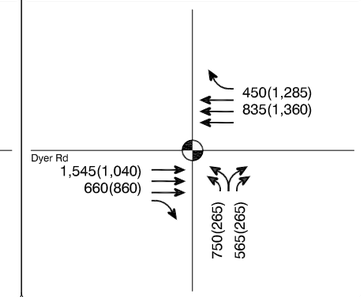
8. SR-55 SB Ramps/Dyer Rd



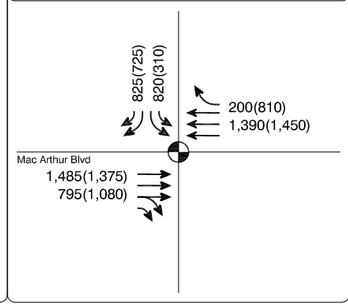
9. S Grand Ave/Dyer Rd



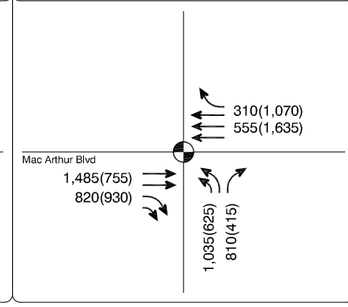
10. SR-55 NB Ramps/Dyer Rd



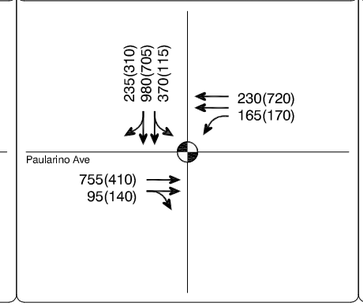
11. SR-55 SB Ramps/MacArthur Blvd



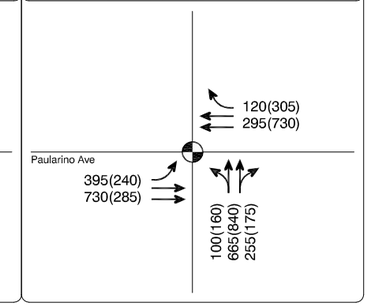
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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REVISED DRAFT

SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 1

FIGURE 3-B

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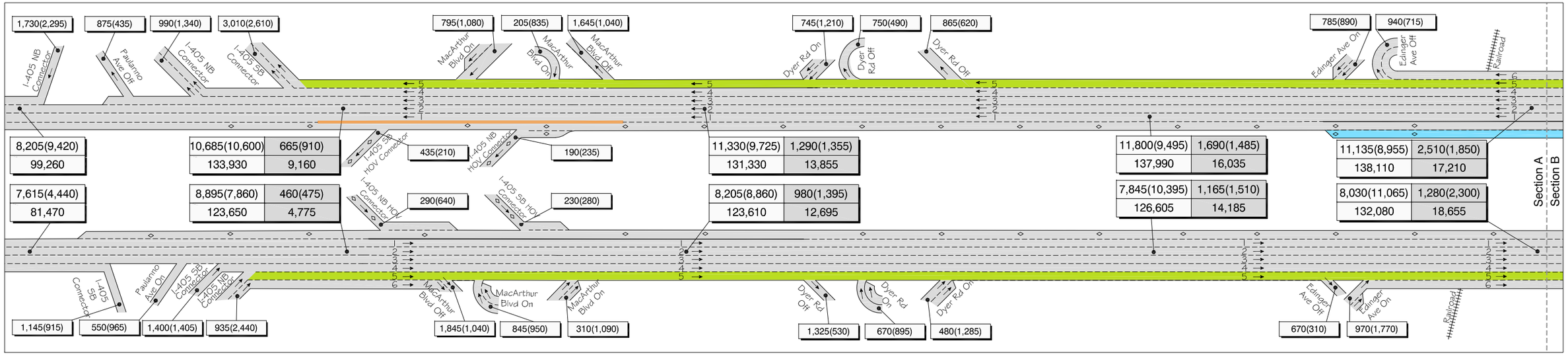
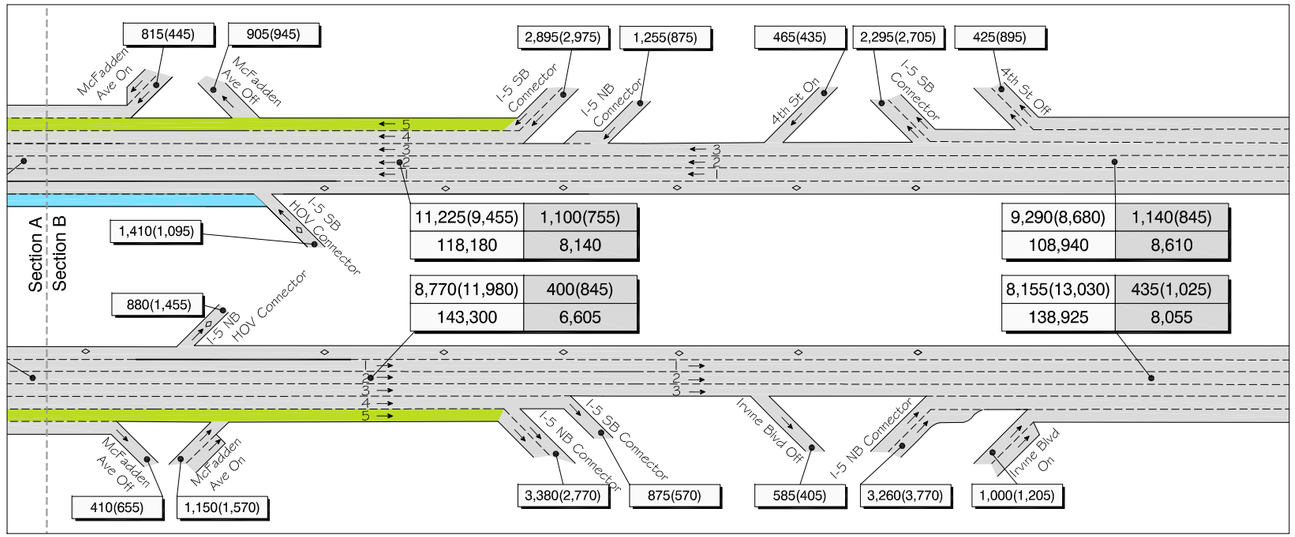
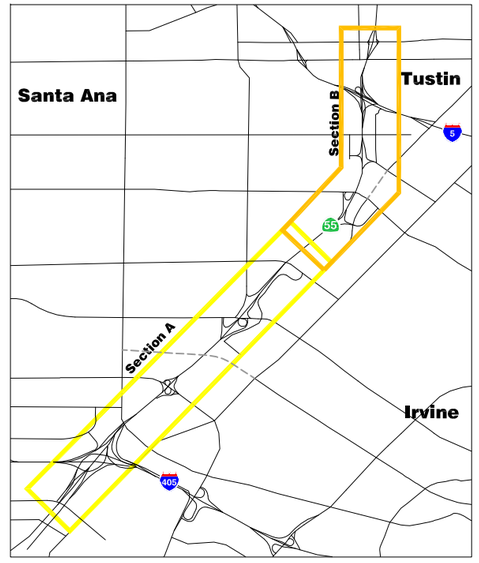
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3BALT3-3BALT4 (WAS OLD 17B-18B)\Int_Vols2040_RampCl.dwg





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed HOV Lane
- - HOV Limited Access



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NOT TO SCALE

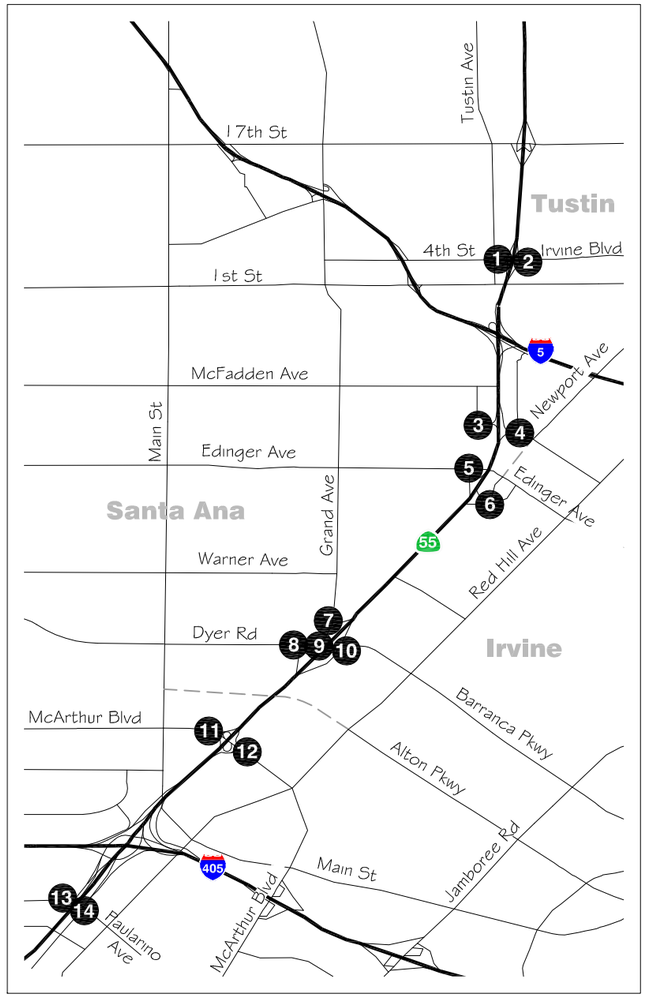
FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F3-A-BUILD ALT 2 (AKA F4-A)\F3-A-BUILD ALT 2 (AKA F4-A)-FreewayVol.dwg

REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 2

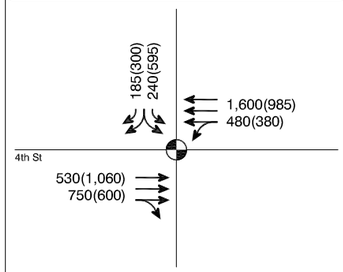
FIGURE 4-A



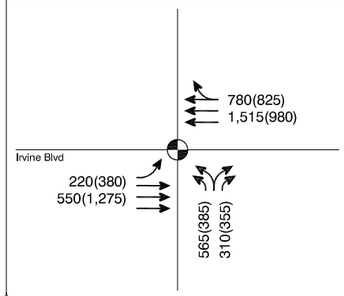
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

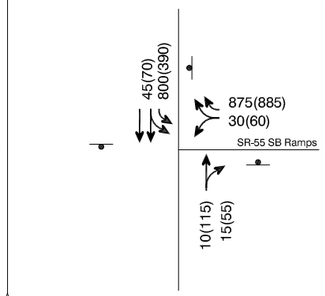
1. SR-55 SB Ramps/4th St



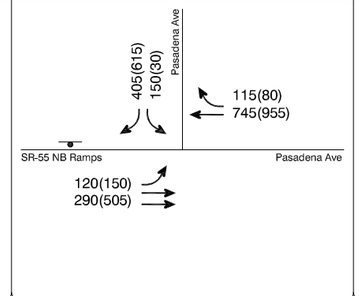
2. SR-55 NB Ramps/Irvine Blvd



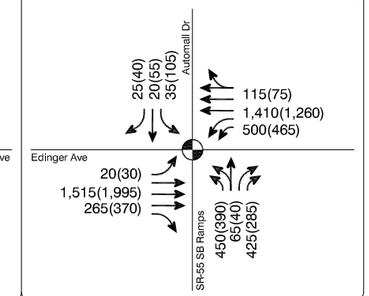
3. Tustin Village Way/SR-55 SB Ramps



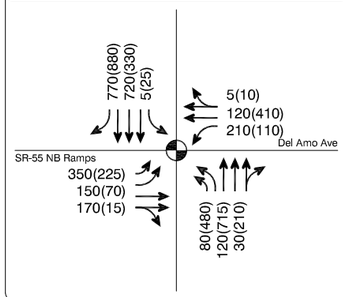
4. Pasadena Ave/SR-55 NB Ramps .



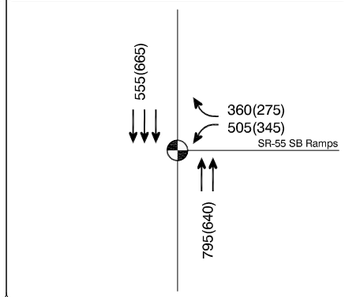
5. Automall Dr/SR-55 SB Ramps/Edinger Av



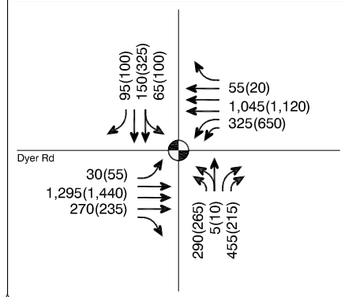
6. Newport Ave/SR-55 NB Ramps



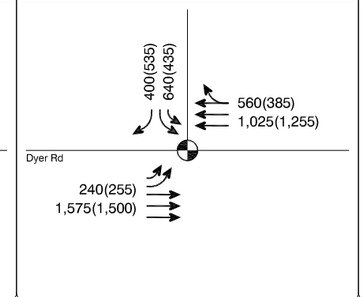
7. S Grand Ave/SR-55 SB Ramps



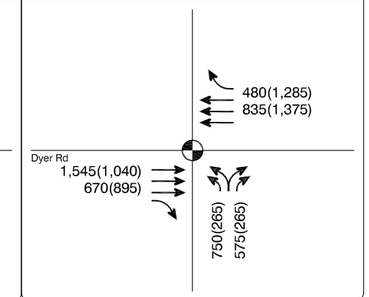
8. SR-55 SB Ramps/Dyer Rd



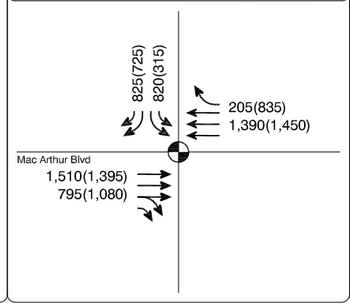
9. S Grand Ave/Dyer Rd



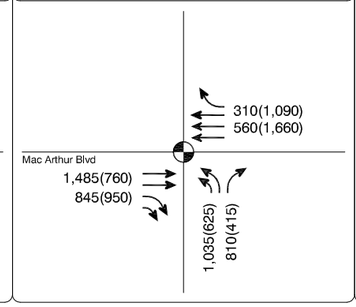
10. SR-55 NB Ramps/Dyer Rd



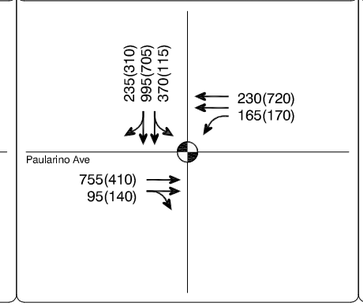
11. SR-55 SB Ramps/MacArthur Blvd



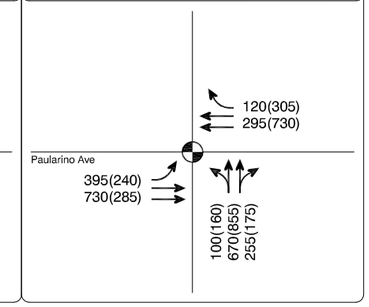
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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NOT TO SCALE

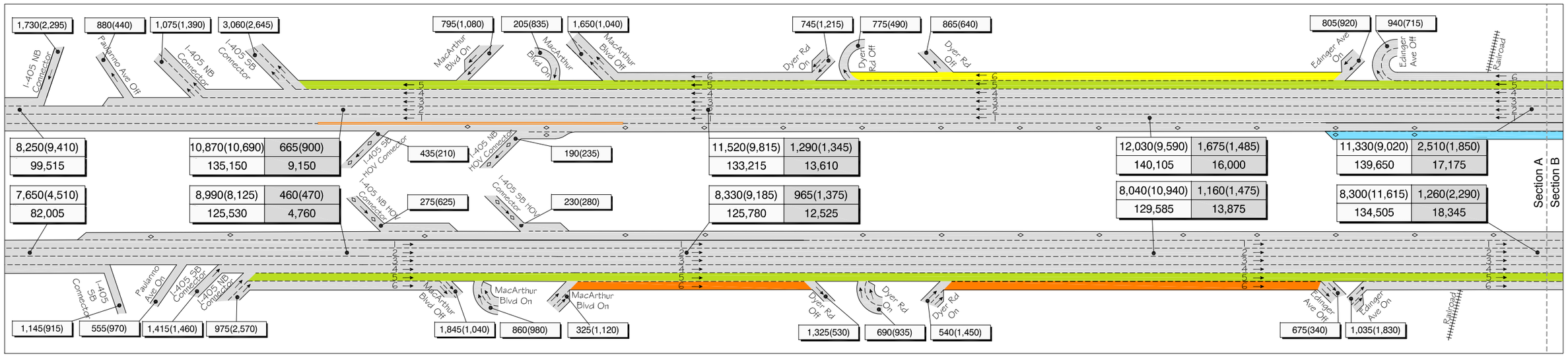
REVISED DRAFT

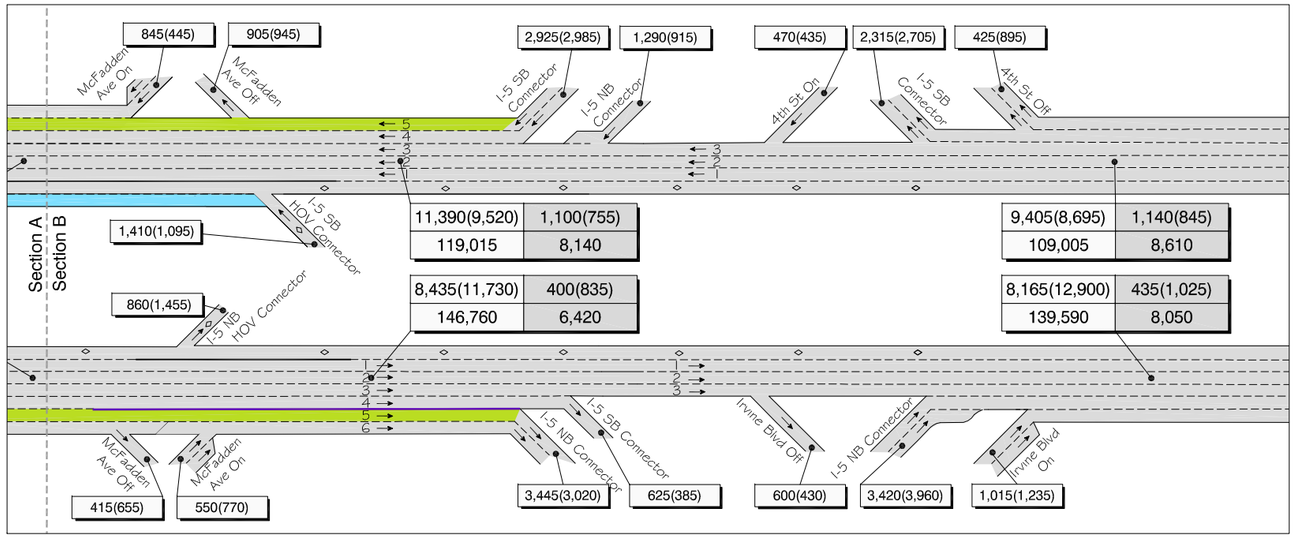
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 2

FIGURE 4-B

FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3BALT3-3BALT4 (WAS OLD 17B-18B)\Int_Vols2040_RampCl.dwg



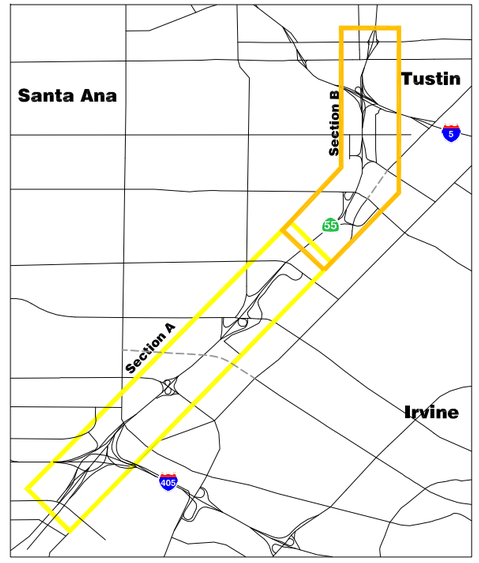


N

NOT TO SCALE

LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - Improvements by Other Project Completed in 2012
- - HOV Limited Access



REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 3

FIGURE 5-A

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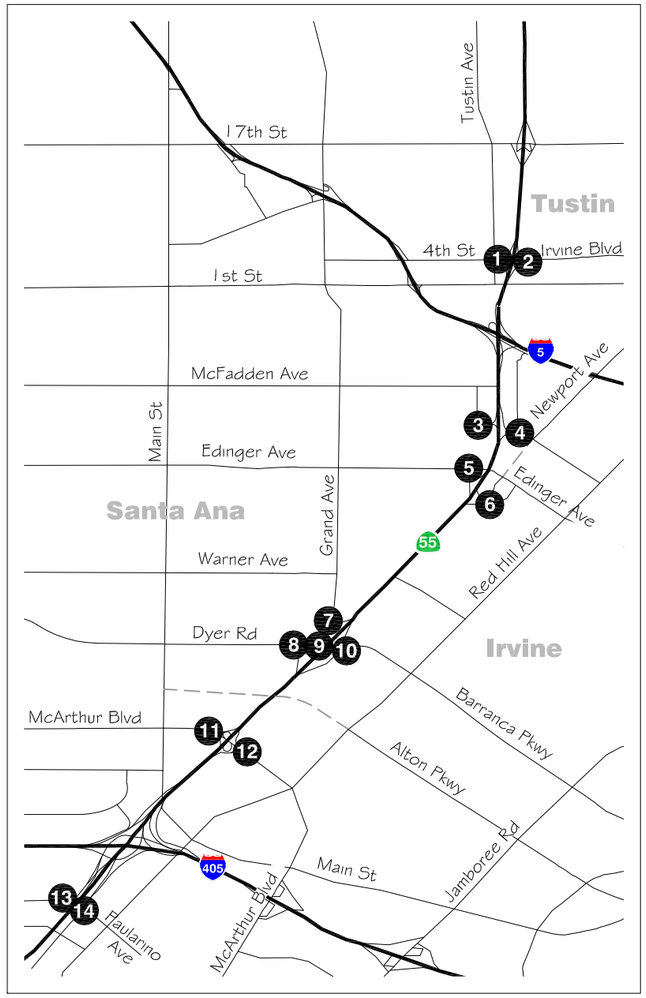
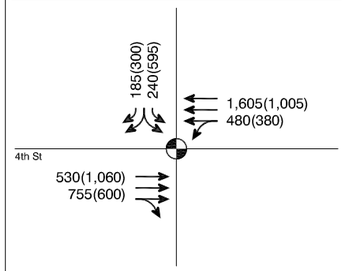
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F3-A-2040 BUILD ALT 3 WITH MCFADDEN VARIATION\F3-A-2040 BUILD ALT 3 FreewayVol with McFadden Design Variation.dwg



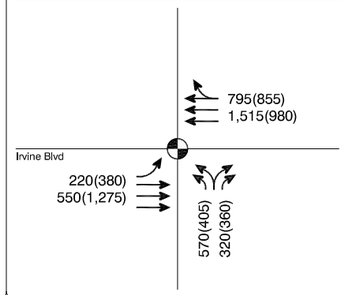
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

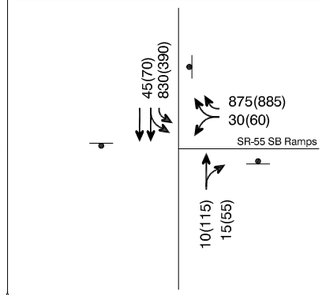
1. SR-55 SB Ramps/4th St



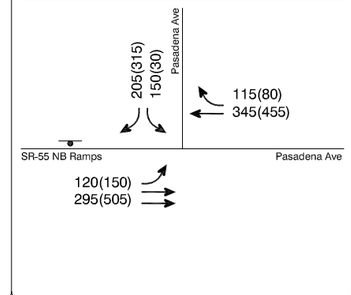
2. SR-55 NB Ramps/Irvine Blvd



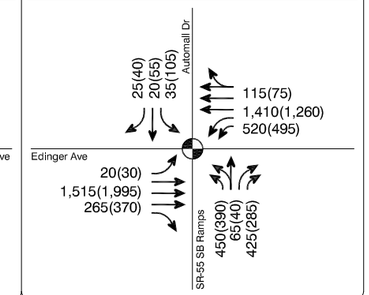
3. Tustin Village Way/SR-55 SB Ramps



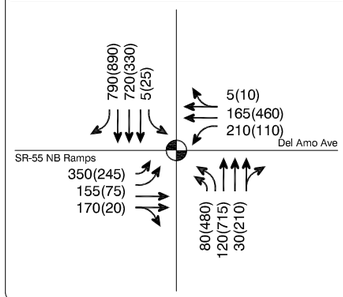
4. Pasadena Ave/SR-55 NB Ramps .



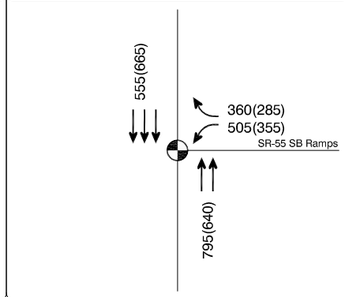
5. Automall Dr/SR-55 SB Ramps/Edinger Av



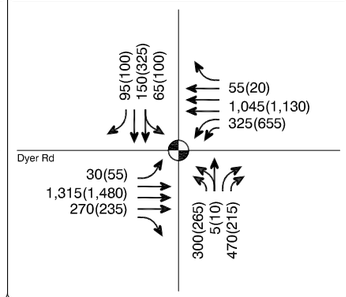
6. Newport Ave/SR-55 NB Ramps



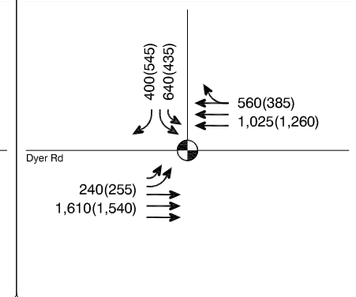
7. S Grand Ave/SR-55 SB Ramps



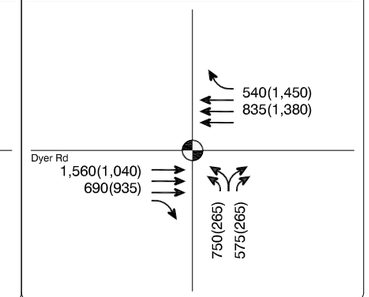
8. SR-55 SB Ramps/Dyer Rd



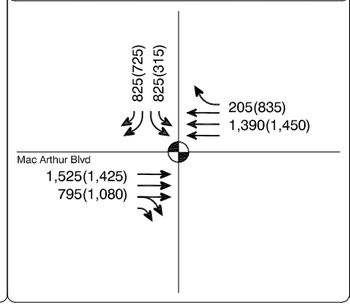
9. S Grand Ave/Dyer Rd



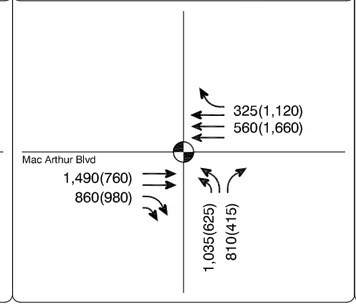
10. SR-55 NB Ramps/Dyer Rd



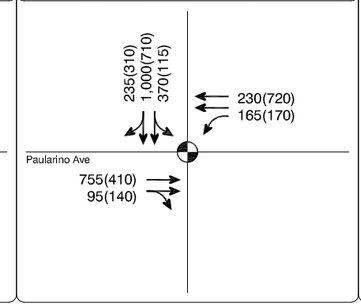
11. SR-55 SB Ramps/MacArthur Blvd



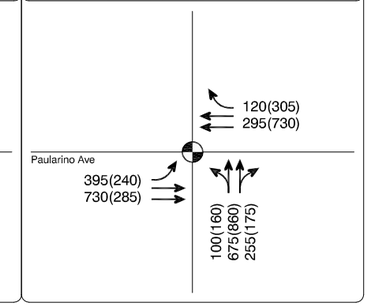
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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REVISED DRAFT

SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 3

FIGURE 5-B

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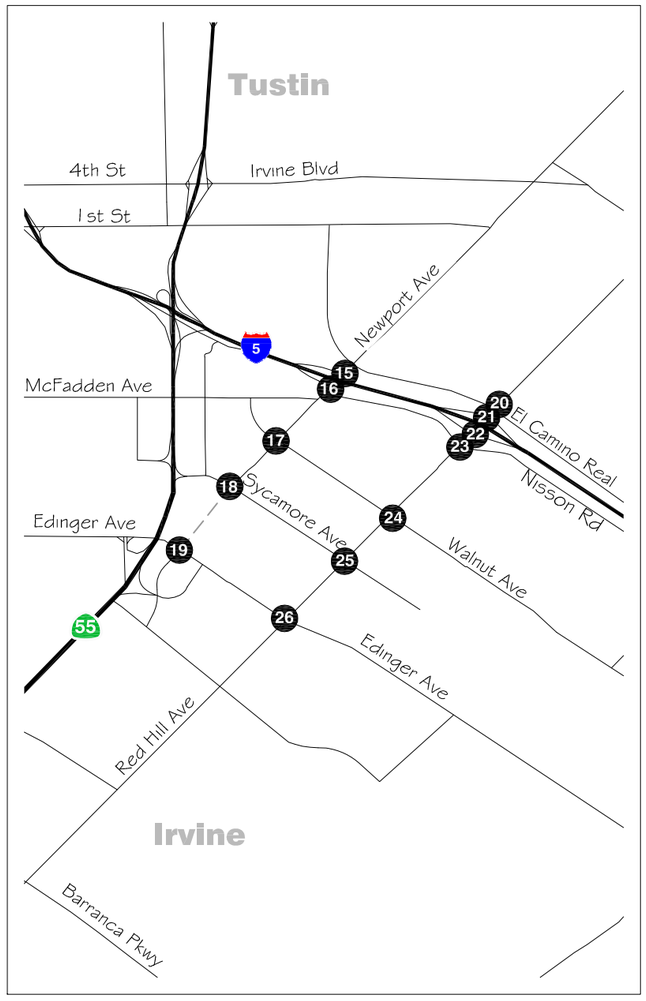
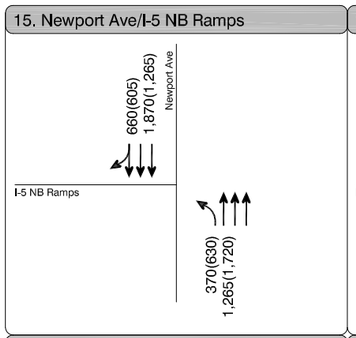
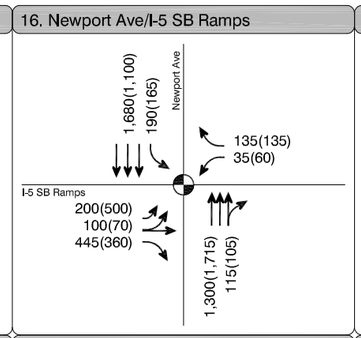
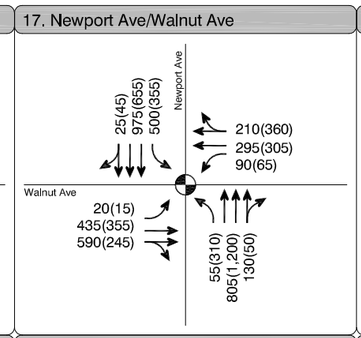
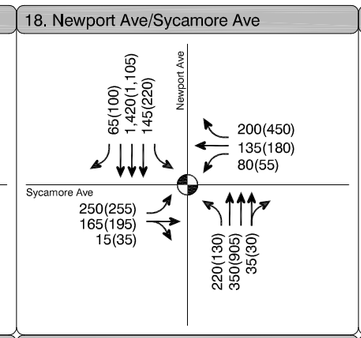
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3BALT3-3BALT4 (WAS OLD 17B-18B)\Int_Vols2040_RampCl.dwg

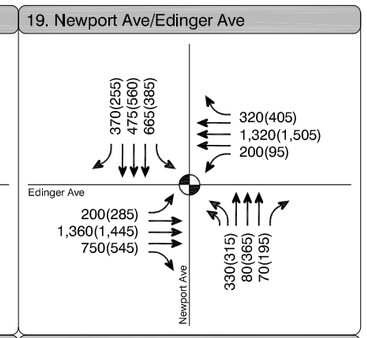


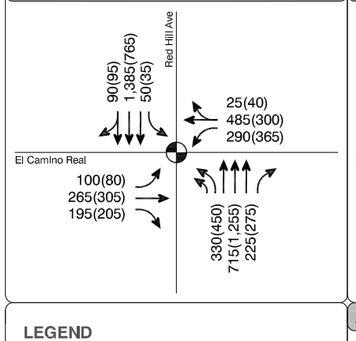


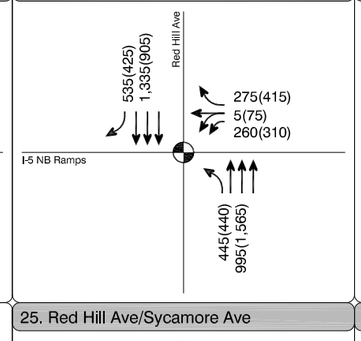


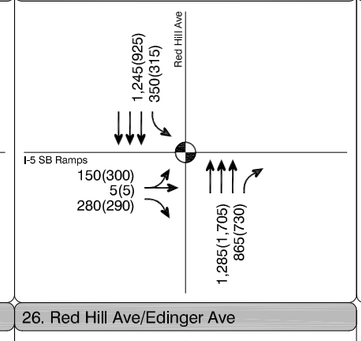


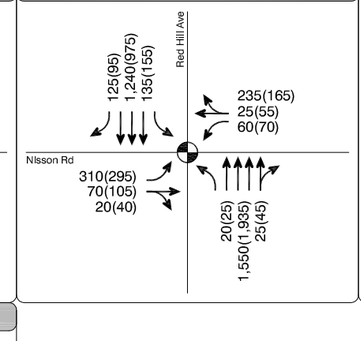


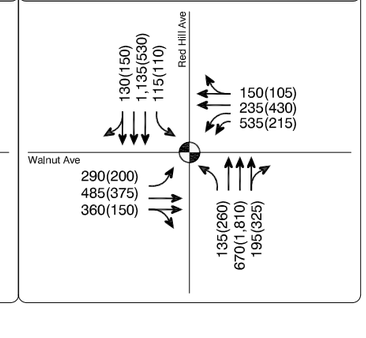






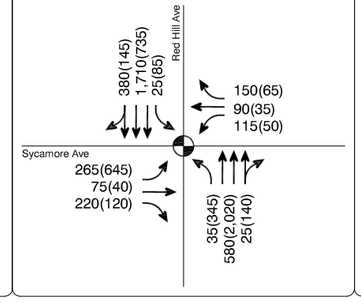


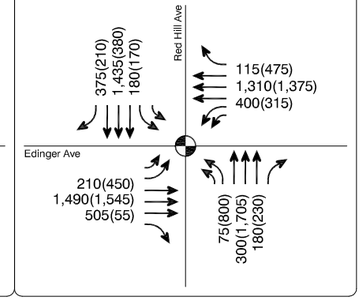




LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign





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NOT TO SCALE

REVISED DRAFT

LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 3

FIGURE 5-C

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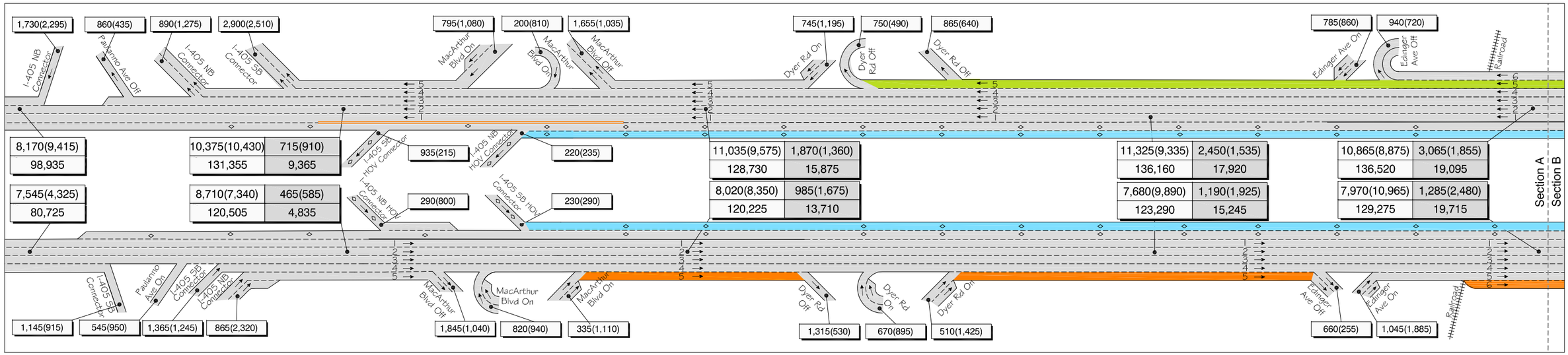
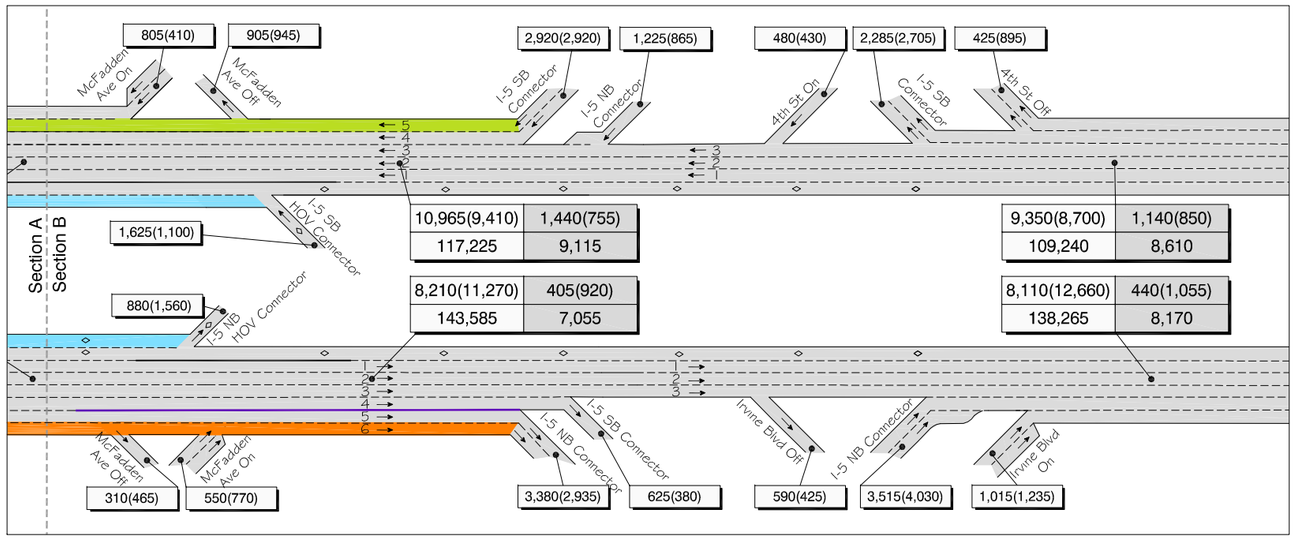
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\3DALT3-ALT4 & 3EALT3-ALT4 (WAS OLD19-22)\LocalInt_Vols_2040.dwg



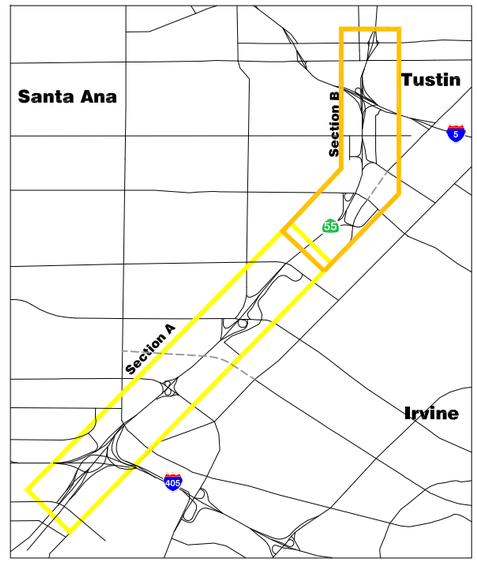


N

NOT TO SCALE

LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - HOV Limited Access



REVISED DRAFT

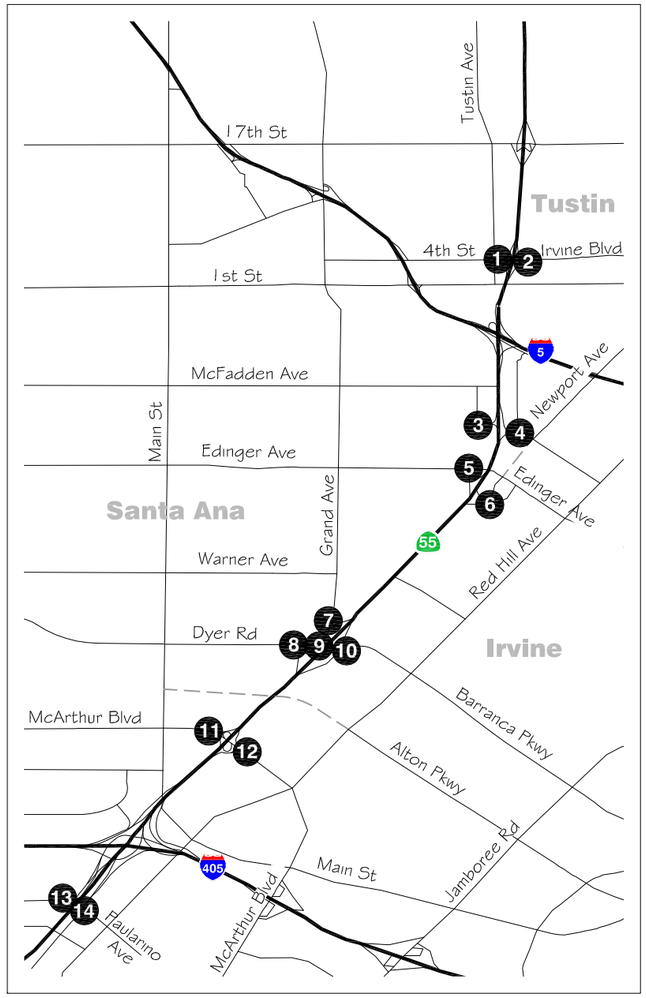
SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 4

FIGURE 6-A

FEHR & PEERS

Aug 30, 2015 MKAO

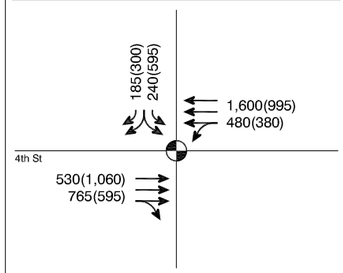
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F3-A-2040 BUILD ALT 4 WITH MCFADDEN VARIATION\F3-A-2040 BUILD ALT 4 Freeway Vol with McFadden Design Variation.dwg



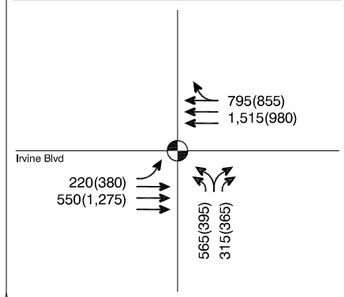
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

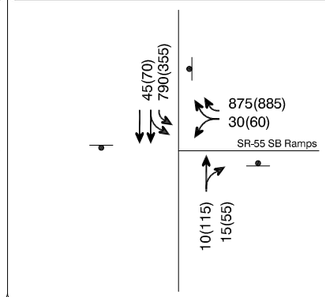
1. SR-55 SB Ramps/4th St



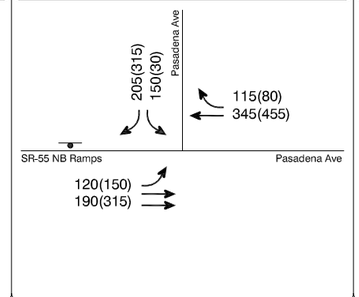
2. SR-55 NB Ramps/Irvine Blvd



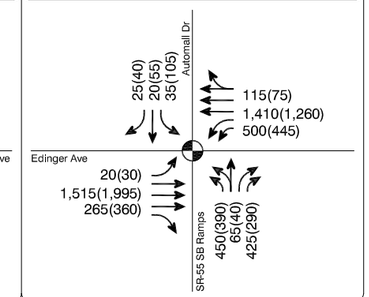
3. Tustin Village Way/SR-55 SB Ramps



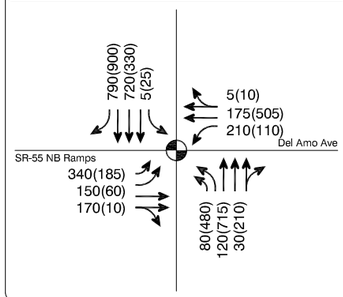
4. Pasadena Ave/SR-55 NB Ramps .



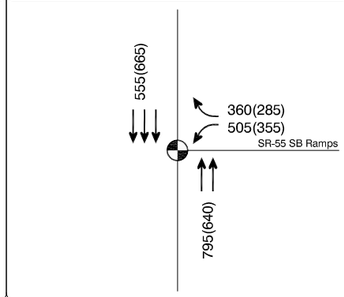
5. Automall Dr/SR-55 SB Ramps/Edinger Av



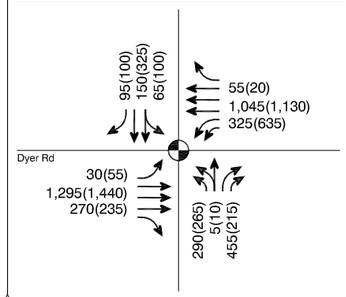
6. Newport Ave/SR-55 NB Ramps



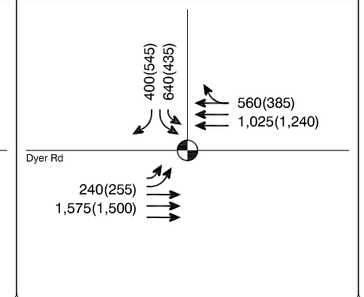
7. S Grand Ave/SR-55 SB Ramps



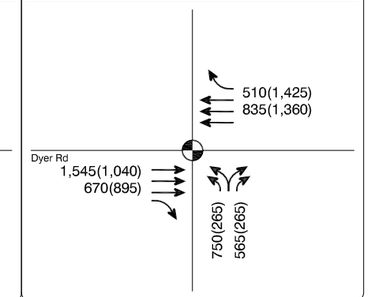
8. SR-55 SB Ramps/Dyer Rd



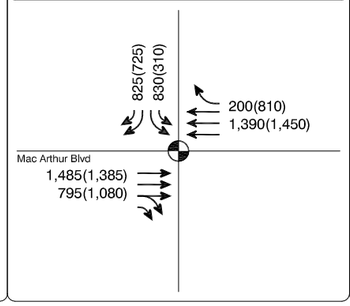
9. S Grand Ave/Dyer Rd



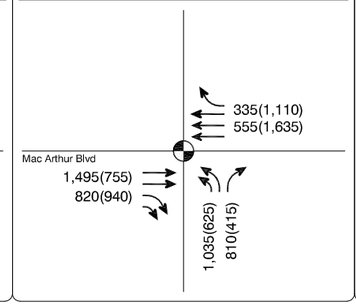
10. SR-55 NB Ramps/Dyer Rd



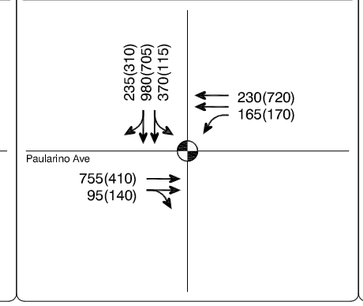
11. SR-55 SB Ramps/MacArthur Blvd



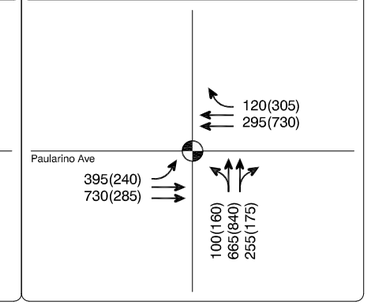
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



N

NOT TO SCALE

REVISED DRAFT

SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 4

FIGURE 6-B

FEHR & PEERS

Aug 30, 2015 MKAO
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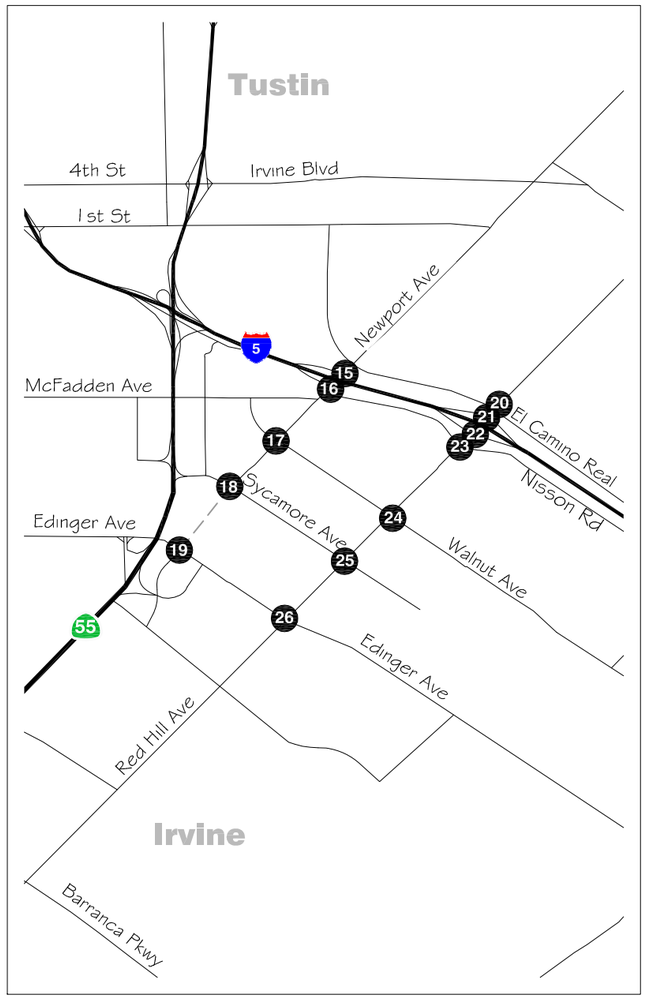
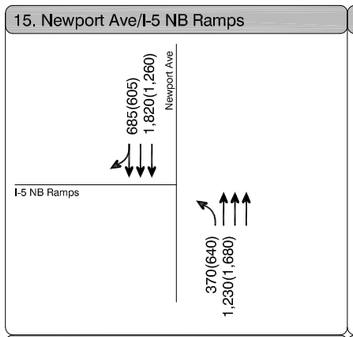
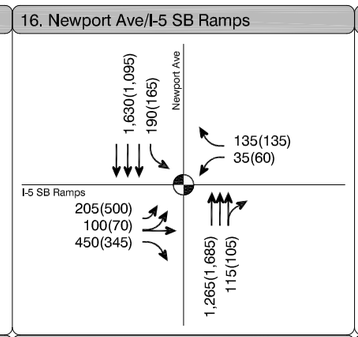
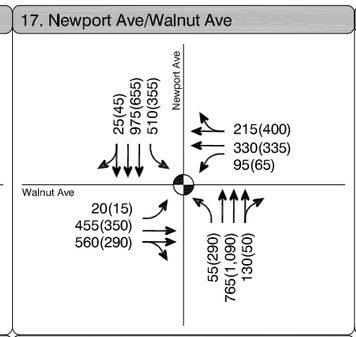
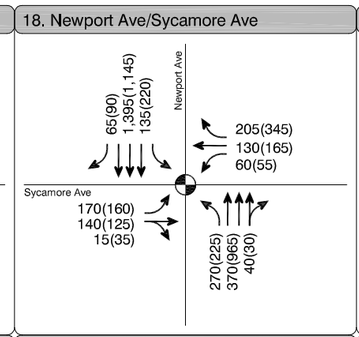
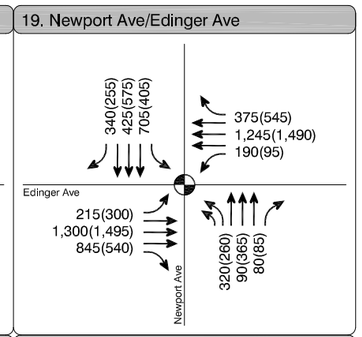


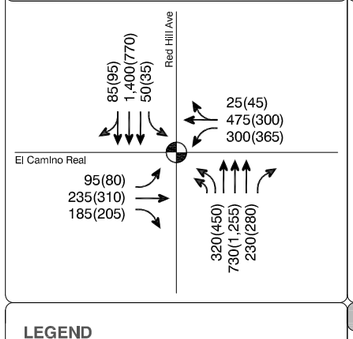


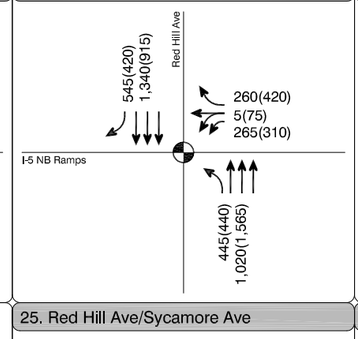


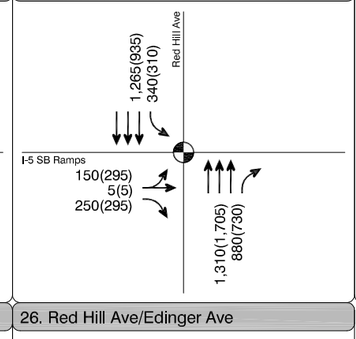


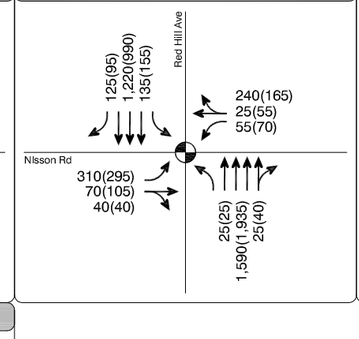


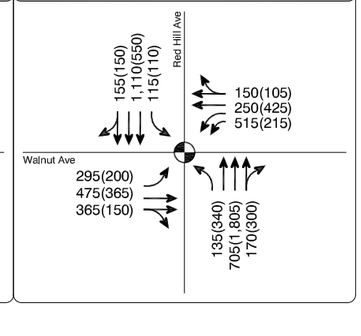






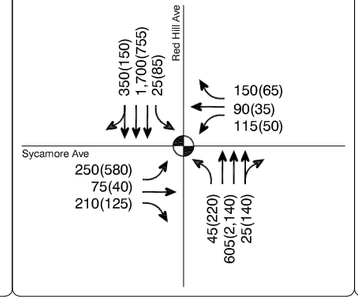


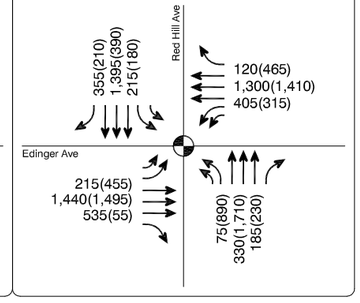




LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign





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LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - DESIGN YEAR 2040 - BUILD ALTERNATIVE 4

FIGURE 6-C

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5. OPENING YEAR 2020 TRAFFIC DEMAND FORECASTS

Year 2020 has been identified as the Opening Year for the SR-55 project, and it is assumed that the Newport Extension and Alton Overcrossing will not be constructed by 2020 per discussion and concurrence made by the PDT. This section presents the traffic forecasting methodologies and resulted peak hour and daily traffic volume forecasts for the study locations identified in the previous section of the report.

Traffic Forecasting Methodology

The most current version of OCTAM (v3.4) was used to develop the Opening Year 2020 traffic forecasts. As mentioned previously, both the Base Year (2010) and Future Year (2035) models were reviewed and refined with the OCTA Modeling Section prior to development of the specific future year 2035 models for the SR-55 project. Since OCTAM does not have an interim year model, the Opening Year 2020 traffic forecasts were developed based on the estimated growth between the Base Year and Future Year OCTAM models.

A new Future Year (2035) model was developed in coordination with the OCTA Modeling Section for each of the five project alternatives with an assumption of the following projects will not be in place: Newport Extension, Alton Parkway Overcrossing, and the 2010 LRTP Preferred Plan projects with the completion date beyond Year 2020. The key projects within the study area assumed to be in place by 2020 include the I-5 HOV project (between SR-55 and SR-57).

It should be noted that HOV drop-down ramps were not included at wither the Von Karman Avenue and Bear Street. In addition, without the Alton Parkway Overcrossing, there are also no HOV drop-down ramps.

Based on the raw model volumes from the Base Year (2010) and Future Year (2035) models, the ADT and peak hour traffic volumes were developed using the difference method contained in the National Cooperation Highway Research Program (NCHRP) Report 255: *Highway Traffic Data for Urbanized Area Project Planning and Design* (Transportation Research Board, December 1982). The Opening Year 2020 traffic forecasts were then developed by applying the calculated annual growth rate between existing and the 2035 traffic forecasts.

For the SR-55 mainline segments, the Design Year 2020 traffic demand was developed using the methodologies described above for the entering locations – south of Paularino Avenue in the northbound direction and north of 4th Street in the southbound direction. Then the traffic forecasts at the two locations were balanced downstream to develop the traffic volumes for other study freeway mainline segments.

McFadden Avenue On-Ramp Volume Splits

One key element for traffic forecasts under Alternatives 3 and 4 is to determine the percentages of traffic splits from the McFadden Avenue on-ramp to downstream destinations including northbound I-5 connector, southbound I-5 connector, and northbound SR-55. To obtain the traffic split data at the McFadden Avenue on-ramp, a three-day video survey was conducted on weekdays in September 2013 when schools were in session during the AM and PM peak periods.

The survey results indicate under existing conditions, a majority of the traffic using the McFadden Avenue on-ramp is traveling to northbound I-5, and the remaining traffic would split between southbound I-5 and northbound SR-55. As shown below, the percentages of the McFadden Avenue on-ramp traveling to northbound I-5, southbound I-5, and northbound SR-55 are 45%, 28%, and 27% in the AM peak period. In the PM peak period, the percentage stays the same as 45% to northbound I-5, decrease to 20% to southbound I-5, and increase to 35% to northbound SR-55.

	AM Peak Period	PM Peak Period
McFadden On-ramp to Northbound I-5	45%	45%
McFadden On-ramp to Southbound I-5	28%	20%
McFadden On-ramp to Northbound SR-55	27%	35%

The traffic splits at the McFadden Avenue on-ramp under the future year conditions were estimated based on the traffic pattern changes identified in the OCTAM models. Under Year 2020 conditions, the percentages are very similar to the existing condition.

With the limited access at the McFadden Avenue on-ramp, most of the traffic would be diverted to use Newport Avenue and Red Hill Avenue. Traffic intended to travel to northbound SR-55 would mainly shift to use Newport Avenue and Red Hill Avenue to get onto northbound I-5 first and then connect to northbound SR-55, while a small part of the traffic would use Edinger Avenue and Dyer Road on-ramps to get onto northbound SR-55, and very few would use MacArthur Boulevard and Irvine Boulevard on-ramp to access northbound SR-55. For traffic intended to travel to southbound I-5, most of them would get onto southbound I-5 using the Red Hill Avenue on-ramp. These traffic pattern changes are consistent with the roadway connectivity, local street capacity/congestion conditions, as well as the commuter expectations

Traffic Forecasting Results

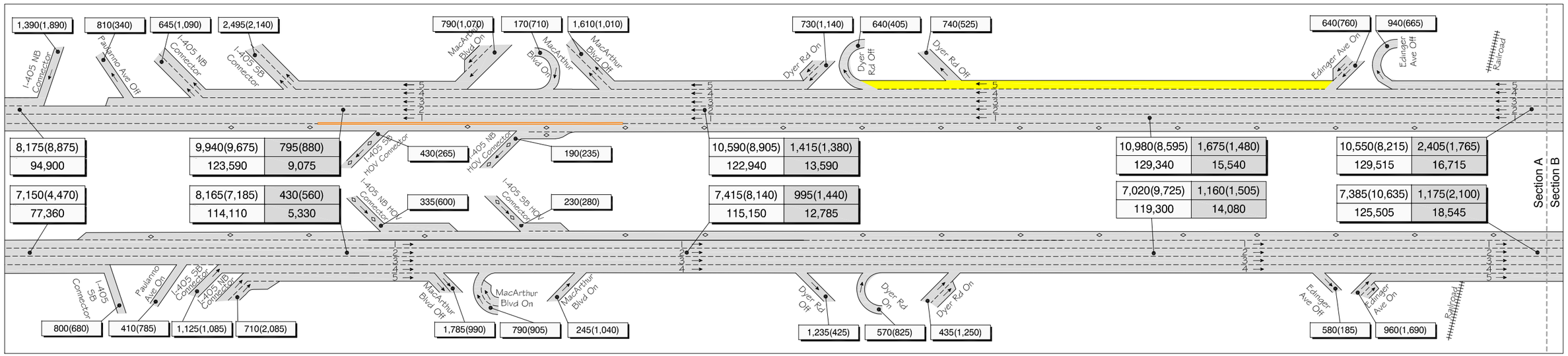
The Opening Year (2020) traffic volume forecasts (including the ADT and AM/PM peak hour volumes for freeway mainline and HOV segments, AM/PM peak hour volumes for on- and off-ramps, and AM/PM peak hour turning movement volumes at ramp terminal intersections) were developed under each of the five alternatives. In addition, the AM/PM peak hour turning movement volumes were developed for the 12 local intersections under Alternatives 3 and 4 in comparison to the No Build Alternative, which are used to identify potential impacts to local streets related to the McFadden Avenue on-ramp limited access proposed under Alternatives 3 and 4.

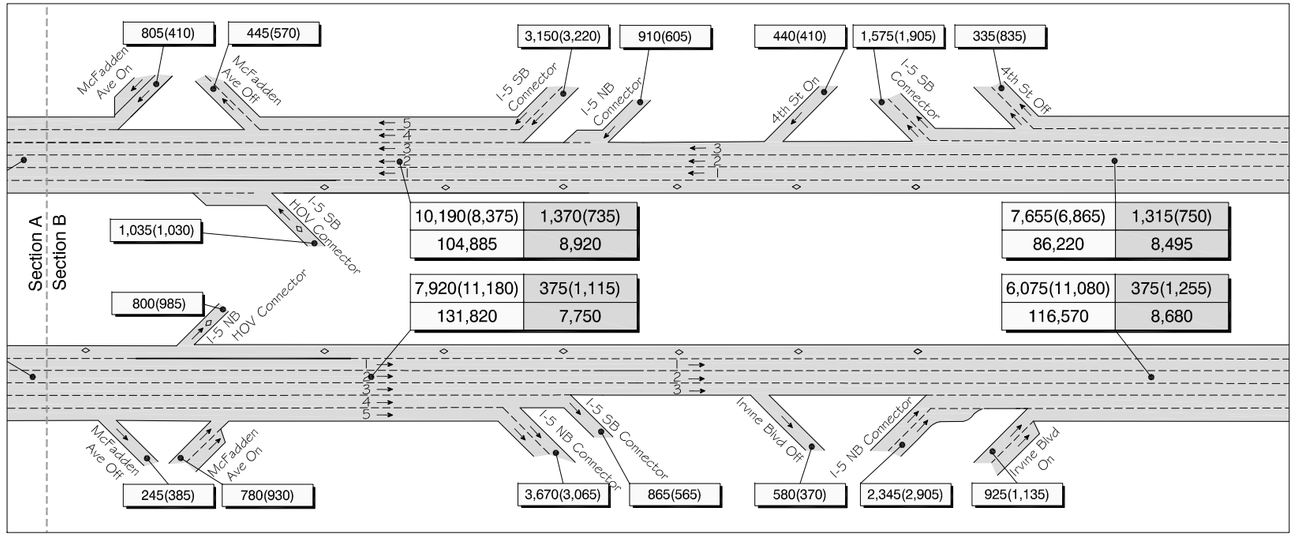
Figures 7A/7B through 11A/11B display the 2020 traffic forecasts for freeway mainline/HOV segment/ramps and study ramp terminal intersections for the following project alternatives.

- No Build Alternative (Figure 7A & 7B)
- Build Alternative 1 (Figure 8A & 8B)
- Build Alternative 2 (Figure 9A & 9B)
- Build Alternative 3 (Figure 10A & 10B)
- Build Alternative 4 (Figure 11A & 11B)

In addition, the 2020 traffic forecasts at the study local intersections are shown in Figures 7C, 10C, and 11C under the following project alternatives.

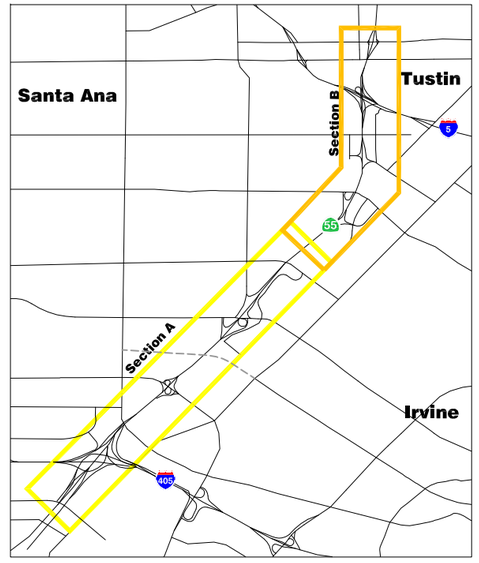
- No Build Alternative (Figure 7C)
- Build Alternative 3 (Figure 10C)
- Build Alternative 4 (Figure 11C)





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed Future Improvements by Other Projects
- - HOV Limited Access



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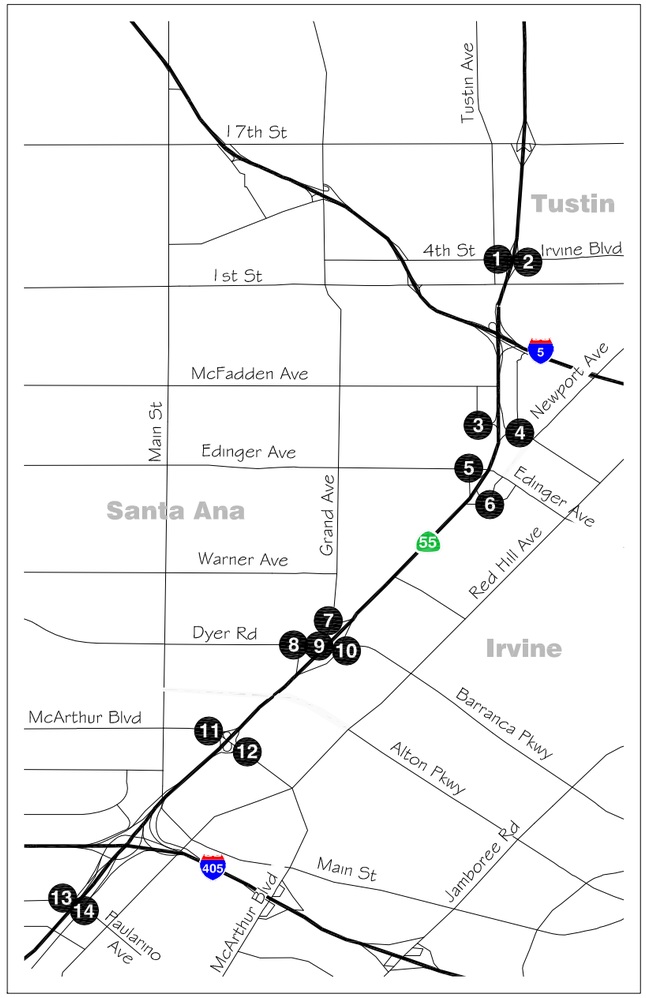
SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - OPENING YEAR 2020 - NO BUILD ALTERNATIVE

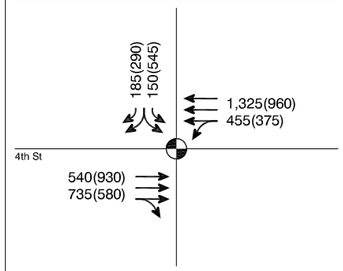
FIGURE 7-A



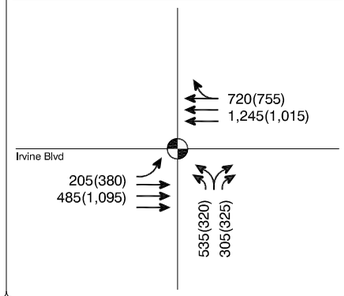
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

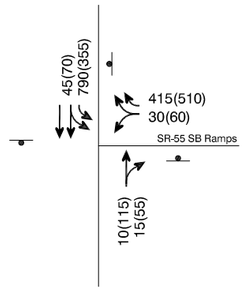
1. SR-55 SB Ramps/4th St



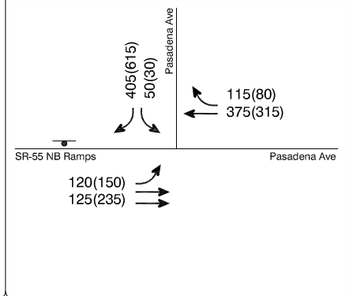
2. SR-55 NB Ramps/Irvine Blvd



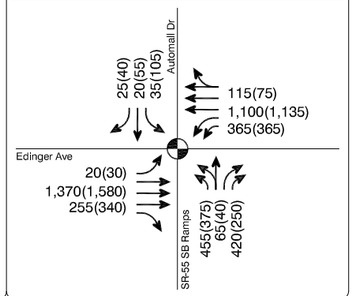
3. Tustin Village Way/SR-55 SB Ramps



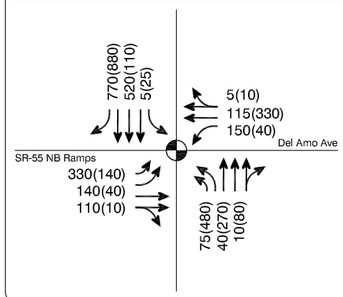
4. Pasadena Ave/SR-55 NB Ramps .



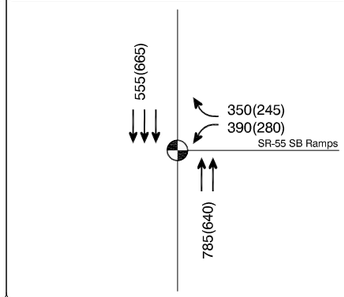
5. Automall Dr/SR-55 SB Ramps/Edinger Av



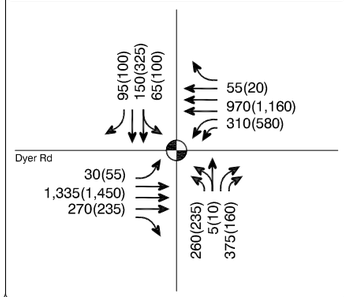
6. Newport Ave/SR-55 NB Ramps



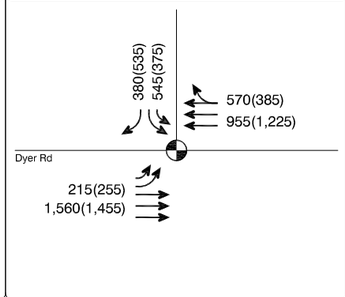
7. S Grand Ave/SR-55 SB Ramps



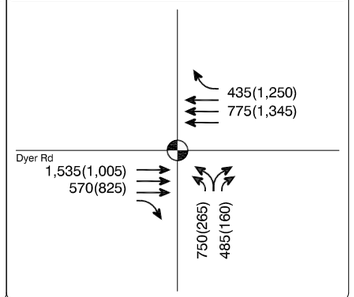
8. SR-55 SB Ramps/Dyer Rd



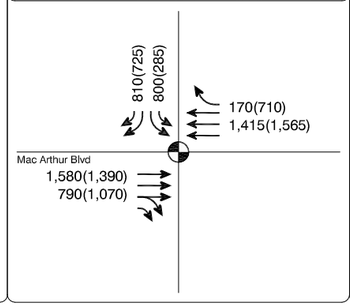
9. S Grand Ave/Dyer Rd



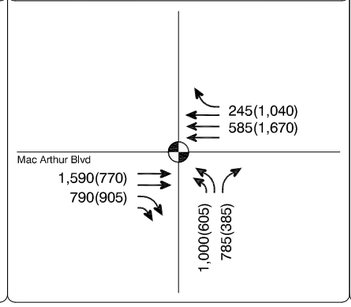
10. SR-55 NB Ramps/Dyer Rd



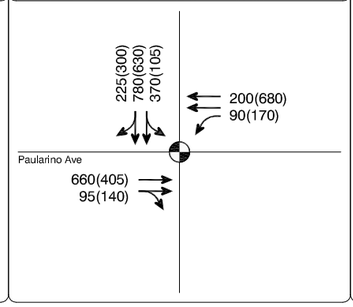
11. SR-55 SB Ramps/MacArthur Blvd



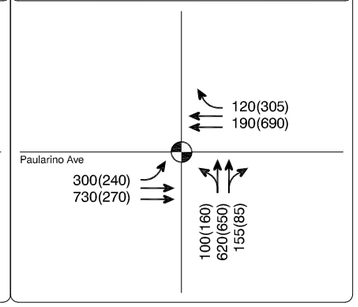
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - NO BUILD ALTERNATIVE

FIGURE 7-B

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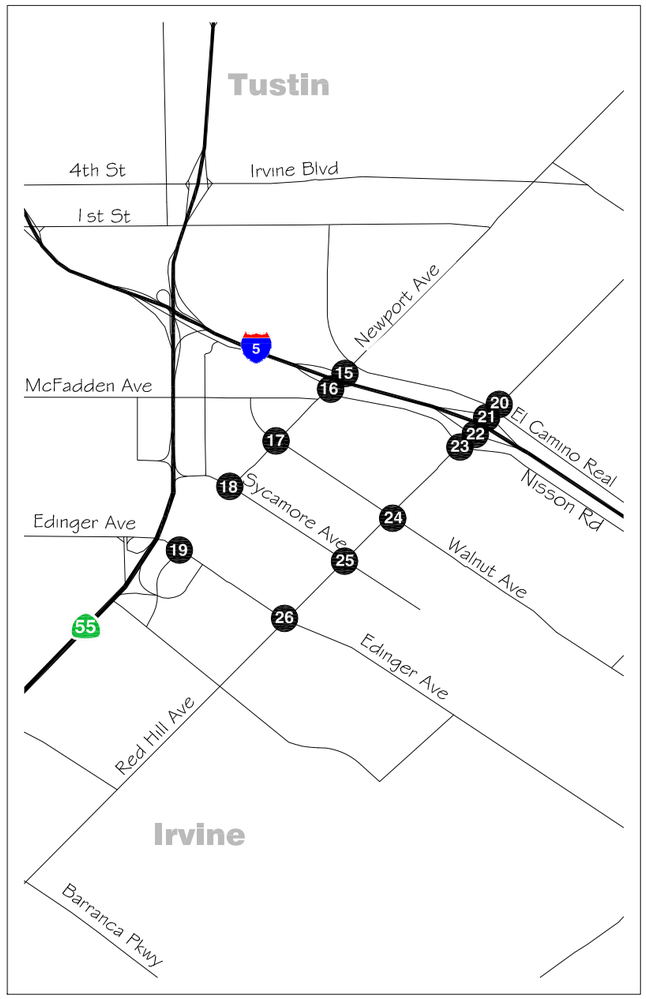
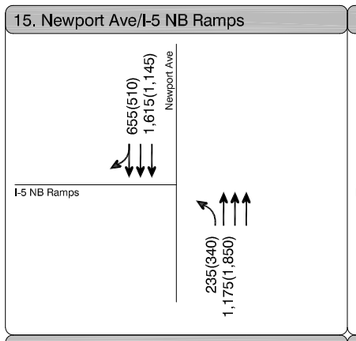
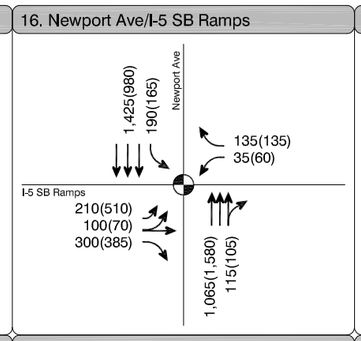
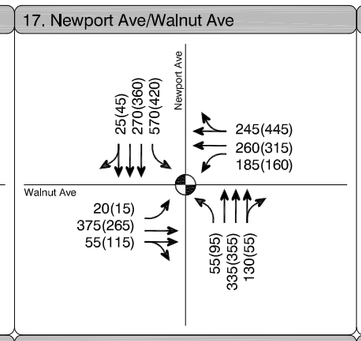
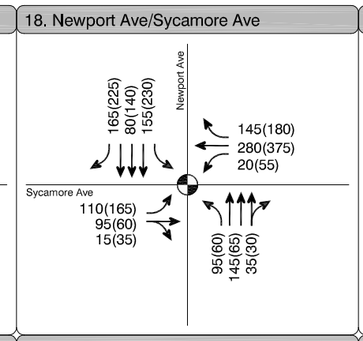
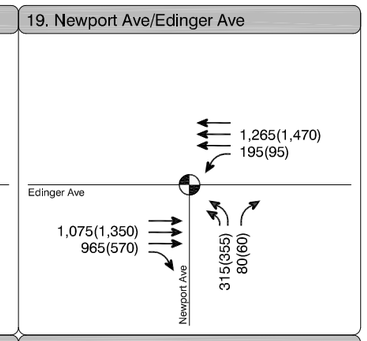


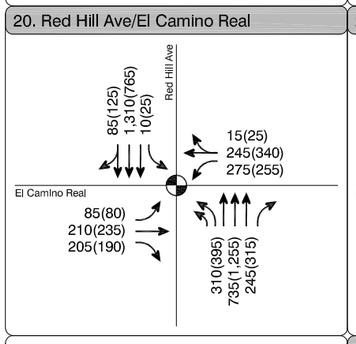


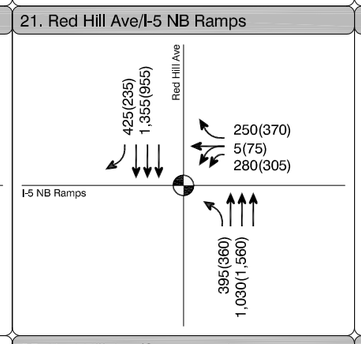


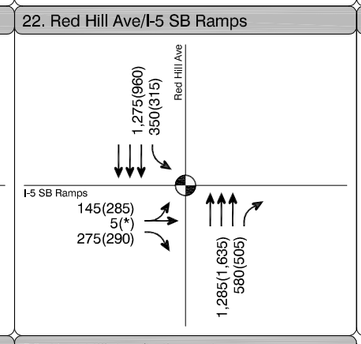


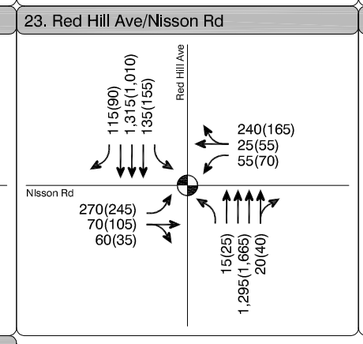


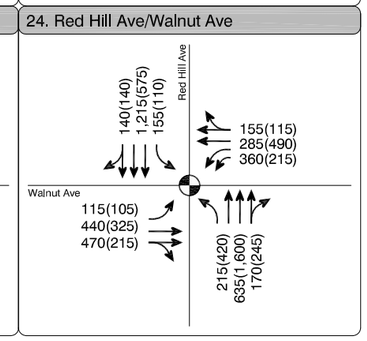






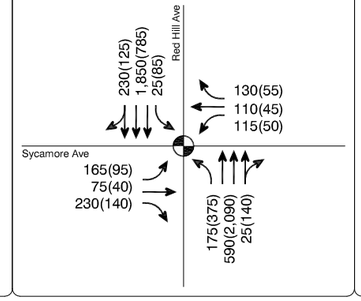


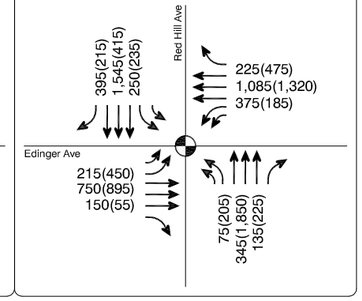




LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign





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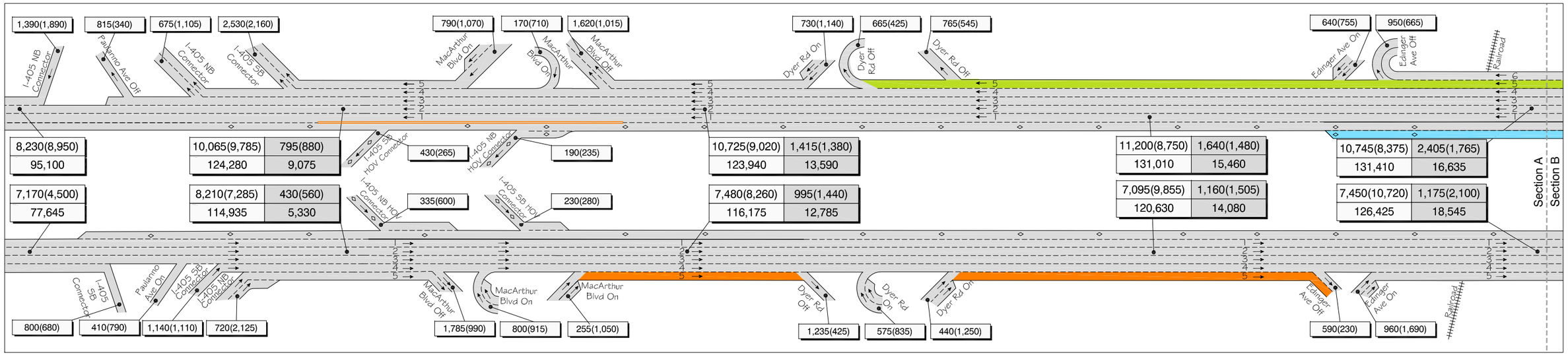
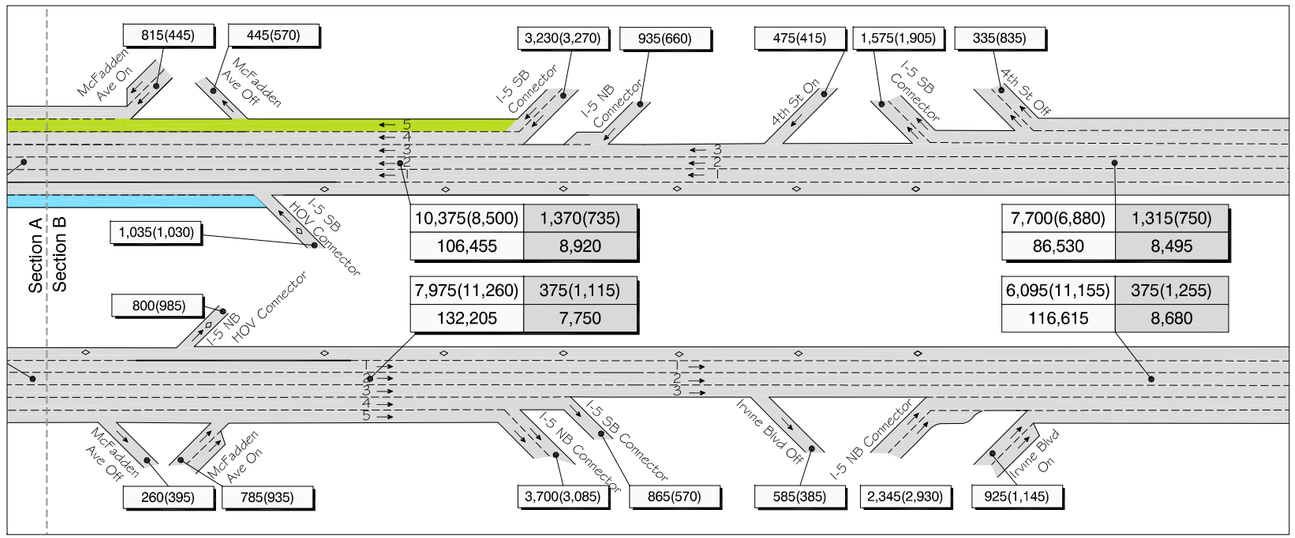
LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - NO BUILD ALTERNATIVE

FIGURE 7-C

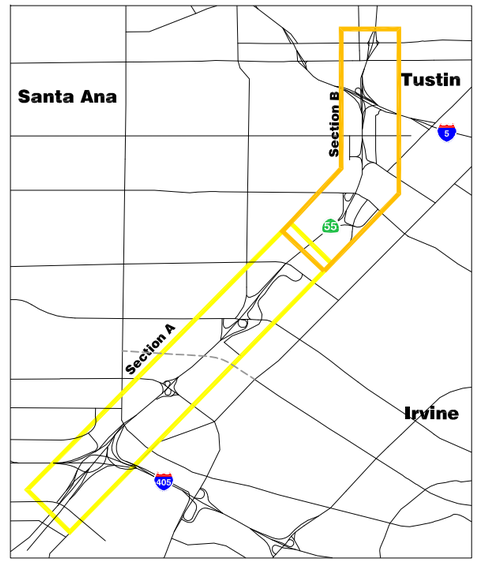
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2DALT3-ALT4 & 2EALT3-ALT4 (WAS OLD 25-28)\LocalInt_Vols_2020.dwg





LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - HOV Limited Access



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NOT TO SCALE

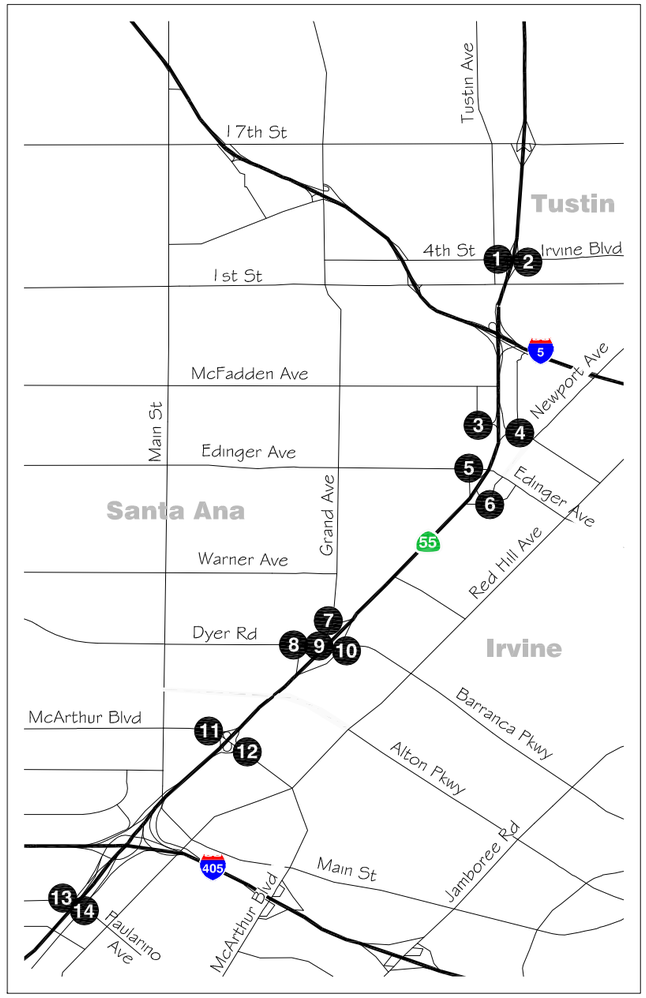
FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F2-A-BUILD ALT 1 (AKA F8A)\F2-A-BUILD ALT 1 (AKA F13A)-FreewayVol.dwg

REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 1

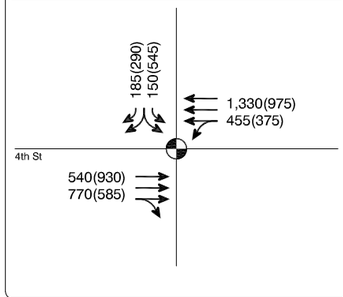
FIGURE 8-A



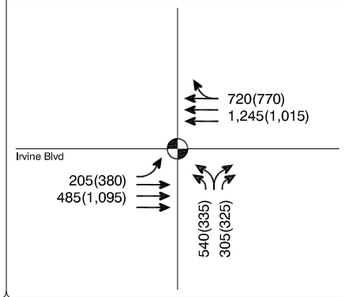
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

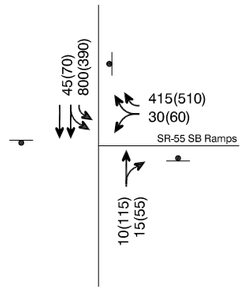
1. SR-55 SB Ramps/4th St



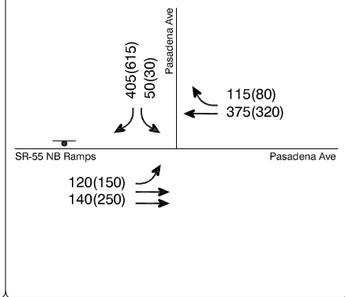
2. SR-55 NB Ramps/Irvine Blvd



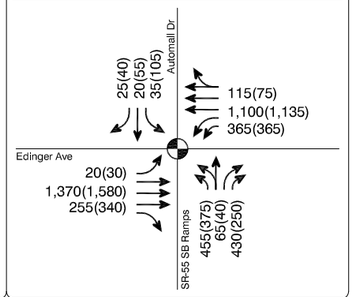
3. Tustin Village Way/SR-55 SB Ramps



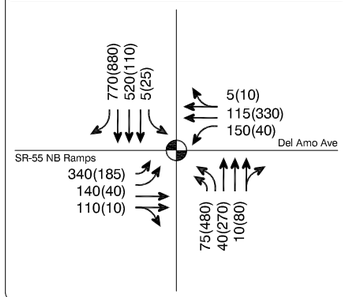
4. Pasadena Ave/SR-55 NB Ramps .



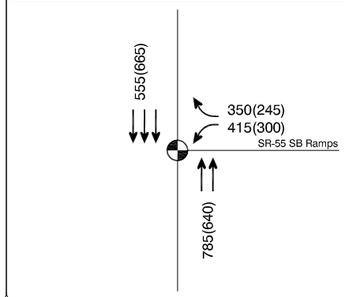
5. Automall Dr/SR-55 SB Ramps/Edinger Av



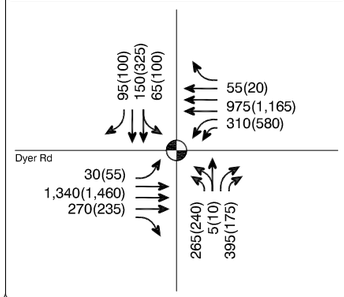
6. Newport Ave/SR-55 NB Ramps



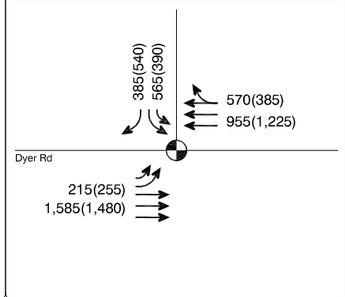
7. S Grand Ave/SR-55 SB Ramps



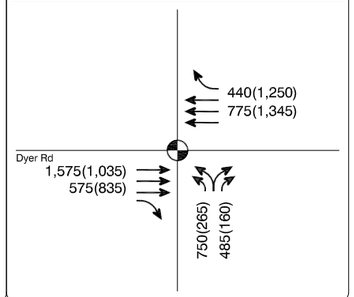
8. SR-55 SB Ramps/Dyer Rd



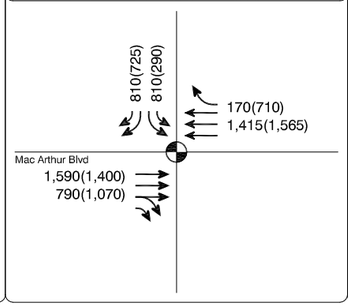
9. S Grand Ave/Dyer Rd



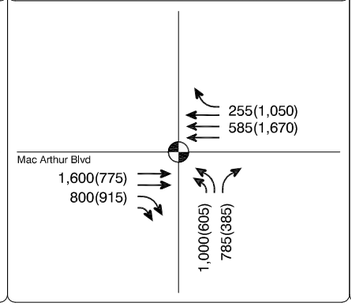
10. SR-55 NB Ramps/Dyer Rd



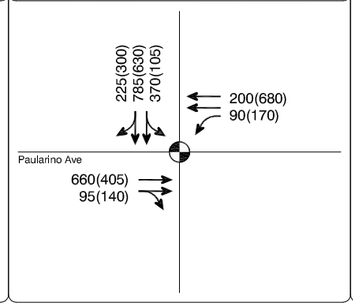
11. SR-55 SB Ramps/MacArthur Blvd



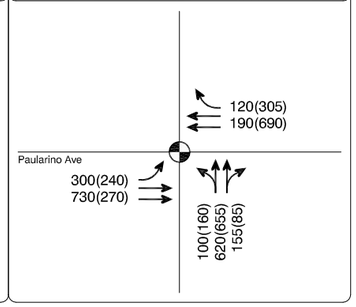
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



N

NOT TO SCALE

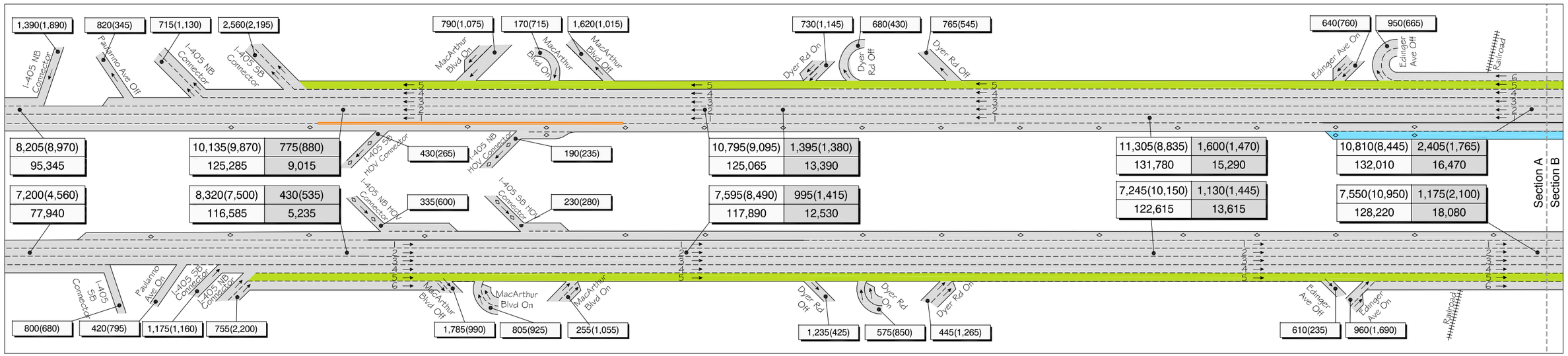
REVISED DRAFT

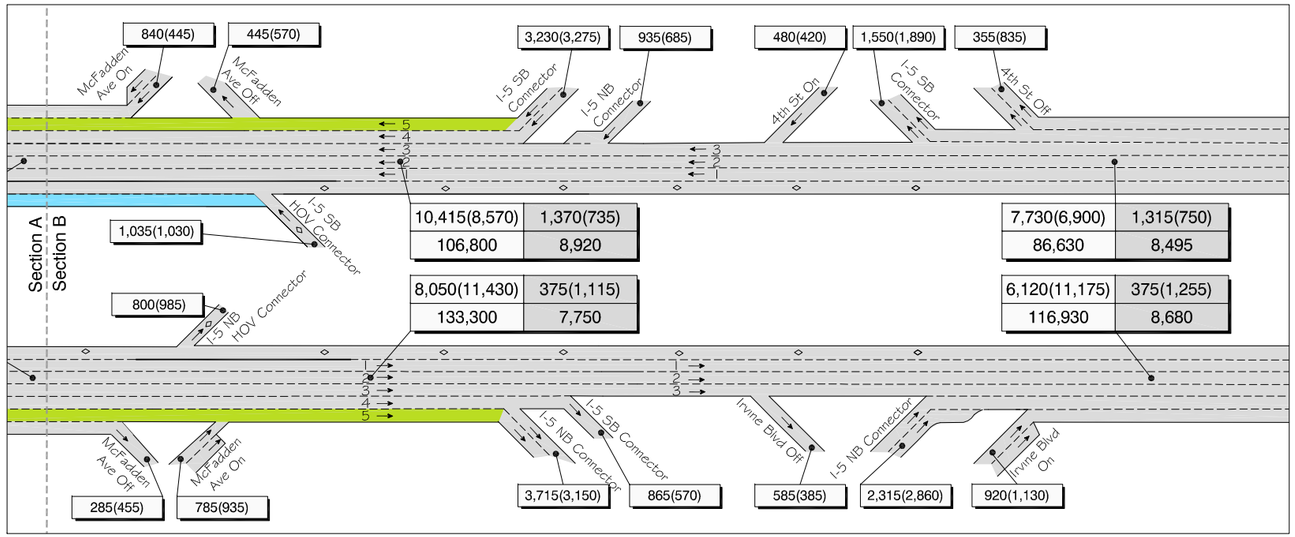
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 1

FIGURE 8-B

FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2BALT3-2BALT4 (WAS OLD 23B-24B)\Int_Vols2020_RampCl.dwg





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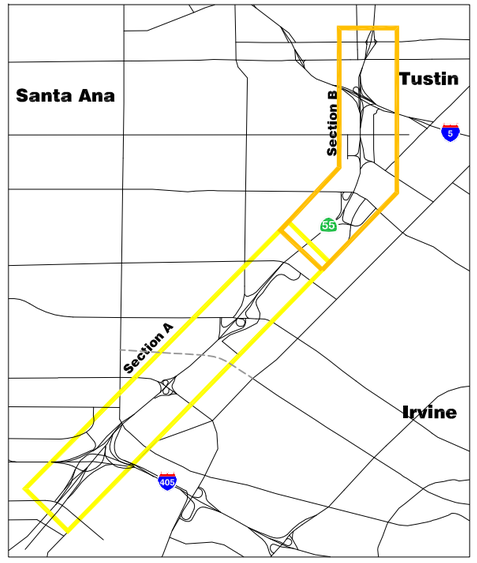
NOT TO SCALE

LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed HOV Lane
- - HOV Limited Access



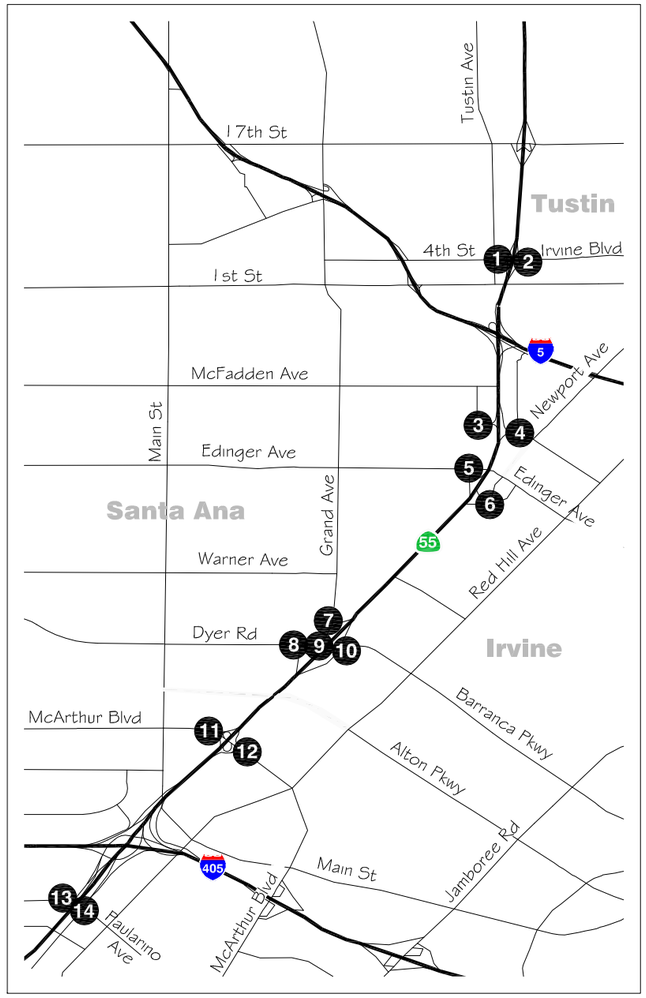
FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F2-A-BUILD ALT 2 (AKA F9A)\F2-A-BUILD ALT 2 (AKA F14A)-FreewayVol.dwg

REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 2

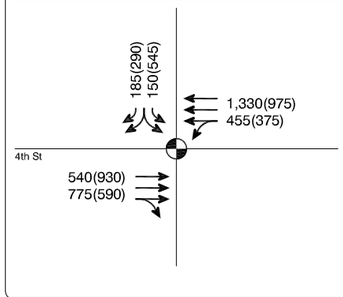
FIGURE 9-A



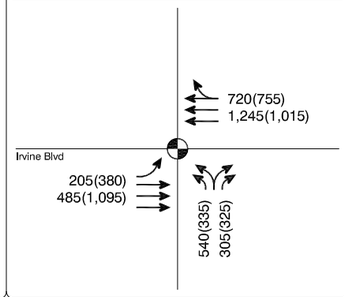
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

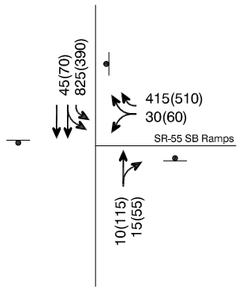
1. SR-55 SB Ramps/4th St



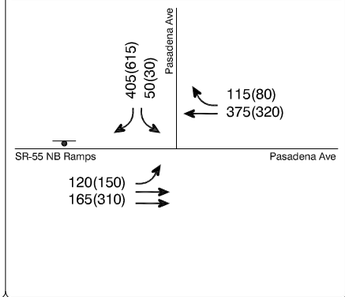
2. SR-55 NB Ramps/Irvine Blvd



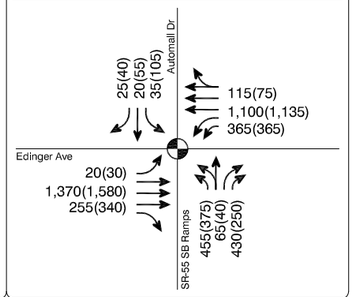
3. Tustin Village Way/SR-55 SB Ramps



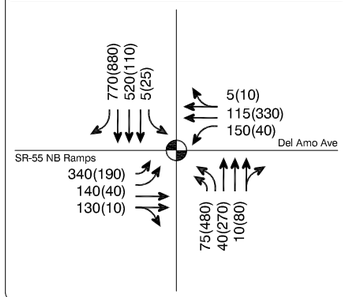
4. Pasadena Ave/SR-55 NB Ramps .



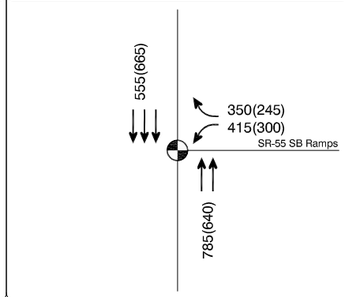
5. Automall Dr/SR-55 SB Ramps/Edinger Av



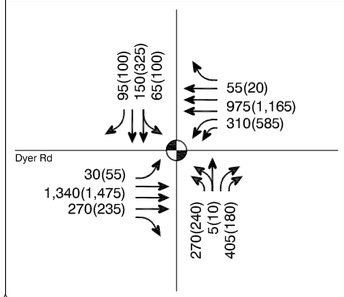
6. Newport Ave/SR-55 NB Ramps



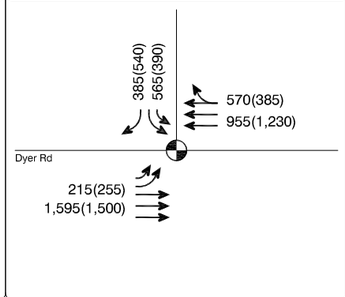
7. S Grand Ave/SR-55 SB Ramps



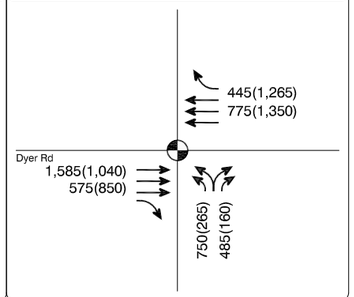
8. SR-55 SB Ramps/Dyer Rd



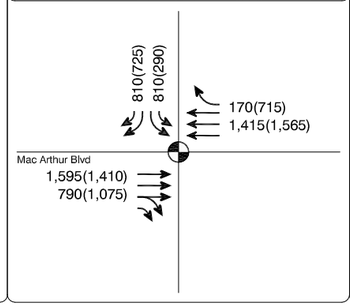
9. S Grand Ave/Dyer Rd



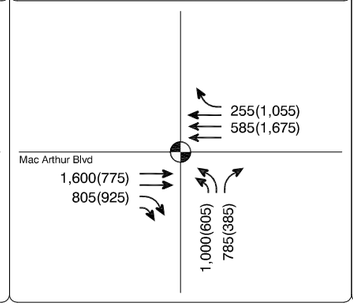
10. SR-55 NB Ramps/Dyer Rd



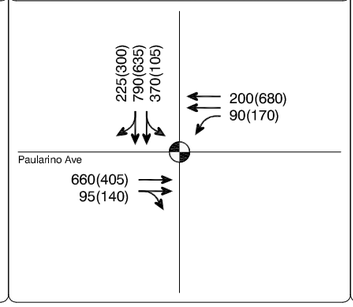
11. SR-55 SB Ramps/MacArthur Blvd



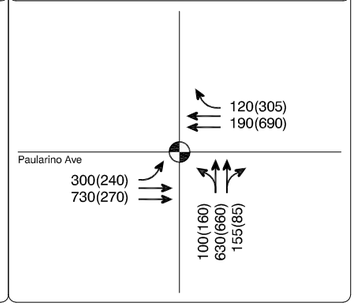
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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NOT TO SCALE

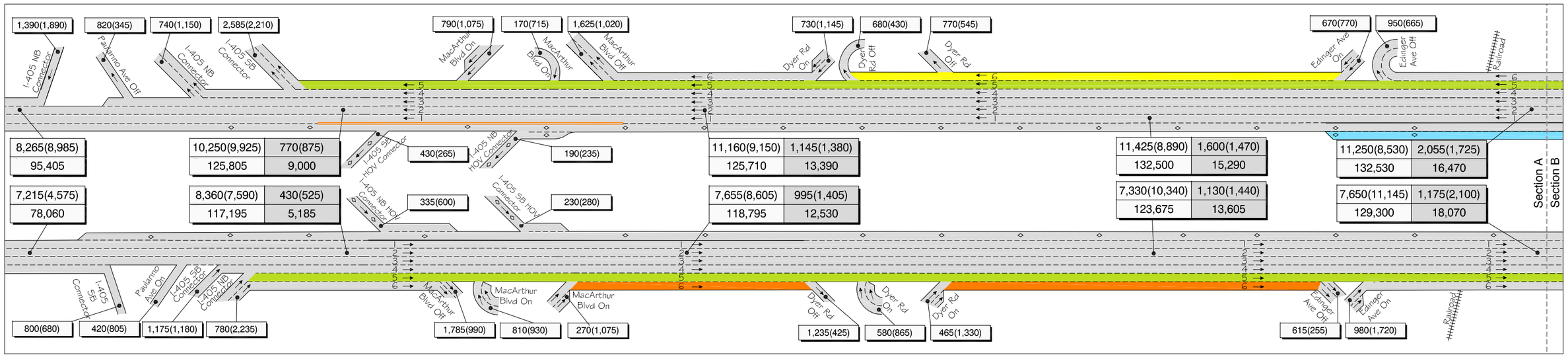
REVISED DRAFT

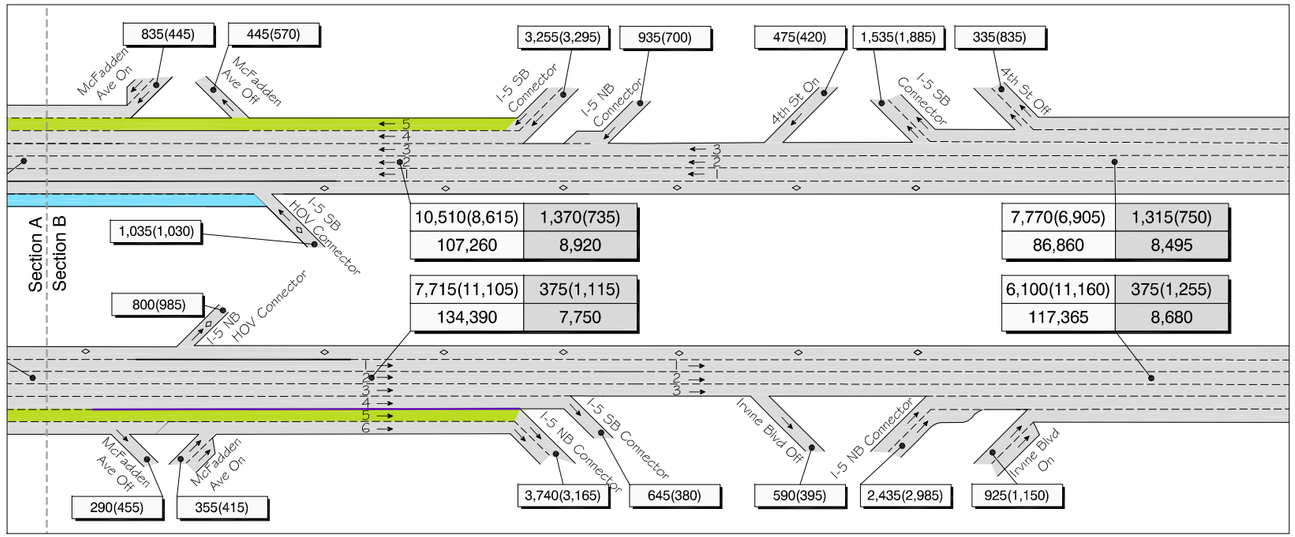
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 2

FIGURE 9-B

FEHR & PEERS

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2BALT3-2BALT4 (WAS OLD 23B-24B)\Int_Vols2020_RampCl.dwg



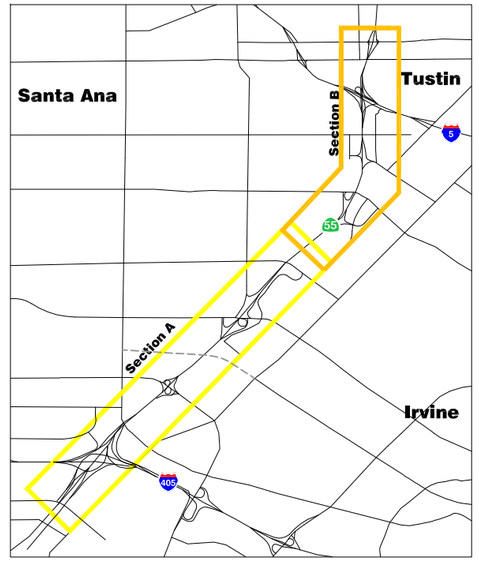


N

NOT TO SCALE

LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - Improvements by Other Project Completed in 2012
- - HOV Limited Access



FEHR & PEERS

Aug 30, 2015 MKAO
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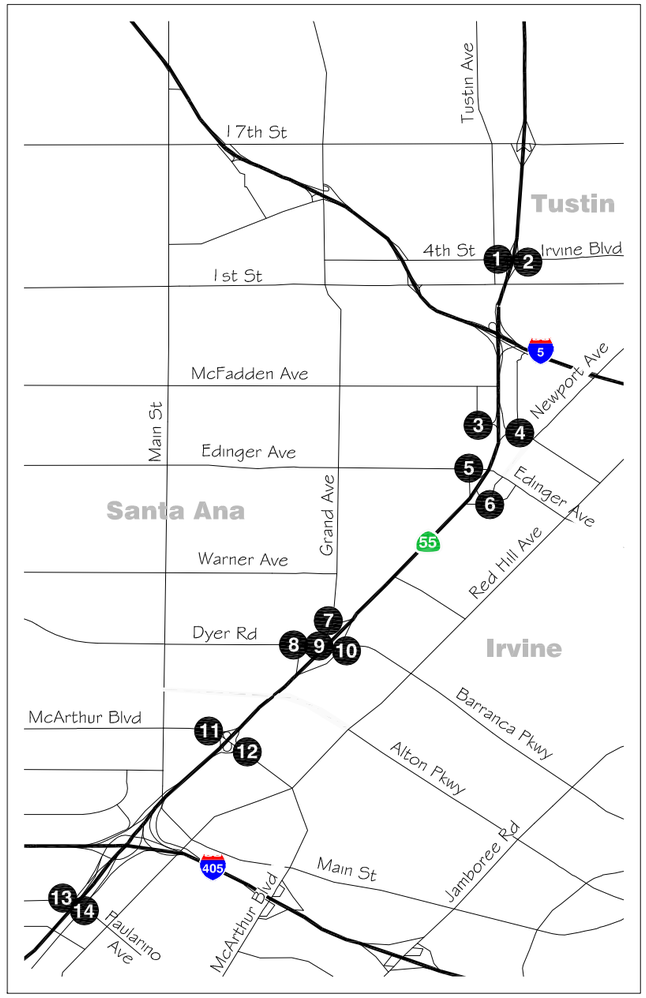
REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 3

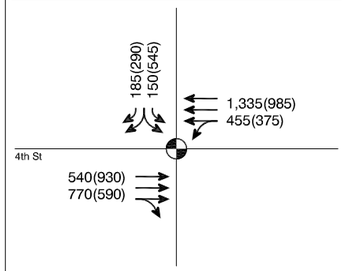
FIGURE 10-A



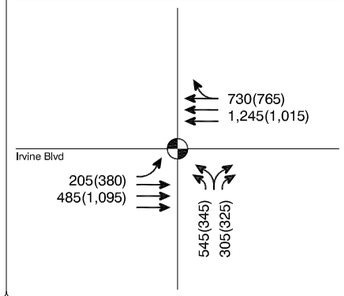
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

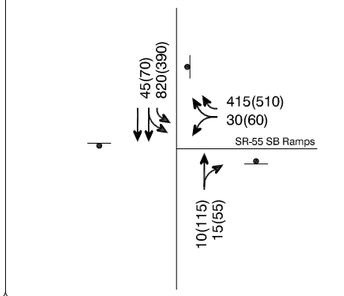
1. SR-55 SB Ramps/4th St



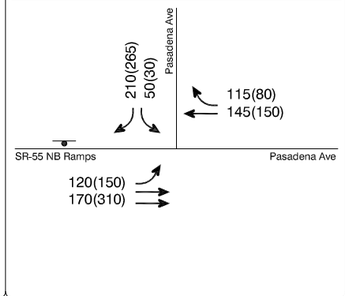
2. SR-55 NB Ramps/Irvine Blvd



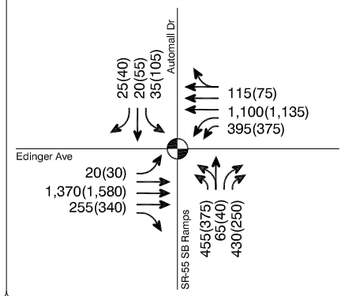
3. Tustin Village Way/SR-55 SB Ramps



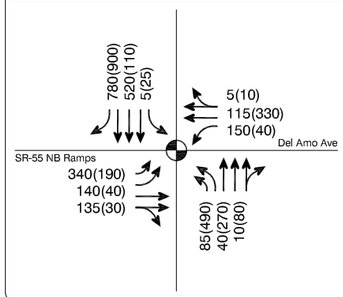
4. Pasadena Ave/SR-55 NB Ramps .



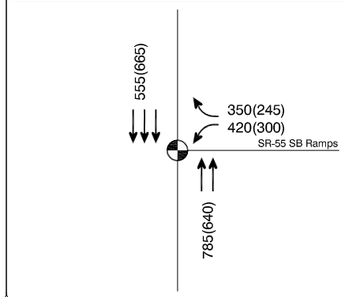
5. Automall Dr/SR-55 SB Ramps/Edinger Av



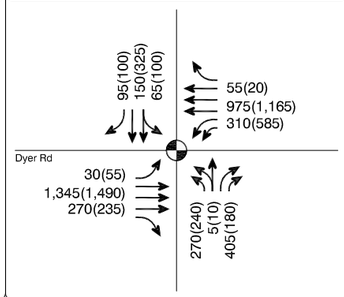
6. Newport Ave/SR-55 NB Ramps



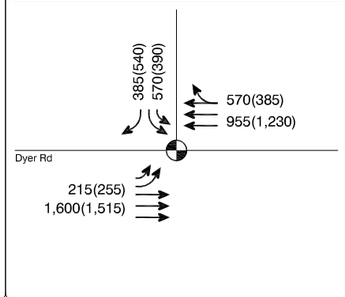
7. S Grand Ave/SR-55 SB Ramps



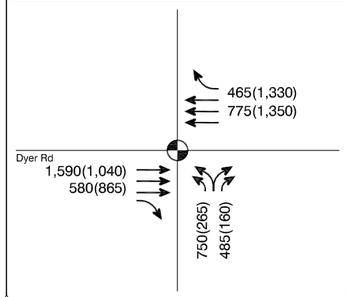
8. SR-55 SB Ramps/Dyer Rd



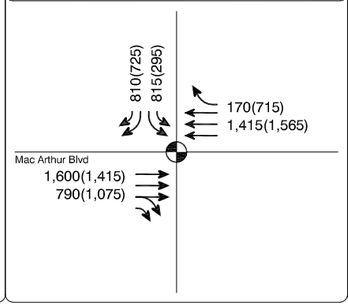
9. S Grand Ave/Dyer Rd



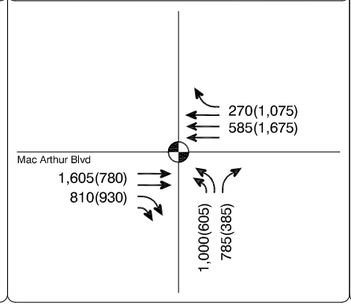
10. SR-55 NB Ramps/Dyer Rd



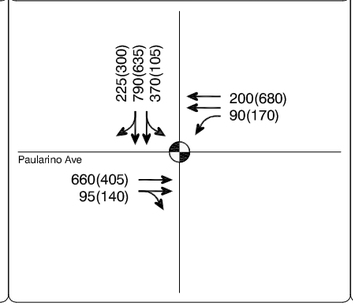
11. SR-55 SB Ramps/MacArthur Blvd



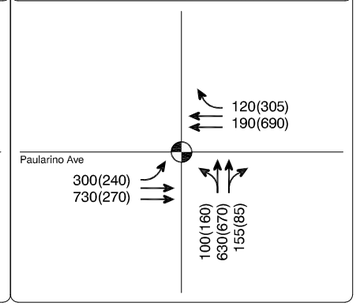
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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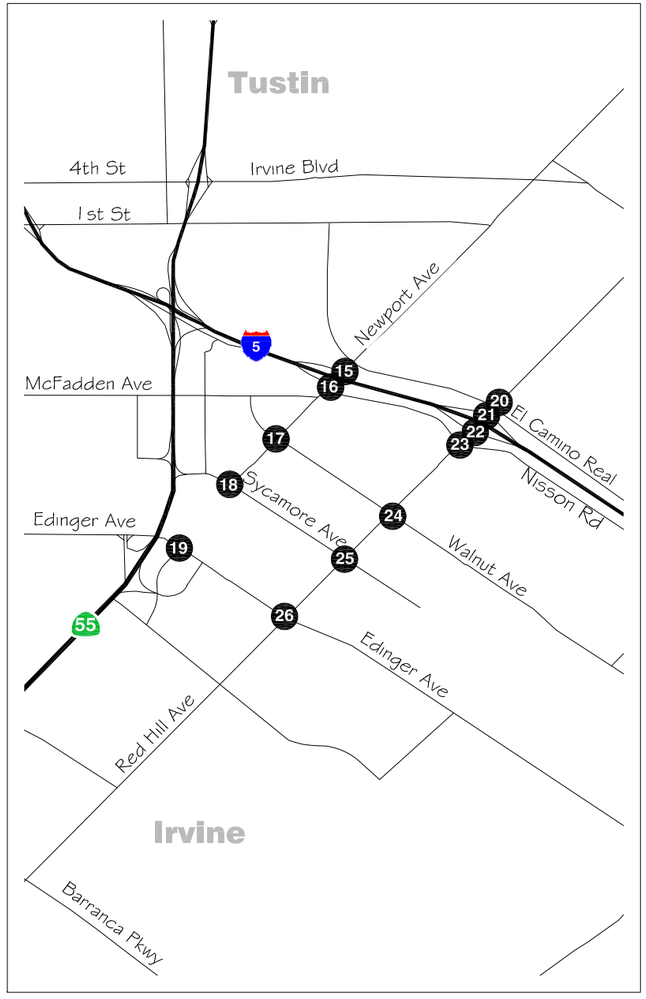
REVISED DRAFT

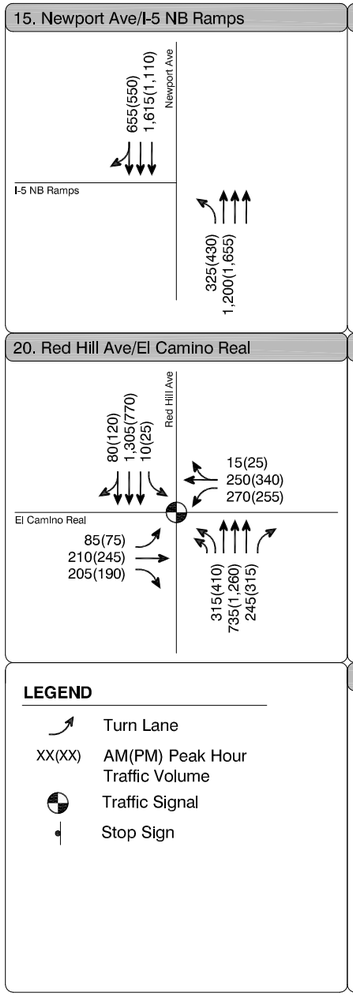
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 3

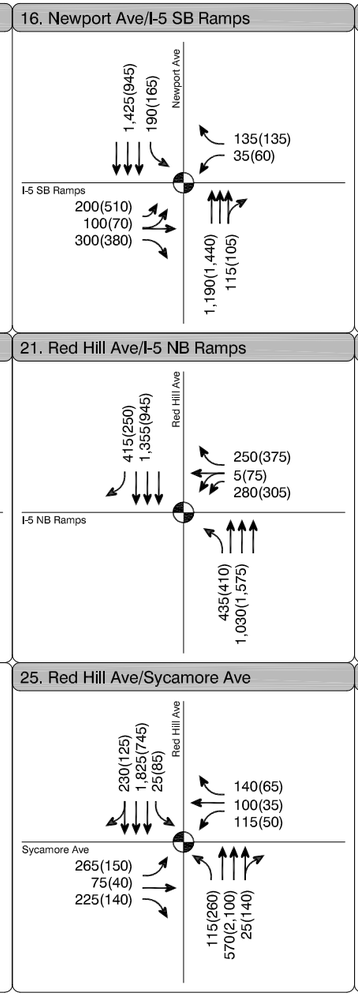
FIGURE 10-B

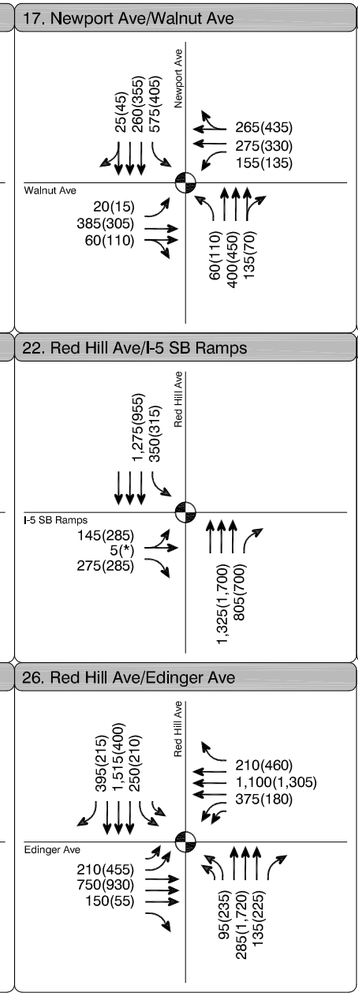
FEHR & PEERS

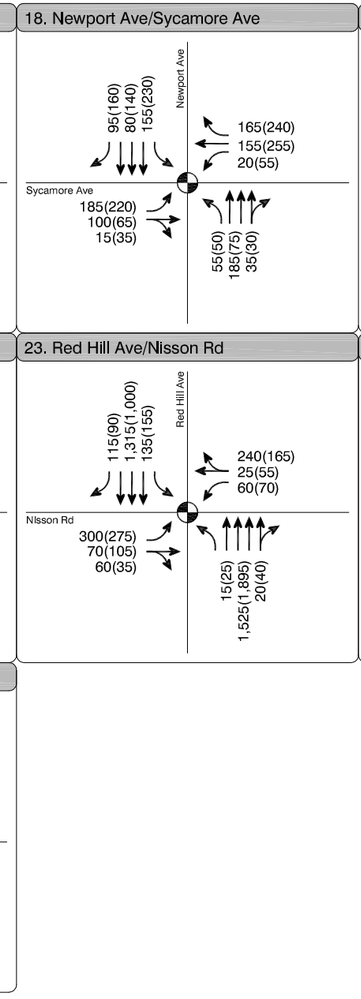
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2BALT3-2BALT4 (WAS OLD 23B-24B)\Int_Vols2020_RampCl.dwg

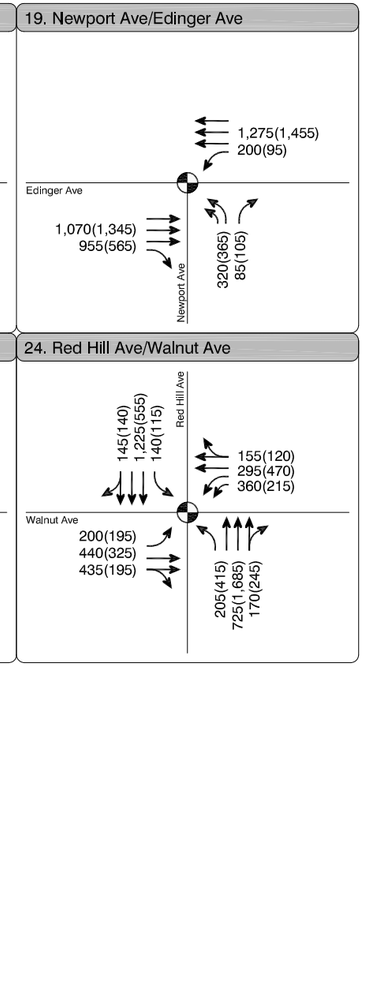












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NOT TO SCALE

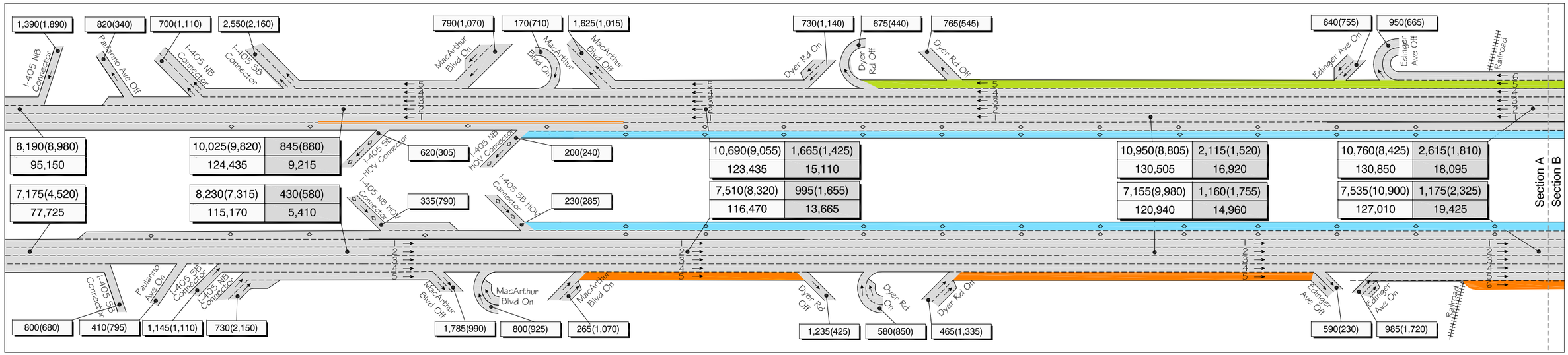
REVISED DRAFT

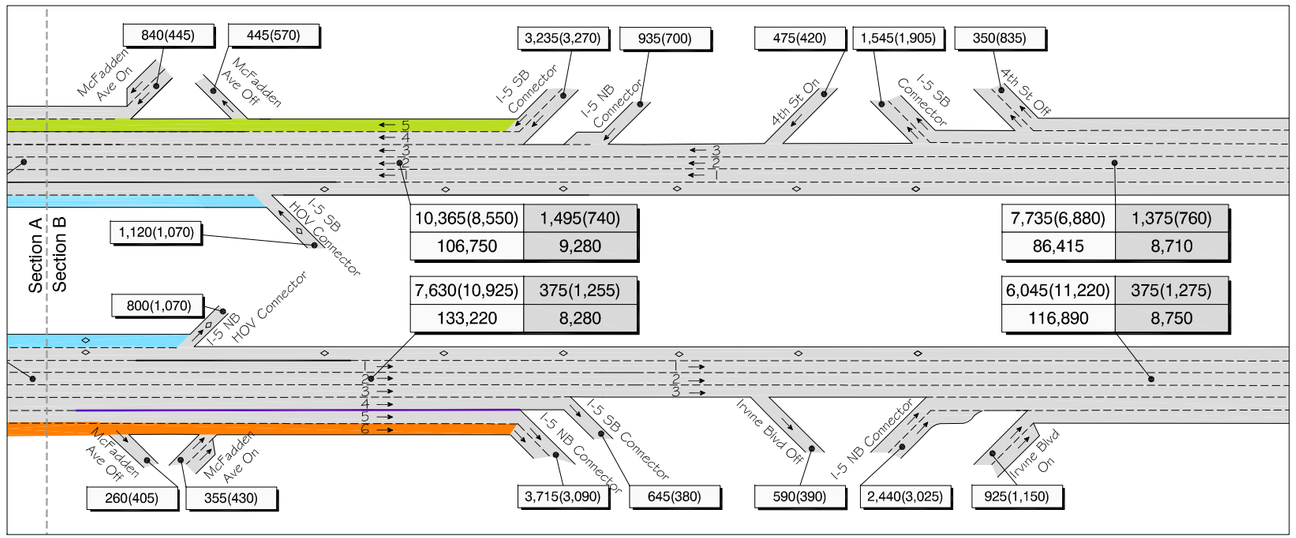
FEHR & PEERS

LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 3

FIGURE 10-C

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2DALT3-ALT4 & 2EALT3-ALT4 (WAS OLD 25-28)\LocalInt_Vols_2020.dwg





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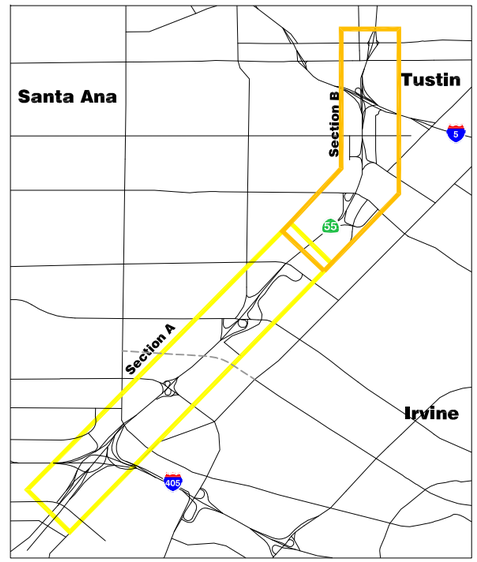
LEGEND

- → - General Purpose Lane
- ◇ - HOV Lane
- XXX(XXX) - Ramp AM(PM) Peak Hour Traffic Volumes
- XXX(XXX) / XXX - Freeway Mainline AM(PM) Peak Hour Traffic Volumes / Freeway Mainline ADT Traffic Volumes
- XXX(XXX) / XXX - Freeway HOV AM(PM) Peak Hour Traffic Volumes / Freeway HOV ADT Traffic Volumes
- - Proposed General Purpose Lane
- - Proposed Auxiliary Lane
- - Proposed HOV Lane
- - Separator
- - HOV Limited Access



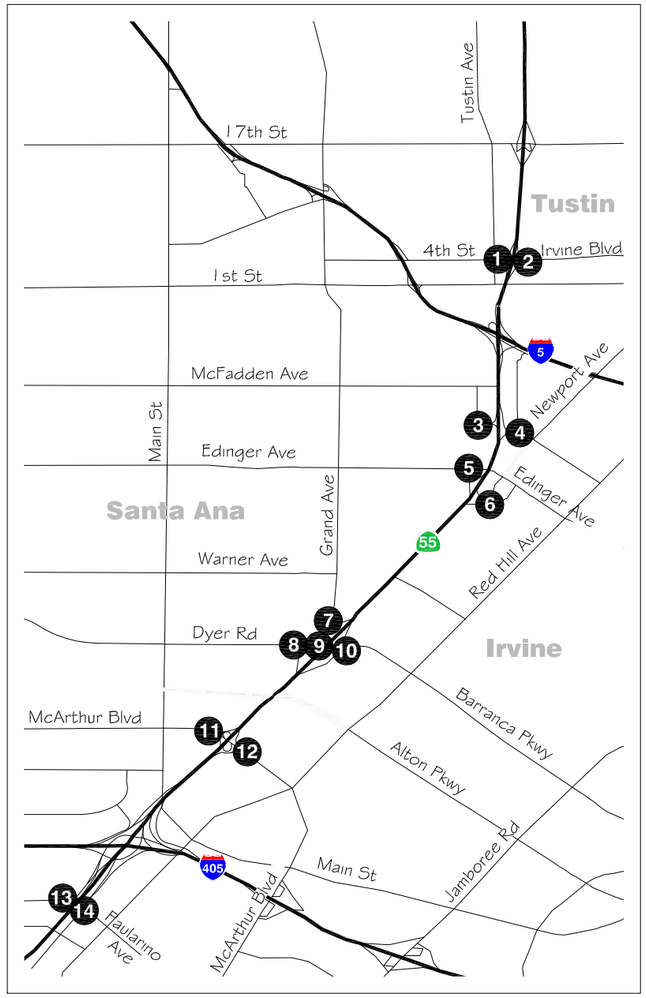
REVISED DRAFT

SR-55 (I-405 TO I-5) FREEWAY LANE CONFIGURATIONS AND PEAK HOUR AND DAILY TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 4

FIGURE 11-A

FEHR & PEERS

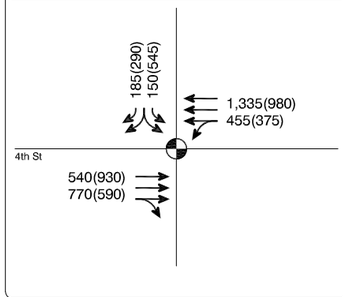
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\FreewayVols\OpsReport\Aug232015\F2-A-2020 BUILD ALT 4 WITH MCFADDEN VARIATION\F2-A-2020 BUILD ALT 4 FreewayVol with McFadden Variation.dwg



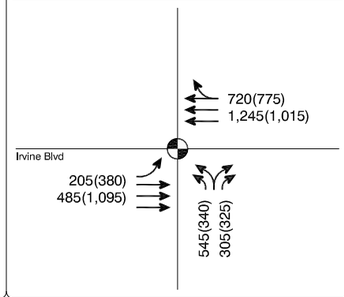
LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign

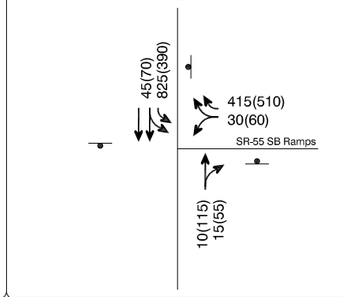
1. SR-55 SB Ramps/4th St



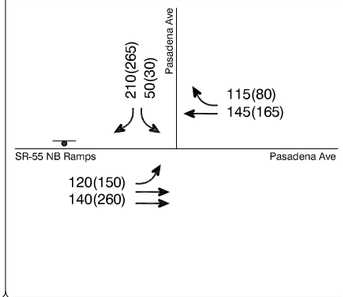
2. SR-55 NB Ramps/Irvine Blvd



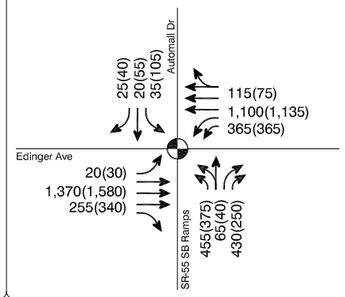
3. Tustin Village Way/SR-55 SB Ramps



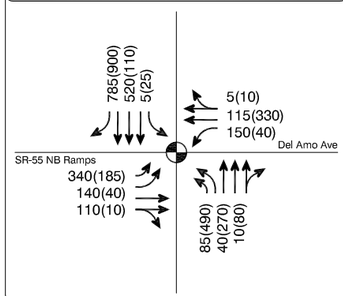
4. Pasadena Ave/SR-55 NB Ramps .



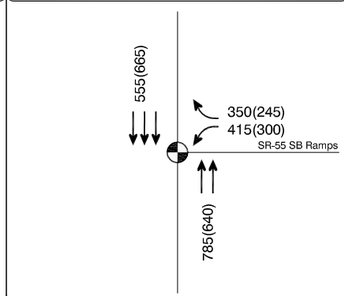
5. Automall Dr/SR-55 SB Ramps/Edinger Av



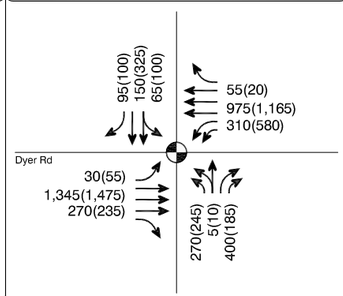
6. Newport Ave/SR-55 NB Ramps



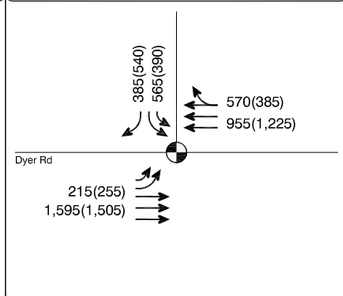
7. S Grand Ave/SR-55 SB Ramps



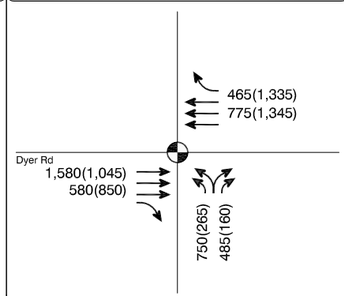
8. SR-55 SB Ramps/Dyer Rd



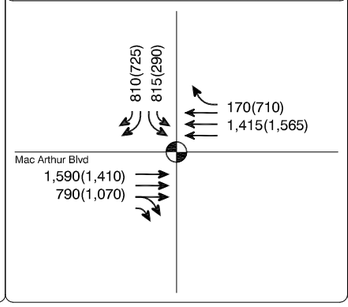
9. S Grand Ave/Dyer Rd



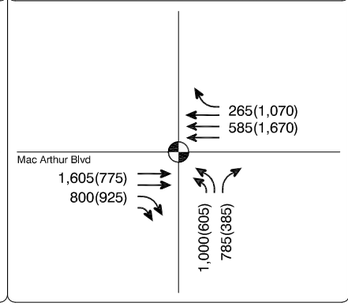
10. SR-55 NB Ramps/Dyer Rd



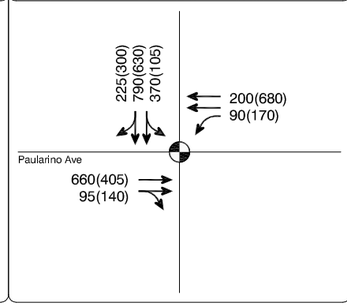
11. SR-55 SB Ramps/MacArthur Blvd



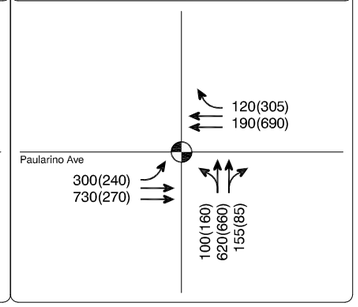
12. SR-55 NB Ramps/MacArthur Blvd



13. SR-55 SB Ramps/Paularino Ave



14. SR-55 NB Ramps/Paularino Ave



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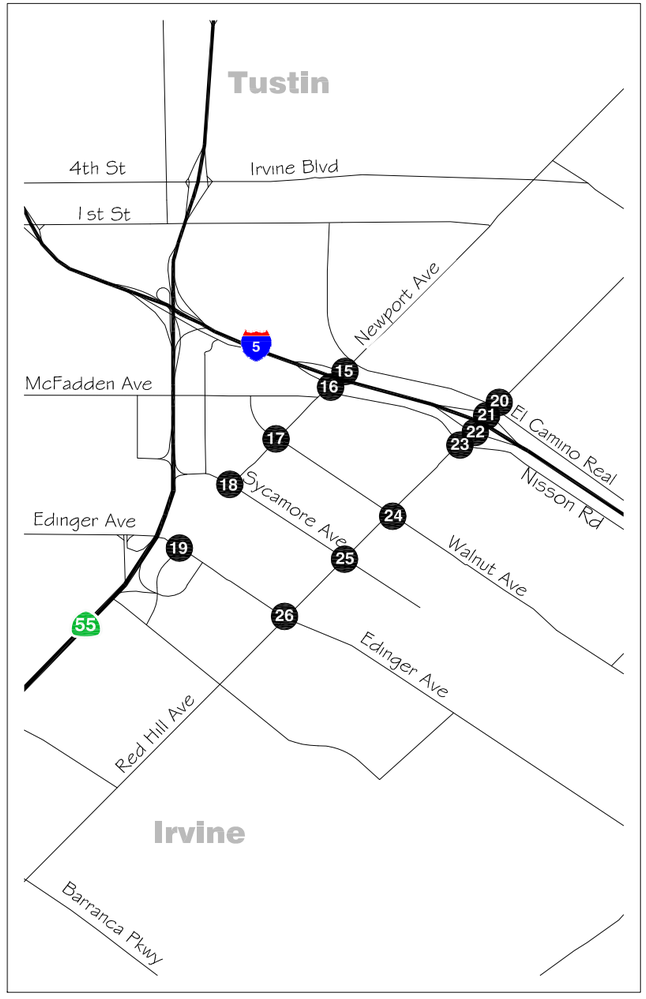
REVISED DRAFT

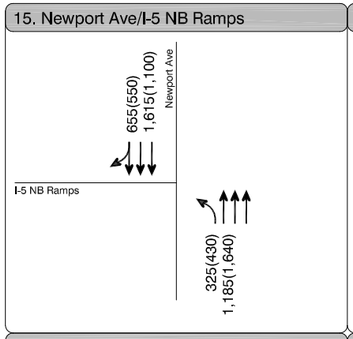
SR-55 (I-405 TO I-5) INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 4

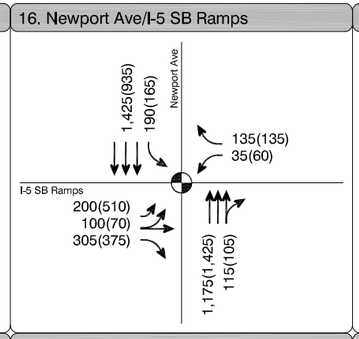
FIGURE 11-B

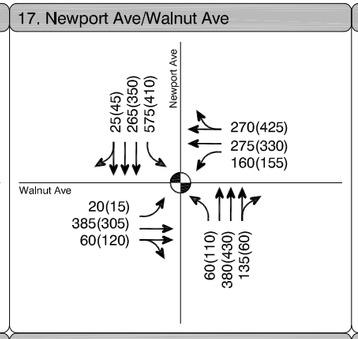
FEHR & PEERS

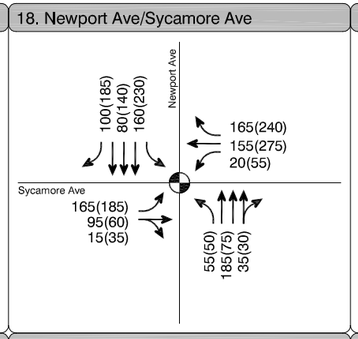
Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2BALT3-2BALT4 (WAS OLD 23B-24B)\Int_Vols2020_RampCl.dwg

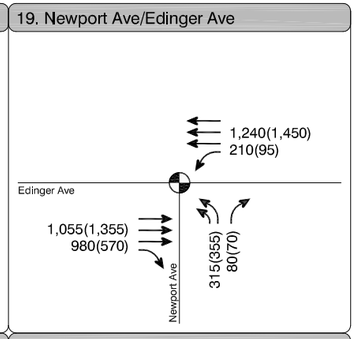


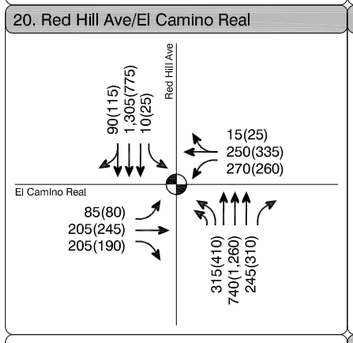


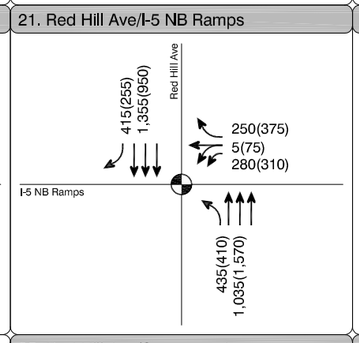


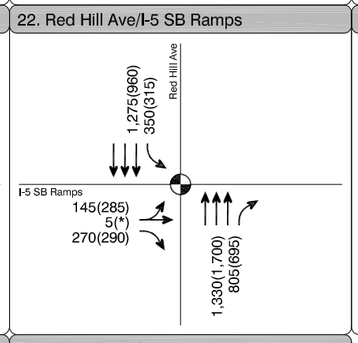


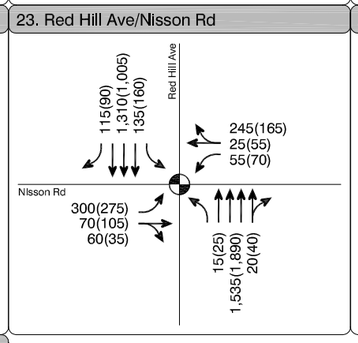


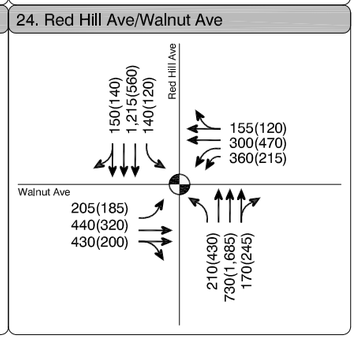






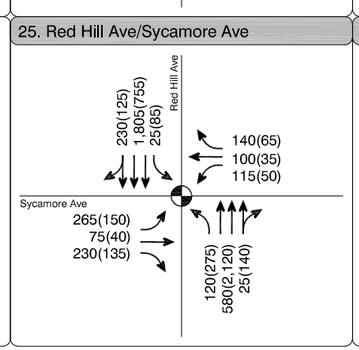


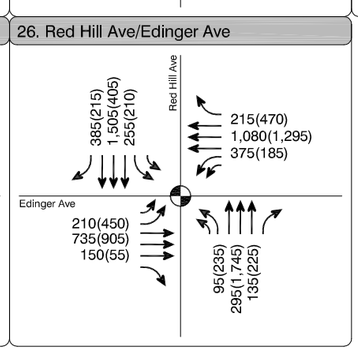




LEGEND

- Turn Lane
- XX(XX) AM(PM) Peak Hour Traffic Volume
- Traffic Signal
- Stop Sign





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REVISED DRAFT

FEHR & PEERS

LOCAL INTERSECTION LANE CONFIGURATIONS AND PEAK HOUR TRAFFIC VOLUMES - OPENING YEAR 2020 - BUILD ALTERNATIVE 4

FIGURE 11-C

Aug 30, 2015 MKAO
N:\Jobs\Active\OC Jobs\OC11-0169\Graphics\ACAD\Intersection Vols\OpsReport\Aug262015\2DALT3-ALT4 & 2EALT3-ALT4 (WAS OLD 25-28)\LocalInt_Vols_2020.dwg

Appendix

(2010 LRTP Preferred Plan Project List)

Appendix B

- Detailed Year 2035 Preferred Plan Project List

Detailed Year 2035 Preferred Plan Project List , *continued on the following page.*

TRANSIT

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Fixed-Route Service	Transit	Several	Bus expansion capital	2035		$ 73.54
	Transit	Several	Bus expansion operations	2035		$ 456.34
	Transit	Several	Community-based shuttles – Deployment	2035	V	$ 264.50
Express Bus Service	Transit	Express Bus Service Expansion	Express Bus Service Expansion (Intracounty and Intercounty)	2035		Part of bus expansion capital
Bus Rapid Transit (BRT)	Transit	Westminster Avenue / 17th Street BRT	22-mile fixed-route BRT between Santa Ana and Long Beach. Includes structures, (23) rolling stock	2026		$ 2.08
	Transit	Harbor Boulevard BRT	19-mile fixed-route BRT between Fullerton and Newport Beach. Includes structures, (23) rolling stock	2027		$ 3.49
	Transit	Bristol Street/State College Boulevard BRT	28-mile fixed-route BRT from Brea Mall to Irvine Transportation Center. Includes structures, (32) rolling stock	2028		$ 4.04
Go Local Bus/ Shuttle*	Go Local - Extensions to Metrolink	Anaheim Regional Transportation Intermodal Center (ARTIC) to Fullerton Transportation Center	New local bus/rail feeder service	2035	S	$ 1,168.00
	Go Local - Extensions to Metrolink	ARTIC/Anaheim Resort/West Anaheim	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Anaheim Canyon Feeder Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Aliso Viejo Town Center Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Brea Employee Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Yorba Linda & Placentia Park-and-Ride Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	La Habra Community Bus	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Buena Park Station to Auto Center/Civic Center	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Buena Park Station to Buena Park Downtown	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Irvine Spectrum Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Cal State Fullerton Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Laguna Beach Summer Arts Festival Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Laguna Woods/Lake Forest/Laguna Hills to Irvine Station	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tri-City Trolley	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Metrolink to Tustin Downtown	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Metrolink to Tustin Legacy	New local bus/rail feeder service			

* Pending Board Action

Detailed Year 2035 Preferred Plan Project List

TRANSIT

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Go Local Bus/ Shuttle*	Go Local - Extensions to Metrolink	Mission Viejo Blue Line	New local bus/rail feeder service	2035	S	$ 1,168.00
	Go Local - Extensions to Metrolink	Bolsa Chica Inter-County Express	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Fountain Valley Express	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Little Saigon/Fountain Valley/Huntington Beach Express	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	ARTIC to Anaheim Canyon Station	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Lake Forest Metrolink Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Irvine Station to Mission Viejo Community Center	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Lake Forest Demand Response Shuttle	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Station to Irvine 1	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Station to Irvine 2	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Station to Irvine 3	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Tustin Station to Irvine 4	New local bus/rail feeder service			
	Go Local - Extensions to Metrolink	Irvine Station to Great Park/Woodbury	New local bus/rail feeder service			
Go Local Fixed Guideway*	Go Local - Extensions to Metrolink	Anaheim Rapid Connection (ARC)	New fixed guideway/rail feeder service	2020		funds from outside of the OCTA financial forecast
	Go Local - Extensions to Metrolink	Santa Ana & Garden Grove Fixed Guideway	New fixed guideway/rail feeder service	2020		funds from outside of the OCTA financial forecast
Station Link	Transit	StationLink Service Increase	Service increase as needed to coordinate with Metrolink service (rail-feeder expansion)	2035		Part of Metrolink service expansion to L.A.
Rail	Transit	Regional Gateways Program	Station improvements including ARTIC and others, to accommodate high-speed rail systems	2035	T	$ 264.70
	Transit	Metrolink Service Expansion Program (Phase II)	Metrolink service expansion from Fullerton to Los Angeles (Operations)	2035	R	$ 23.38
	Transit		Metrolink service expansion from Fullerton to Los Angeles (Capital)	2035	R	$ 6.86
	Transit	California High-Speed Rail - Phase 1	New service from San Francisco to Los Angeles and Anaheim	2020		funds from outside of the OCTA financial forecast
Other	Transit	Elderly & Handicapped Assistance	Expand transportation choices	2035	U	$396.90
	Transit	Safe Transit Stops	Transit stop improvements	2035	W	$29.20
	Transit	Vanpool and Park & Ride Program Expansion	Expand rideshare services in Orange County	2035		$ 161.54

* Pending Board Action

Detailed Year 2035 Preferred Plan Project List , *continued on the following page.*

FREEWAY

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Transportation System Management Projects	Santa Ana Freeway (Interstate 5)	Interstate 5 HOV Expansion from Pacific Coast Highway to Avenida Pico, Interstate 5 Local Interchange Upgrade	Add one HOV lane in each direction from Pacific Coast Highway to Avenida Pico	2019	C/D	$ 365.00
Interchange Projects	Santa Ana Freeway (Interstate 5)		Improve interchange of Interstate 5 with Avenida Pico			
Transportation System Management Projects	Santa Ana Freeway (Interstate 5)	Interstate 5 HOV Lane Expansion, Interstate 5 Interchange Upgrade	Add one HOV lane each direction from State Route 55 to State Route 57	2031	A	$ 95.95
Interchange Projects	Santa Ana Freeway (Interstate 5)		Reconstruct interchange of Interstate 5 with 1st Street/4th Street to increase weaving length to standard on southbound Interstate 5 (extend merge lanes by 100 feet)			
Transportation System Management Projects	Santa Ana Freeway (Interstate 5)	Interstate 5 HOV Improvements	HOV ramp improvements at Barranca Parkway (southbound on-ramp, northbound off-ramp)	2021		$21.21
Transportation System Management Projects	San Diego Freeway (Interstate 405)	Interstate 405 HOT Project, Interstate 405 Improvements Project from State Route 73 to Interstate 605	Convert existing HOV lane to HOT, add one additional HOT lane each direction from State Route 73 to Interstate 605	2022	K	$ 2,200.00
General Purpose Improvements	San Diego Freeway (Interstate 405)		Add one mixed-flow lane in each direction from State Route 73 to Interstate 605			
Transportation System Management Projects	Orange Freeway (State Route 57)	State Route 57 Improvements	Provide HOV interchange at Cerritos Avenue	2035		$ 81.42
	Orange Freeway (State Route 57)	State Route 57 Improvements	Add one truck climbing auxiliary lane in the northbound direction from Lambert Road to Los Angeles County line	2015	G	$ 124.60
	Corona Del Mar Freeway/San Joaquin Transportation Corridor (State Route 73)	State Route 73 Improvements	Add one HOV lane each direction from MacArthur Boulevard to Interstate 405	2035		$ 359.13

Detailed Year 2035 Preferred Plan Project List , *continued on the following page.*

FREEWAY

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Transportation System Management Projects	Corona Del Mar Freeway (State Route 73)	State Route 73 HOV Connector	Add HOV lane connector to Interstate 405	2035		$ 513.61
	Eastern Foothill Transportation Corridor (State Route 241) / Riverside Freeway (State Route 91)	State Route 91/State Route 241 Interchange	Add HOV/HOT connector at State Route 241 / State Route 91 interchange (eastbound on-ramp, westbound off-ramp)	2020		$ 394.75
	All Freeways	Freeway Service Patrol & Call Box Program	Continuation of motorist aid services	2035	N	$ 175.20
	Transportation Corridor Agencies (State Route 241/261/133/73)	Toll Roads Video Detection Demonstration Project	Image-based toll collection system demonstration project	2014		$ 0.75

Detailed Year 2035 Preferred Plan Project List , *continued on the following page.*

FREEWAY

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
General Purpose Improvements	Santa Ana Freeway (Interstate 5)	Interstate 5 Improvements Between State Route 55 and El Toro "Y"	Add one mixed-flow lane in each direction from State Route 55 to Interstate 405	2023	B	$ 394.24
	Santa Ana Freeway (Interstate 5)	Interstate 5 Improvements from State Route 57 to State Route 91	Add one mixed-flow lane in each direction from State Route 57 to State Route 91	2030		$ 475.55
	Santa Ana Freeway (Interstate 5)	Interstate 5 Improvements South of the El Toro "Y"	Add one mixed-flow lane in each direction from Avery Parkway to Alicia Parkway	2019	C/D	$ 584.24
			Reconfigure interchange of Interstate 5 with Avery Parkway			
			Reconfigure interchange of Interstate 5 with La Paz Road			
	San Diego Freeway (Interstate 405)	Interstate 405 Improvements Project from State Route 55 to Interstate 5	Add one auxiliary lane in the northbound direction from Jeffrey Road to Culver Drive	2020		$ 12.17
	San Diego Freeway (Interstate 405)	Interstate 405 Improvements Project from State Route 55 to Interstate 5	Add one mixed-flow lane in each direction from Interstate 5 to State Route 55 and improve merging	2023	L	$ 664.30

Detailed Year 2035 Preferred Plan Project List , *continued on the following page.*

FREEWAY

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
General Purpose Improvements	Costa Mesa Freeway (State Route 55)	State Route 55 Improvements	Add one mixed-flow lane in each direction from Interstate 405 to Interstate 5 and fix chokepoints	2020	F	$ 325.34
	Costa Mesa Freeway (State Route 55)		Add one auxiliary lane in each direction between select on/off ramps through project limits from Interstate 405 to Interstate 5			
	Costa Mesa Freeway (State Route 55)	State Route 55 Improvements	Add one mixed-flow lane in each direction from Interstate 5 to State Route 22	2022	F	$ 136.12
	Orange Freeway (State Route 57)	State Route 57 Improvements	Add one mixed-flow lane in the northbound direction from Orangewood Avenue to Katella Avenue	2015		$ 27.83
	Orange Freeway (State Route 57)	State Route 57 Improvements	Add one mixed-flow lane in the northbound direction from Lincoln Avenue to Orangethorpe Avenue	2020		$ 44.29
	Riverside Freeway (State Route 91)	State Route 91 Improvements from State Route 55 to Orange County/Riverside County Line	Add one westbound lane from State Route 241 to Gypsum Canyon Road	2018	J	$ 223.29
	Riverside Freeway (State Route 91)		Add one auxiliary lane in each direction from State Route 241 to Green River Road. Additional improvements in Riverside County			
	Riverside Freeway (State Route 91)	State Route 91 Improvements from State Route 57 to State Route 55	Add one mixed-flow lane in the eastbound direction from State Route 57 to State Route 55	2021	I	$ 460.59
Interchange Projects	Riverside Freeway (State Route 91)	State Route 91 Improvements from State Route 57 to State Route 55	Improve interchange with State Route 55 (operational, no increase in capacity)			
	Riverside Freeway (State Route 91)	State Route 91 Improvements from State Route 57 to State Route 55	Improve interchange with Lakeview Drive (operational, no increase in capacity)			
	Santa Ana Freeway (Interstate 5)	Interstate 5/Stonehill Drive Interchange	Add southbound off-ramp at interchange with Stonehill Drive	2020		$ 117.85
	Santa Ana Freeway (Interstate 5)	Interstate 5/Marguerite Parkway Interchange	Add interchange with Marguerite Parkway (Saddleback College connection)	2020		$ 186.06
	Santa Ana Freeway (Interstate 5)	Interstate 5/Alicia Parkway Interchange Improvement	Improve interchange of Interstate 5 with Alicia Parkway	2021		$ 100.60
	Santa Ana Freeway (Interstate 5)	Interstate 5/Los Alisos Boulevard Interchange	Add interchange at Los Alisos Boulevard	2019	D	$ 73.85

Detailed Year 2035 Preferred Plan Project List

FREEWAY

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Interchange Projects	Santa Ana Freeway (Interstate 5)	Interstate 5/North Irvine Traffic Mitigation Improvements	Improve interchanges on Interstate 5: Alton Parkway (SB off-ramp) Bake Parkway (SB off-ramp) Culver Drive (SB off-ramp) El Toro Road (SB off-ramp) Jamboree Road (NB and SB off-ramps) Jeffrey Road (SB off-ramp) Sand Canyon Avenue (NB on-ramp)	2025		funds from outside of the OCTA financial forecast
	San Diego Freeway (Interstate 405)	Interstate 405/South Bristol Braid Interchange Reconfiguration	Reconfigure interchange of Interstate 405 with State Route 55 and Bristol Street	2035		$ 138.37
	San Diego Freeway (Interstate 405)	Interstate 405/Irvine Center Drive/North Irvine Traffic Mitigation Improvements	Improve interchanges at: Irvine Center Drive (SB off-ramp) Jeffrey Road (NB off-ramp) Sand Canyon Avenue (NB direct on-ramp) Sand Canyon Avenue (SB off-ramp)	2025		funds from outside of the OCTA financial forecast
	San Gabriel Freeway (Interstate 605)	Interstate 605 Freeway Access Improvements	Ramp improvements at interchange with Katella Avenue	2020	M	$ 43.11
	Costa Mesa Freeway (State Route 55)	State Route 55/Meats Avenue Interchange	Construct on-ramp/off-ramps at the interchange of State Route 55 with Meats Avenue	2017	O	$ 60.00
	Orange Freeway (State Route 57)	State Route 57 Improvements	Ramp Improvement at Lambert Road	2035		$ 19.43
	San Joaquin Transportation Corridor (State Route 73)	State Route 73/Glenwood Drive/Pacific Park Drive Interchange	Complete southbound ramp at interchange with Glenwood Drive/Pacific Park Drive	2035		$ 66.52
	Riverside Freeway (State Route 91)	State Route 91/Gypsum Canyon Road	Improve access ramp at Gypsum Canyon Road	2025		funds from outside of the OCTA financial forecast
	Riverside Freeway (State Route 91)	State Route 91/Fairmont Boulevard Interchange	Add interchange and overcrossing at Fairmont Boulevard	2018		$88.93
	Foothill Transportation Corridor (State Route 241)	State Route 241/Jeffrey Road Interchange	New interchange at Jeffrey Road	2025		funds from outside of the OCTA financial forecast
Other	Freeways	Soundwall Program	Construct soundwalls along freeways to minimize traffic noise from freeways into residential neighborhoods	2035		$ 32.00
	Freeways	State Highway Operation and Protection Program	Reconstruction or rehabilitation to correct major highway issues	2035		$ 1,723.27
Environmental Mitigation	Freeways	Environmental Cleanup and Freeway Mitigation Programs	Transportation-related water quality program and acquisition/restoration of habitat, respectively	2035	X	$ 368.41

Detailed Year 2035 Preferred Plan Project List

STREET

Category	Route/Facility	Project	Description	Anticipated Completion Date	Measure M Project ID	Year of Expenditure Project Cost ($ million)
Transportation Demand Management	Streets	Signal Synchronization Program	Coordinate traffic signals in key corridors -750 mile network with 2000 signals (includes local share)	2023	P	$ 635.04
	Bikeways	Implement Commuter Bikeways Plan	Add Class I, II, III bikeways throughout Orange County	2035		$ 704.50
Capacity & Maintenance	Alton Parkway	Alton Parkway Overpass	Add new four lane roadway from Daimler Street to east Alton Avenue	2015		$ 35.00
	Streets	Local Fair Share Program	Roadway maintenance projects	2035	Q	$ 2,381.60
	Streets	Complete the MPAH Regional Capacity Program	Various arterial roadway projects (includes local share)	2035	O	$ 1,984.65
Other	Other	Planning, Programming & Monitoring Studies, and Other Studies Including TDM/TSM	Transportation-related studies	2035		$ 87.43
	Other	Debt Services	Debt Services (interest)	2035		$ 3,026.83