August 23, 2023

Mr. Chris Dart
Danco Communities
5251 Ericson Way
Arcata, CA 95521

Focused Transportation Analysis for the Burns Valley Subdivision Project

Dear Mr. Dart;

As requested, W-Trans has prepared a focused transportation analysis for the Burns Valley Subdivision to be located at 2890 Old Highway 53 in the City of Clearlake. The purpose of this letter is to set forth the project's anticipated trip generation and the results of an analysis of potential transportation impacts based on criteria set forth in the California Environmental Quality Act (CEQA).

Project Description

The proposed subdivision would be located at 2890 Old Highway 53 in the City of Clearlake. The project as proposed includes a subdivision with 22 single family homes on a currently vacant parcel between State Route (SR) 53 and Old Highway 53. The project site as proposed would be accessed by two new cul-de-sac streets that would intersect Old Highway 53 on the east side. A preliminary site layout is enclosed for reference.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, for Single Family Detached Housing (Land Use #210). Based on the application of these rates, the proposed project would be expected to generate an average of 207 trips per day, including 15 a.m. peak hour trips and 21 trips during the p.m. peak hour. These results are summarized in Table 1.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Single-Family Housing	22 du	9.43	207	0.70	15	4	11	0.94	21	13	8

Note: du = dwelling unit

Given that the project would generate fewer than ten trips on any single movement at a critical intersection, an operational analysis does not appear to be warranted. Further, the intersections most likely to experience an adverse effect would be those on SR 53, which are under the jurisdiction of Caltrans, and Caltrans no longer has an operational standard.

Trip Distribution

The pattern used to allocate new project trips to the street network was determined based on historical turning movements in the study area, knowledge of the area and surrounding region, and anticipated travel patterns for residents of the project. Given the position of the project site in the northern part of the city, it is likely that the majority of project trips would be to and from destinations within the City of Clearlake southwest of the project

site. Therefore, a trip distribution of 80 percent to and from the south on Old Highway 53 with 20 percent to and from the north on Old Highway 53 was applied.

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. The project site is located in a rural part of the City and as a result, there are no dedicated pedestrian facilities in the project vicinity, nor are there any land uses within one-half mile of the project site that would be expected to draw pedestrian trips from the project. Residents walking within the project site itself would be able to use sidewalks as indicated on the preliminary site plan, or the low-volume, low-speed project streets.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2019, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

There are currently no dedicated bicycle facilities in the immediate vicinity of the project site. According to the *2040 General Plan Update,* City of Clearlake, a Class III bikeway is proposed along the length of Olympic Drive.

Transit Facilities

There are no transit facilities in the vicinity of the project site so transit is not readily accessible. This is considered an acceptable condition given the type of project proposed and the location of the site. The proposed project would have no effect on existing or planned transit facilities; therefore, its impact would be considered less than significant.

Finding – The lack of existing dedicated pedestrian, bicycle, and transit facilities in the project vicinity is considered acceptable for the limited anticipated demand and the project would not include any components that would preclude the City's ability to implement future improvements for these modes; therefore, the project is consistent with City policy and plans and its impact would be therefore considered less than significant.

Vehicle Miles Traveled

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based the project's anticipated Vehicle Miles Traveled (VMT).

Background and Guidance

Senate Bill (SB) 743 established VMT as the metric to be applied in determining transportation impacts associated with development projects. As of the date of this analysis, the City of Clearlake has not yet adopted a policy or thresholds of significance regarding VMT so the project-related VMT impacts were assessed based on guidance provided by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory*, 2018 as well as information contained within the

Senate Bill 743 Vehicle Miles Traveled Regional Baseline Study (RBS), Fehr & Peers, 2020, prepared for the Lake Area Planning Council (LAPC). Many of the recommendations in the RBS are consistent with the OPR Technical Advisory.

VMT Impact

The OPR Technical Advisory recommends development of screening thresholds that can be applied to quickly identify projects that would be expected to have a less-than-significant VMT impact without conducting a detailed analysis. One of these screening criteria applies to "small projects". The RBS includes a list of small projects as defined for Lake County and residential projects with up to 22 units were identified as meeting the small project screening threshold. Therefore, because the proposed project includes 22 dwelling units, it can be presumed that its transportation impact on VMT would be less-than-significant.

It should be noted that while state law allows owners of single-family residences to construct an accessory dwelling unit (ADU) on their properties, ADUs are exempt from CEQA considerations so it would be unreasonable to consider them in the VMT analysis or analysis of any other CEQA topic areas. Further, no ADUs are proposed to be constructed as part of the project so it would be speculative to estimate whether or not any homeowners may decide to build an ADU on their properties in the future. For these reasons, ADUs were not analyzed as part of the proposed project.

Finding – The proposed project would meet the small project screening criteria identified in the Lake County Vehicle Miles Traveled Regional Baseline Study and therefore can be presumed to have a less-than-significant VMT impact.

Safety Issues

Stopping Sight Distance

At unsignalized intersections, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time should be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distances along Old Highway 53 at the proposed street connections to "Road A" and "Road B" were evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distances for minor street approaches to intersections of public streets are based on corner sight distances, with more sight distance needed for making a left turn versus a right turn. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street is evaluated based on stopping sight distance criterion. Both corner sight distance and stopping sight distance are based on the approach speed of traffic on the major street.

For the posted speed limit of 40 miles per hour (mph) on Old Highway 53, the minimum corner sight distance needed is 445 feet for left turns and 385 feet for right turns. Field measurements were obtained to and from the position where a vehicle would wait at the locations of the proposed street connections and were determined to extend more than 500 feet to either direction from Street A. At Street B near the southern end of the project site, sight lines were measured to extend more than 500 feet to the north and approximately 250 feet to the south to a horizontal curve in the alignment of Old Highway 53. While this is less than the minimum corner sight distance needed for speeds of 40 mph, motorists approaching from this direction would be navigating a 90-degree bend so would be expected to be traveling well below 40 mph likely in the 15- to 25-mph range. For speeds of 25 mph, 150 feet of stopping sight distance is needed and 240 feet of corner sight distance is needed for right-turn movements, both of which would be provided so this condition would be considered acceptable.

Additionally, adequate following sight distance is available on the major street approaches to each intersection for a motorist to observe and react to a preceding motorist slowing or stopped waiting to turn into the project

streets. As a result, sight lines are adequate to accommodate all turns into and out of the project site. To preserve existing sight lines, any new signage, monuments, or other structures should be positioned outside of the vision triangles of a driver waiting on the minor street approaches. Any landscaping in the vision triangle should be lower than three feet tall for ground cover and tree canopies trimmed to be seven feet and above.

Finding – Sight lines are adequate on Old Highway 53 to accommodate all turns to and from the project streets.

Recommendation – To preserve existing sight lines, any new signage, monuments, or other structures should be positioned outside of the vision triangles of a diver waiting on the project street approaches. Landscaping planted in the vision triangle should be low-lying or above seven feet and maintained to remain outside the area needed for adequate sight lines.

Collisions

The collision history for the section of Old Highway 53 between Olympic Drive and SR 53 was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrate Traffic Records System (SWITRS) reports. For the five-year period from January 1, 2017, through December 31, 2021, there were three collisions reported along the 1.3-mile study segment, which translates to a calculated collisions rate of 2.41 collisions per million vehicle miles (c/mvm). This is above the average collisions rate for similar facilities statewide of 1.20 c/mvm, as indicated in *2018 Collision Data on California State Highways*, California Department of Transportation (Caltrans). The injury rate for the study segment of 0.0 percent was lower than the statewide average of 39.9 percent. Since there were only three collisions and they were dispersed along the segment no pattern of crashes could be determined so no remedial action appears appropriate. A copy of the collision rate calculation is enclosed.

Left-Turn Lane Warrants

The need for a left-turn lane on Old Highway 53 at the locations of the proposed project streets was evaluated based on criteria contained in the *Intersection Channelization Design Guide*, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985, as well as an update of the methodology developed by the Washington State Department of Transportation and published in the *Method For Prioritizing Intersection Improvements*, January 1997. The NCHRP report references a methodology developed by M. D. Harmelink that includes equations that can be applied to expected or actual traffic volumes to determine the need for a left-turn pocket based on safety issues.

All trips were conservatively routed to one of the proposed streets to determine if a left turn lane is warranted. Under a.m. and p.m. peak hour Existing plus Project volumes a left-turn lane is not warranted on Old Highway 53 at the proposed streets. Copies of the turn lane warrant analysis spreadsheets are enclosed.

Finding – A left-turn lane is not warranted at the proposed project streets.

Emergency Access

The proposed project would result in two new public streets that would be 36 feet wide, which is adequate to meet the minimum street width of 20 feet needed for emergency vehicles. The bulbs at the ends of these cul-de-sacs would have a radius of 45 feet from the center of the bulb to the face of curb, which is enough to meet the minimum radius of 43 feet set in the City of Clearlake's *Design and Construction Standards*, 2012. These standards are assumed to provide adequate space for emergency vehicles. Site access and circulation are therefore expected to function acceptably for emergency response vehicles.

Since all roadway users must yield the right-of-way to emergency vehicles when using their sirens and lights, the added project-generated traffic is expected to have a less-than-significant impact on emergency response times.

Finding – The proposed project would have a less-than-significant impact on emergency response times. Site access for emergency vehicles would be adequate assuming it is built to meet applicable design and construction standards.

Conclusions and Recommendations

- The proposed project would be expected to generate an average of 207 trips on a daily basis, including 15 trips during the morning peak hour and 21 trips during the evening peak hour.
- The lack of existing pedestrian, bicycle, and transit facilities is considered acceptable for the limited anticipated demand. The project would not conflict with any policies or plans so it would have a less-than-significant impact on transportation for these modes.
- The proposed project would meet the small project screening criteria identified in the Lake County Vehicle Miles Traveled Regional Baseline Study and therefore can be presumed to have a less-than-significant VMT impact.
- Sight lines along Old Highway 53 at the proposed street locations are adequate to accommodate all turns into and out of the project site.
- To maintain adequate sight lines, any new signage, monuments, or other structures should be kept out of the vision triangles at the project intersections. Further, any landscaping planted in the vision triangle should be placed and maintained to ensure that the area between three and seven feet from the pavement is foliage free.
- The segment of Old Highway 53 from Olympic Drive to SR 53 had an above-average collision rate for the five-year period evaluated, but with so few collisions dispersed along the segment no pattern was evident, so no remedial action is recommended.
- Left-turn lanes would not be warranted on Old Highway 53 at the proposed project streets.
- The proposed project would have a less-than-significant impact on emergency response times and access for emergency responders is anticipated to be acceptable assuming incorporation of appropriate design standards.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

William Andrews

William Andrews, EIT
Assistant Engineer

Dalene J. Whitlock

Dalene J. Whitlock, PE, PTOE
Senior Principal

REGISTERED PROFESSIONAL ENGINEER
DALENE J. WHITLOCK
TR001552
TRAFFIC
STATE OF CALIFORNIA

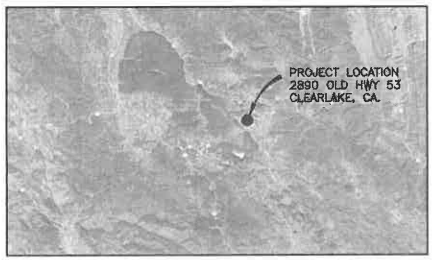
Cameron Nye

Cameron Nye, EIT
Associate Engineer

DJW/cn-wa/CLE031.L1

Enclosures: Conceptual Site Layout
Segment Collision Rate Calculations
Left-Turn Lane Warrant Spreadsheets

BURNS VALLEY SUBDIVISION
2890 OLD HWY 53, CLEARLAKE, CA. 95422
APN: 010-048-08



VICINITY MAP

NO SCALE

NORTH

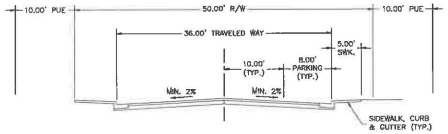
APPLICANT: THE DANCO GROUP
5251 ERICSON WAY
ARCATA, CA. 95521
(707) 822-9000

AGENT: WHITCHURCH ENGINEERING, INC.
610 9th, St.
FORTUNA CA. 95540
(707) 725-6826
JEFFREY LAIKAM P.E.
jtl@whitchurchengineering.com

SEWER: ON-SITE

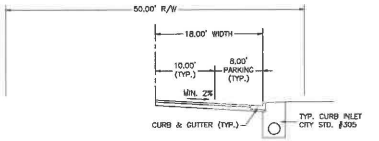
WATER: HIGHLANDS WATER DISTRICT

PROJECT DESCRIPTION:



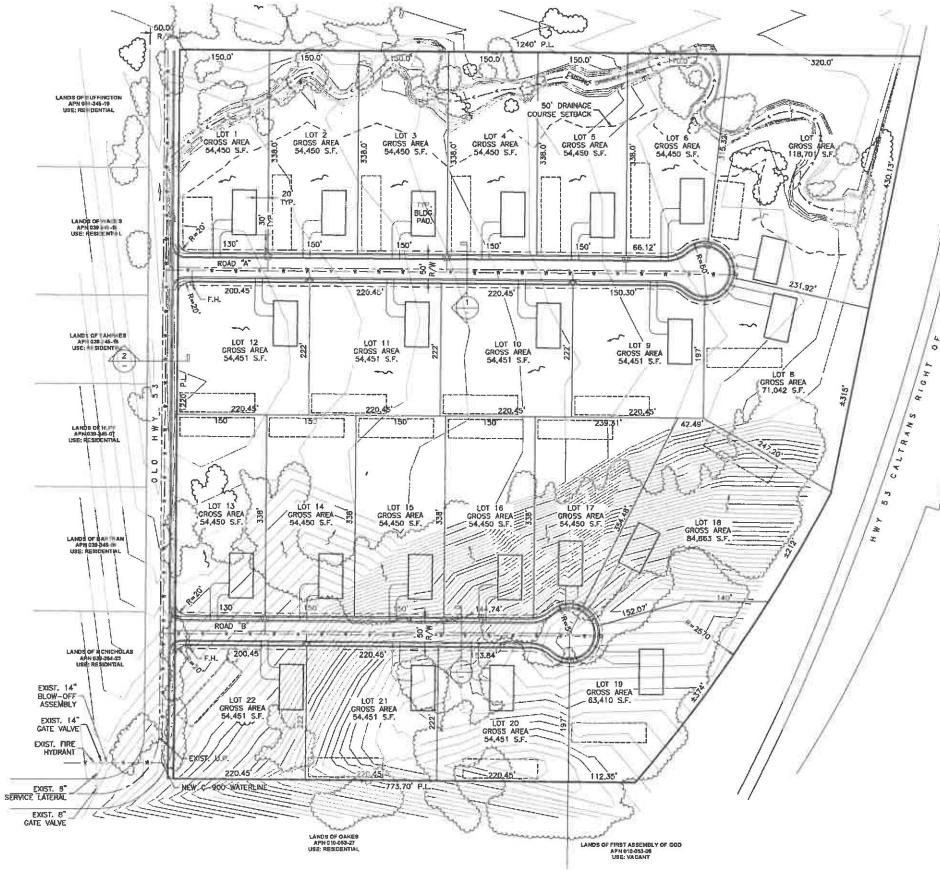
1/- TYP. NEW ROAD SECTION

SCALE: 1"=10'



2/- TYP. ½ WIDTH IMPROVEMENT TO OLD HWY 53

SCALE: 1"=10'



TENTATIVE MAP

SCALE: 1"=100'

NORTH

LEGEND

- TYPICAL 40'x75' BUILDING PAD
- TYPICAL LEACHFIELD (±4,000 S.F.)
- EXISTING CONTOURS AT 1' INTERVALS (EXTRACTED FROM MICHAEL BUTLER CIVIL ENGINEERING TENTATIVE SUBDIVISION MAP DATED 10/13/2006)
- EXISTING TREES
- SETBACKS/EASEMENTS
- PROPOSED FIRE HYDRANTS
- PROPOSED WATER LINES
- PROPOSED DOUBLE WATER SERVICE
- PROPOSED SINGLE WATER SERVICE
- DIRECTION OF SURFACE FLOW

STATEMENT: ALL EASEMENTS OF RECORD ARE SHOWN ON THE TENTATIVE MAP AND WILL APPEAR ON THE RECORDED MAP.

Lot Number	Gross Area (ft²)
1	54,450
2	54,450
3	54,450
4	54,450
5	54,450
6	54,450
7	118,701
8	71,042
9	54,451
10	54,451
11	54,451
12	54,451
13	54,450
14	54,450
15	54,450
16	54,450
17	54,450
18	84,863
19	63,410
20	54,451
21	54,451
22	54,451

LOT TABLE

PRELIMINARY

THESE PLANS ARE ORIGINALLY PRINTED ON 22"x34" PAPER.

1 INCH

REVISIONS	BY

PLAN REVIEW ONLY

WHITCHURCH ENGINEERING, INC.
610 9th Street Fortuna, California 95540
Phone (707) 725-6826

BURNS VALLEY SUBDIVISION
APN: 010-048-08
2890 Old Hwy 53, Clearlake, CA. 95422

TENTATIVE SUBDIVISION MAP

For: Burns Valley L.L.C.

Date	OCT 26 '22
Scale	AS NOTED
Design	JTL
Drawn	GKK
Job	DAN2201
Sheet	1

Roadway Segment Collision Rate Worksheet

Focused Transportation Analysis for the Burns Valley Subdivision Project

Location: Old Highway 53

Date of Count: Thursday, January 19, 2023
Average Daily Traffic (ADT): 510

Number of Collisions: 3
Number of Injuries: 0
Number of Fatalities: 0
Start Date: January 1, 2017
End Date: December 31, 2021
Number of Years: 5

Highway Type: Conventional 2 lanes or less
Area: Urban
Design Speed: ≤45

Segment Length: 1.3 miles
Direction: North/South

$$\text{Collision Rate} = \frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times \text{Days per Year} \times \text{Segment Length} \times \text{Number of Years}}$$

$$\text{Collision Rate} = \frac{3 \times 1{,}000{,}000}{510 \times 365 \times 1.34 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**2.41 c/mvm**	**0.0%**	**0.0%**
Statewide Average*	**1.20 c/mvm**	**1.0%**	**39.9%**

Notes
ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* 2019 Collision Data on California State Highways, Caltrans

Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Old Highway 53 and Proposed Street
Study Scenario: AM Existing Plus Project

Direction of Analysis Street: North/South

Cross Street Intersects: From the East

Old Highway 53

Northbound Volumes (veh/hr)

Through Volume = 27

Right Turn Volume = 3

Northbound Speed Limit: 40 mph

Northbound Configuration: 2 Lanes - Undivided

Project Driveway

Old Highway 53

Southbound Volumes (veh/hr)

24 = Through Volume

1 = Left Turn Volume

Southbound Speed Limit: 40 mph

Southbound Configuration: 2 Lanes - Undivided

Northbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	1027.6
Advancing Volume	Va =	30
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Northbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

2. Check advance volume threshold criteria for taper

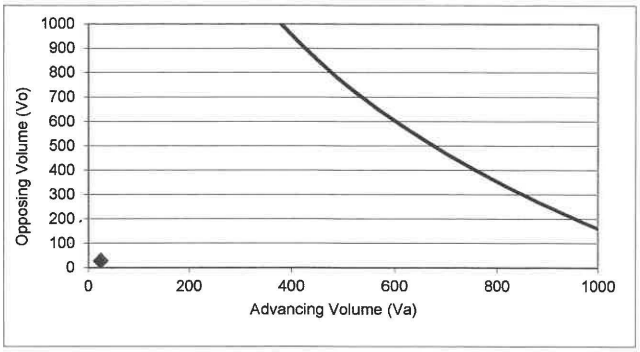
Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	30
If AV<Va then warrant is met		-

Right Turn Taper Warranted: **NO**

Southbound Left Turn Lane Warrants

Percentage Left Turns %lt	4.0 %
Advancing Volume Threshold AV	1163 veh/hr

If AV<Va then warrant is met



◆ Study Intersection

——— Two lane roadway warrant threshold for: 40 mph

Turn lane warranted if point falls to right of warrant threshold line

Left Turn Lane Warranted: **NO**

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997.
The right turn lane and taper analysis is based on work conducted by Cottrell in 1981.
The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

Turn Lane Warrant Analysis - Tee Intersections

Study Intersection: Old Highway 53 and Proposed Street
Study Scenario: PM Existing Plus Project

Direction of Analysis Street: North/South

Cross Street Intersects: From the East

Old Highway 53

Northbound Volumes (veh/hr)

Through Volume = 31

Right Turn Volume = 10

Northbound Speed Limit: 40 mph

Northbound Configuration: 2 Lanes - Undivided

Project Driveway

Old Highway 53

Southbound Volumes (veh/hr)

25 = Through Volume

3 = Left Turn Volume

Southbound Speed Limit: 40 mph

Southbound Configuration: 2 Lanes - Undivided

Northbound Right Turn Lane Warrants

1. Check for right turn volume criteria

Thresholds not met, continue to next step

2. Check advance volume threshold criteria for turn lane

Advancing Volume Threshold	AV =	975.1
Advancing Volume	Va =	41
If AV<Va then warrant is met		No

Right Turn Lane Warranted: **NO**

Northbound Right Turn Taper Warrants
(evaluate if right turn lane is unwarranted)

1. Check taper volume criteria

NOT WARRANTED - Less than 20 vehicles

2. Check advance volume threshold criteria for taper

Advancing Volume Threshold	AV =	-
Advancing Volume	Va =	41
If AV<Va then warrant is met		-

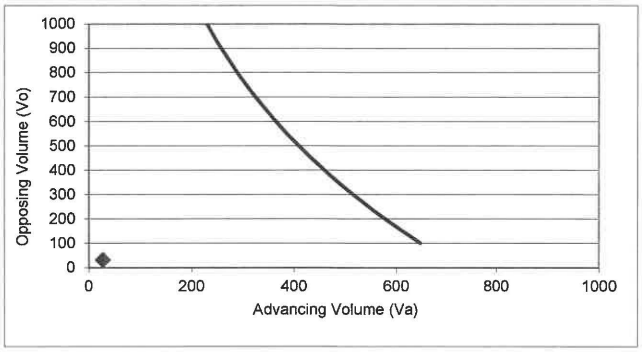
Right Turn Taper Warranted: **NO**

Southbound Left Turn Lane Warrants

Percentage Left Turns %lt 10.7 %

Advancing Volume Threshold AV 702 veh/hr

If AV<Va then warrant is met



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