



STAFF REPORT

Discussion and Direction on the Traffic Control Devices on Hiller Street at Oxford Way and Biddulph Way

Honorable Mayor and City Council:

Summary

The City relocated the STOP signs at both Cornish Way and Oxford Way to Biddulph Way as part of the Safe Routes to School project that included the installation of bulb-outs along Hiller Street and the side streets. The issue of the bulb-outs is being handled separately.

The Sterling Downs Neighborhood Association has requested the northbound STOP sign on Hiller Street at Oxford Way to be re-installed to facilitate vehicle traffic turning left out of Oxford Way onto Hiller Street. City staff is recommending the STOP signs that are currently in place remain in place and no additional STOP signs be installed.

Background and Discussion

City staff in conjunction with area residents developed a traffic calming plan to address residents' concerns regarding the speed at which vehicles travel along Hiller Street, the amount of short cutting traffic, and the general safety of pedestrians walking to and from Nesbit Elementary School. A plan was developed which included the installation of bulb-outs and the relocation of the all-way STOP signs from both Oxford Way and Cornish Way to Biddulph Way. Biddulph Way is the entrance to Nesbit Elementary School and was determined the logical location of an all-way STOP.

Some of the residents in the area expressed concerns regarding the relocation of the STOP sign at Oxford Way and Hiller Street. The residents in the area specifically requested an all-way STOP a number of years ago because they were insufficient gaps in the Hiller Street traffic to safely make a left turn. This was primarily caused by vehicle drivers rolling through the STOP signs on Hiller Street and Cornish Way and accelerating up to speed frequently catching up to the vehicles in front of them. This made it difficult for vehicle drivers making a left turn from Oxford Way onto Hiller Street during the peak commuter times.

The Sterling Downs Neighborhood Association has requested the northbound STOP sign be re-installed.

Although the City Council adopted the Safe Route to School plans that included the relocation of the STOP signs from Oxford Way and Cornish Way to Biddulph Way, the City Attorney has opined a resolution establishing the STOP signs on Hiller Street and Biddulph is required. Currently the Police Department is not enforcing the STOP signs and are warning vehicle drivers if they are caught running the STOP signs.

All-way STOPs

City staff has collected traffic volume data, conducted sight distance analysis, reviewed the collision history and completed STOP compliance studies of vehicle drivers traveling through the STOP controlled approaches at both Biddulph and Oxford Way before and after the relocations of the STOP signs.

City Council adopted the Guidelines for the Installation of All-Way STOP signs on Residential Streets in July 2003. The Guidelines indicate the primary purpose of a STOP sign is to assign right-of-way to all users of the intersection. The STOP sign is a useful regulatory traffic control device that directs motorists to stop at all times before proceeding through an intersection. A fully justified and properly installed stop sign can facilitate traffic movement, effectively assign right-of-way, reduce vehicle delay and decrease accidents. A stop sign is not a cure-all and is not a substitute for other traffic control devices. In fact, multi-way stops that did not meet adopted criteria expose the City to liability issues, traffic noise, automobile pollution, and problems with driver behavior that may lead to enforcement problems.

All-way STOPs are most effective when the traffic volumes are equal on all approaches. As the traffic volume differential increases, the number of vehicle drivers not stopping at the stop controlled intersection increases. The safety of all intersection users, especially pedestrians, is compromised when there is a high violation rate.

Stop Compliance Study

City staff conducted a stop compliance study both before and after the relocation of the STOPs at Oxford Way and Hiller Street. Over 10 hours of staff time was spent observing the traffic conditions. City staff recorded whether or not vehicle drivers stopped or rolled through the STOP signs. In addition, the number of vehicles that had to wait more than 10 seconds to make a left turn off of Oxford Way onto Hiller Street was recorded.

Before the all-way STOPs on Hiller Street at Oxford Way were relocated the number of vehicle drivers who actually stopped was less than 40 percent. Over 60 percent of the traffic turning left off of Oxford Way onto Hiller and northbound traffic turning right off of Hiller Street onto Oxford Way failed to come to a stop. Approximately 10 percent of the traffic didn't even slow

down when making these maneuvers. There were no vehicles that had to wait more than 10 seconds to turn off of Oxford Way onto Hiller Street.

After the STOPs on Hiller Street at Oxford were relocated a similar study was completed. Immediately after the STOPs were relocated, there was still a low compliance rate (less than 40 percent) by vehicle drivers turning left off of Oxford onto Hiller Street. However, over the following two weeks as vehicle drivers became familiar with the changes, the compliance rate increased to 98 percent of the vehicle drivers stopped before traveling through the intersection. The number of vehicle drivers who had to wait more than 10 seconds was less than 0.5 percent of the traffic. Typically, this occurred when three vehicles arrived at the Oxford Way STOP in a platoon during the peak traffic time (between 8:20 am and 8:30 am). It was the last vehicle in the platoon that took more than 10 seconds to make the left turn off of Oxford Way. There was no other time of the day when any vehicle driver had to wait more than 10 seconds to turn left off of Oxford Way.

The stop sign compliance rate on Hiller Street at Biddulph Way is also very high. It took several weeks for vehicle drivers to become used to the revised patterns. Nesbit School is very pleased with the STOPs at the intersection of Biddulph and Hiller Street. They have received numerous comments from parents who both drive and walk their students to school in favor of the new STOPs.

The stop sign compliance study clearly indicates:

1. Vehicle drivers are complying with the relocation of the stop signs from Oxford Way to Biddulph Way.
2. The relocation of the stops has significantly increased the number of vehicles complying with the traffic controls.
3. The intersections are safer for all users as the result of increased compliance.
4. Less than 0.5 percent of the traffic making a left turn from Oxford Way has to wait longer than 10 seconds to make the turn. This occurs only during a 10 to 15 minute period during the morning peak.
5. The need for traffic enforcement in the area may be reduced as the result of increased compliance.

All-way STOP Analysis

The traffic volume data that was collected over a one-week period indicates the average daily traffic (ADT) on Hiller approaching Oxford Way in the northbound direction is 3045 vehicles. The northbound Hiller traffic ADT approaching Biddulph Way is 2430 vehicles. The difference between the two (615 vehicles per day) indicates the number of northbound vehicles turning right from Hiller Street onto Oxford Way. The southbound ADT approaching Biddulph Way and Oxford Way is 1975 vehicles.

The ADT approach volumes for Biddulph Way and Oxford Way are 795 vehicles and 885 vehicles. The pedestrian volumes at the intersection of Biddulph are significantly higher because of parents parking on Hiller Street and walking their children to Nesbit School. There were few pedestrians who cross Hiller Street at Oxford. In fact, during the 10 hours of field observations only 3 high school aged pedestrians crossed Hiller at Oxford.

The relocation of the STOPs from Cornish Way to Biddulph Way has improved the ability of vehicle drivers to make a left turn out of Oxford Way. The relocated STOP is approximately 120 feet closer to Oxford Way. This reduces the ability of a vehicle in a queue to catch up with the previous vehicle that stopped at the intersection and fill the gap in traffic.

The review of the collision history at both intersections indicates that there have been no reported collisions in the past three years.

The review of the Guidelines for the Installation of All-way Stop Signs indicates that the intersection of Biddulph Way and Hiller Street meets the minimum criteria, as the conditions exist today with the exception of the minimum volumes for the minor street. The Guidelines indicate the minor street volumes should be one-third of the total volume of the major street. The minor street volume is 18 percent of the total volume on the major street.

This is also true with the intersection of Oxford Way and Hiller Street. The Oxford Way traffic volumes are only 17 percent of the total volume of traffic entering the intersection from Hiller Street.

The Guidelines indicate there should not be another STOP within 600 feet of an existing STOP. The Oxford Way intersection is approximately 100 feet from the intersection of Biddulph Way. The Sterling Downs Neighborhood Association only wants the northbound STOP to be re-installed. This is poor traffic engineering, as it tends to create a confusing situation for vehicle drivers traveling through the area and may expose the City to unnecessary liability. It is standard practice to stop traffic in both directions. Therefore, an all-way STOP should be installed if any stops at all are installed.

An all-way STOP could be installed at Biddulph Way or Oxford Way, however, not at both. The two intersections are very similar from a traffic volume, sight distance, and collision history basis. The intersection of Biddulph Way does have higher peak traffic volumes and pedestrian volumes and provides traffic control to the access and egress to Nesbit Elementary School.

The review of all the analysis indicates Biddulph Way is an appropriate location for all-way STOPs. The analysis indicates that the STOP for northbound Hiller Street should not be re-installed for the following reasons:

1. Does not comply with the Guidelines for the Installation of All-Way STOPs on Residential Streets
2. Non standard traffic engineering practice of stopping only one approach

3. Stop compliance will most likely revert to pre-existing conditions making the intersection less safe for all users
4. There are sufficient gaps in traffic to facilitate vehicle drivers turning out of Oxford Way
5. There is minimal delay to vehicle drivers turning left on to Hiller Street

Fiscal Impact

There is no fiscal impact as the result of this staff report.

Recommendation

It is recommended the City Council adopt a resolution establishing an all-way STOP at the intersection of Hiller Street and Biddulph Way.

Alternatives

1. Instruct staff to return with a resolution establishing an all-way stop at Hiller Street and Oxford Way
2. Refer to staff for further consideration

Respectfully submitted,

Raymond E. Davis III, PE, PTOE
Director of Public Works

Jere Kersnar
City Manager

RESOLUTION NO. _____
CITY OF BELMONT
SAN MATEO COUNTY CALIFORNIA

**RESOLUTION ESTABLISHING AN ALL-WAY STOP AT THE INTERSECTION
OF HILLER STREET AND BIDDULPH WAY**

WHEREAS, City staff has collected traffic volume data, conducted sight distance analysis, reviewed the collision history and completed STOP compliance studies of vehicle drivers traveling through the STOP controlled approach at both Biddulph and Oxford Way; and,

WHEREAS, the All-way Stop Analysis indicates Biddulph Way is an appropriate location for all-way STOPS.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Belmont that:

1. An all-way STOP at the intersection of Hiller Street and Biddulph Way is established.
2. Staff is hereby directed to maintain and enforce said designation.

I hereby certify that the foregoing Resolution was duly and regularly passed and adopted by the City council of the City of Belmont at a regular meeting thereof held on May 11, 2004, by the following vote:

AYES, COUNCILMEMBER(S): _____

NOES, COUNCILMEMBER(S): _____

ABSTAIN, COUNCILMEMBER(S): _____

ABSENT, COUNCILMEMBER(S): _____

City Clerk of the City of Belmont

APPROVED:

Mayor of the City of Belmont