TO:       HONORABLE CITY COUNCIL

FROM:     CITY MANAGER  DEPARTMENT: PLANNING AND
          COMMUNITY ENVIRONMENT

DATE:     June 7, 2004  CMR: 270:04

SUBJECT:  SECOND TRIAL PLAN FOR DOWNTOWN NORTH TRAFFIC
          CALMING PROJECT

This is an informational report and no Council action is required.

BACKGROUND
On March 29, 2004, Council directed staff to remove most elements of the first trial plan for
the Downtown North Traffic Calming project that was installed in June 2003, including six
of the seven street closures. Council directed staff to implement one of the staff-prepared
alternative traffic calming plans (the No Closures Plan) with modifications, for a one-year
trial period. Council also approved Resolution 8415, as revised, to reflect approval of the
modified No Closures Plan. Council asked staff to provide an informational report on
various aspects of the new plan, as discussed below.

DISCUSSION

Second Trial Plan
Council approved implementation of the No Closures Plan with two modifications—(i) keep
the existing closure on Palo Alto Avenue at Middlefield, and (ii) add a speed table on Palo
Alto Avenue west of Bryant as a replacement for the removed street closure near Bryant.
Council also gave staff the latitude to add up to two traffic circles to Hawthorne and/or
Everett to strengthen the plan, without the need for further Council approval. The
Commission and some Council Members were concerned about the impact of the
Everett/High street closure (in the first trial plan) and the Alma/Everett turn restriction (in
the No Closures and Modified Mixed Measures Plans) on the retail business of Stanford
Electric, but Council’s motion did not remove that turn restriction from the plan. Staff
believes it is important to maintain the turn restrictions at all four locations in order to insure
that neither Hawthorne nor Everett becomes the sole, unbalanced access point for through
traffic during the peak hours.

At its March 29 meeting, Council also gave direction to staff to evaluate adding either one
or two additional traffic circles to the No Closures Plan (second trial plan) as adopted by
Council. Staff does not recommend adding additional traffic circles to the No Closures Plan since additional circles would not add significantly to the volume or speed reduction effects of the second trial plan; hence they are not cost-effective.

Staff plans to locate the new speed table on Palo Alto Avenue to the west of Emerson, about midway between Alma and Bryant, in order to impact the section of Palo Alto Avenue that includes the Emerson to Alma travel route. In this section it can be located approximately midway between Alma and Bryant, about 120 feet west of Emerson at a location with good sight distance and a straight alignment on the property line between two single family houses.

The Council-adopted second trial plan described above is illustrated in Figure 1.

**New Performance Measures for Second Trial Plan**

It is important to note that, due to the desire to expedite installation of the turn restrictions, the Transportation Division will be unable (owing to time restriction) to collect new existing conditions data (post-closure removal, but prior to installation of the turn restriction signs). There was some interest expressed, during recent public hearings at the Planning and Transportation Commission and Council on the first traffic calming trial plan, in trying to collect an even more comprehensive and robust set of such data than had been collected before and after installation of the first trial plan. Ordinarily, per best practices in traffic engineering assessment, the Transportation Division would collect new pre-project data just prior to installation of any measures that are expected to change traffic conditions (as for example with installation of turn restrictions), then collect the same data (e.g. traffic counts at the same locations as pre-project data collection) after a settling down of traffic in the project area. The purpose of doing so would be to appraise effects of the measures installed.

Since staff will be unable, because of too short a time window between barrier removal and installation of the turn restriction signs, to collect a set of brand new (and potentially more comprehensive) data, the Transportation Division will rely on the somewhat more limited data set collected in February 2003, prior to installation in June 2003 of the first Downtown North traffic calming trial plan (i.e. pre-project with no traffic calming measures in place). By the time the second trial plan is evaluated beginning in February 2005, the February 2003 “before” data will be two years old. During this two-year period, it is possible that other factors besides the new trial plan will have caused changes in traffic counts, thus lessening the accuracy of the before/after calculations. Such factors include land use changes, roadway improvements or changes, and the general upward trend of regional traffic volumes.
As indicated, the “before” baseline data will be that which was gathered before the first (seven street closures) Downtown North trial began. Approximately five months after implementation of the second trial plan, corresponding “after” data will be gathered. Most performance measures will be evaluated by comparing the before/after data. The performance measures that will be evaluated for the Second Trial Plan fall into three categories, indicated in parentheses after each measure. The most important are the measures designated as California Environmental Quality Act (CEQA) standards. The second group of performance measures carry staff-suggested “targets” that are desirable to be reached, but not mandatory. Measures in the third group are informational reports to Council with no suggested target or mandatory standard. Only the CEQA standards are mandatory tests that the Second Trial Plan must pass. It is desirable for the plan to perform well as regards the proposed targets and informational report metrics.

1. **Through Traffic Reduction** (Target). Average neighborhood through traffic should be reduced by 20 percent compared to the before condition, as projected by the Transportation Division in CMR:180:04. This will be measured by the “cordon count” method described in detail in the attached technical memorandum. This method uses average neighborhood through traffic reduction as a surrogate, or indicator, of the level of through-traffic reduction on the primary east/west streets. This method is a second-best alternative to best practice, which is to conduct an expensive, labor-intensive origin and destination study using license plate matching methodology such as was conducted in 1999, prior to development of the first Downtown North Traffic Calming Plan.

2a. **Diversion to Local Streets with less than 2500 vpd** (CEQA standard). On local and collector streets with a before count of less than 2500 vehicles per day (vpd) in the Downtown North and Lytton neighborhood, no average daily vehicle count will increase by more than 25 percent of the before count due to the traffic calming plan, not to exceed 2500 vpd (% 10 percent) on local streets.

2b. **Diversion to Local Streets with greater than 2500 vpd** (CEQA standard). On local and collector streets with a “before” count of 2500 vpd or greater in the Downtown North and Lytton neighborhoods, no average daily traffic count will increase by more than 10 percent of the “before” count due to the traffic calming plan.

2c. **Diversion to Arterial Streets.** Arterial street diversion will be evaluated by level of service and queue length as described in performance measures 3a and 3b.

3a. **Arterial Intersection Level of Service (LOS)** (CEQA standard). The AM and PM peak hour level of service (LOS) at the Lytton/Alma, Lytton/Middlefield, Lytton/Cowper and Lytton/Emerson intersections will not degrade to less than LOS D, which is the minimum acceptable LOS in Palo Alto. Only after measurements of the second trial plan are required
for this measure, since the impact measure is whether or not the threshold value (LOS D) has been exceeded, not whether there has been a change in LOS.

3b. Queue Length at Lytton/Middlefield (Report). The change in maximum and average stopped vehicle queue lengths during AM and PM peak hours on all four legs of this intersection will be measured through observation.

4. Speed Reduction (Report). Speeds will be evaluated at 6-8 mid-block locations on the interior Downtown North streets where speed tables and traffic circles are located. This will provide a gauge of the effectiveness of these measures at reducing speeds in their vicinity. Little change in speed is expected at locations that are over 200 feet away from speed tables or traffic circles. It is important to note that staff will compare these “after” data with such “before” data as may be available. Since some “before” volume counts (hence also speed, since counting tubes are deployed in pairs allowing for simultaneous recording of both vehicle volumes and speeds) will not have been taken within 200 feet of the new speed table or traffic circle locations, staff will not have an identical set of before/after speed data.

5. Crashes Due to Traffic Calming Measures (Target). There will be no reported injury crashes directly attributable to the traffic calming plan elements in the Downtown North neighborhood during the trial period. The following crashes and/or primary causal factors will not be considered in evaluating this measure: property damage only, driving under the influence, failure to obey rules of the road or mechanical failure. Careful assessment must be made with respect to attribution of crash causation. It is important to note, however, that traffic volumes on local and collector streets, such as all interior streets of Downtown North, established during a single year, which is the length of the second trial plan, are typically too low for statistically valid database comparison with past trends.

6. Fire and Police Responses (CEQA standard). The travel times for Fire and Police Department calls within and near the Downtown North neighborhood will not exceed the Departments’ mission goals for travel times of 4 minutes for 90 percent of fire and basic medical responses, 6 minutes for 90 percent of advanced medical responses (paramedics), and 3 minutes for police calls.

7. Fire Department Access to Lytton Gardens and Webster House (Report). The Fire Department will evaluate the impact of the traffic calming project on access to these facilities with respect to increased traffic congestion on Lytton and Middlefield or any other aspect of the traffic calming plan.

8. Turn Restriction Compliance (Report). Staff will evaluate compliance with turn restrictions though a representative sample visual survey during turn-restricted hours.
9. *Impacts on Service Providers* (Report). Impacts attributable to the traffic calming plan as reported by City departments, PASCO, the post office, or any other public agencies serving the neighborhood (including bordering arterials) will be compiled and reported.

10. *Neighborhood Acceptance* (Report). A household-based neighborhood opinion survey will be conducted, in general, according to the advisory survey methodology used by the Transportation Division in the local and collector streets traffic calming program, as follows:

a) Households and business addresses as advisory survey units; one household, one business address, one response. A non-resident property owner also receives one response.

b) Household and business address advisory survey database to be derived from Utility Department customer list, supplemented by information obtained by residents and/or resident associations and organizations with respect to apartment and condominium unit numbers (typically the Utility Department list will include only one customer per address and this address may comprise multiple residences).

c) Four distinct advisory survey areas: i.) all streets interior to the Downtown North neighborhood, bounded by Alma, Lytton, Middlefield, and the San Francisquito Creek; ii.) the three bounding arterial streets (Alma, Lytton, and Middlefield), both sides; and iii.) the Lytton Neighborhood, defined as all streets in the area south of the San Francisquito Creek, east of Middlefield, north of University Avenue, and west of Chaucer (note that both sides of Chaucer are included in this area); and iv.) University Avenue, both sides, from Middlefield to Chaucer.

d) Advisory survey areas’ results are tabulated and reported separately.

e) Interpretation of advisory survey results will be up to the staff, Planning and Transportation Commission and Council. No target percentage of advisory survey results will be set a priori.

**RESOURCE IMPACT**

The second trial plan as approved by Council will cost approximately $77,000, including $15,000 for removal of the first trial plan elements (already accomplished), $4,000 for new before/after data, and $58,000 for installation of the second trial plan elements. There is $85,000 in the Transportation Division FY 2003/04 operating budget for this project, which would need to be carried over to FY 2004/05. The estimated cost for Public Works Operations to maintain the traffic calming measures in the second trial plan is approximately $2,500 annually. This extra maintenance requirement is not funded. In the near future, when the PTC and Council consider staff’s proposed revisions to the Neighborhood Traffic Calming Program, staff will propose that funding for annual maintenance of new traffic calming measures be taken from the Traffic Calming Program CIP.
Any possible future changes to the second trial plan are not included in these estimates. If the plan is successful and remains permanently, an additional approximately $12,000 would be required to fill the three traffic circles with decomposed granite, similar to the fill used in the now-removed street closures. Additional funds would have to be secured for this work, or any future changes to the plan.

**POLICY IMPLICATIONS**
This traffic calming plan is consistent with Comprehensive Plan policies and programs relating to neighborhood streets, including the following:

Policy T-32: “Design and maintain the City street network to provide a variety of alternate routes, so that the traffic loads on any one street are minimized.”

Policy T-33: “Keep all neighborhood streets open unless there is a demonstrated safety or overwhelming through traffic problem and there are no acceptable alternatives, or unless a closure would increase the use of alternative transportation modes.”

Policy T-34: Implement traffic calming measures to slow traffic on local and collector residential streets and prioritize these measures over congestion management. Include traffic circles and other traffic calming devices among these measures.”

**TIMELINE**
Removal of the six street closures and two gateway features near Middlefield was completed by Friday, April 9.

An expedited implementation of the second trial plan will require two phases. The first phase is locating sites for and installing the peak-period turn restriction signs. This entails specifying locations, ensuring that no underground utilities would be damaged by installation of the signs, and sign installation. The last step, sign installation, is expected to be complete by Friday, April 23.

Following is an approximate timetable for the one-year trial:

- Turn restriction signs to be installed by April 23, 2004.
- Construction of second trial plan begins mid-August 2004. It is expected that construction will be completed no later than mid-September 2004. Every effort will be made to minimize any disruption to traffic flow during construction.
- One-year trial begins mid-September 2004.
- Trial evaluation begins mid-February 2005 for three months (includes data gathering, neighborhood meeting, and resident opinion survey).
- Planning and Transportation Commission (PTC) meetings June 2005
• City Council meeting and decision regarding second Downtown North Traffic Calming Trial September 2005

Installation of the second trial plan physical measures, including traffic circles and speed tables, is governed by how quickly staff can prepare the plans and specifications and hire a contractor. Staff projects that this installation will begin in mid-August.

ENVIRONMENTAL REVIEW
A mitigated negative declaration was approved by the Council for the Modified Mixed Measures Plan, which included plans with similar or less impact, such as the second trial plan.

ATTACHMENTS
A. Technical Memo Describing Through Traffic Measurements in Downtown North

PREPARED BY: __________________________________________
CARL STOFFEL
Transportation Engineer

DEPARTMENT HEAD: _________________________________________
STEVE EMSLIE
Director of Planning and Community Environment

CITY MANAGER APPROVAL: _________________________________
EMILY HARRISON
Assistant City Manager

cc: DTNNA representatives (Dan Lorimer, Chas Pavlovic, Mike Liveright, Josh Mogal)
    Unblock representatives (Joe Durand, Dana DeNault, Pat Markevitch, Steve Kutner)
    Lytton neighborhood representatives (Alan and Bonnie Luntz)
    Palo Bicycle Advisory Committee Members
    City of Menlo Park Transportation Division
Date: April 5, 2004
To: File
From: Carl Stoffel
Subject: Through Traffic in Downtown North

The purpose of this memo is to document the findings and calculations regarding through traffic in Downtown North as they were used in determining the impact of the trial traffic calming plan with seven street closures that was installed in June 2003.

Background
Through traffic (a.k.a cut-through or non-neighborhood traffic) is defined as a vehicle trip with neither origin nor destination in a neighborhood. A trip with one end in the neighborhood is a local or neighborhood trip, and is one-way. Each local trip in or out of the neighborhood is a single one-way trip. Examples of local trips are a resident leaving or returning home, a trip to or from a business in the neighborhood, a visitor to a business or residence, a service trip, etc. In Downtown North, a special case are the trips made in and out of the neighborhood by non-resident parkers. Each parker can be assumed to make one entry and one exit trip, and they were not considered to be through trips. The traffic calming project was not designed nor expected to deter non-resident parking trips.

Through Trip Calculations
By definition, through trips are one-way trips that count twice in a volume hose count—one entry and one exit to/from a street or a neighborhood. Neighborhood trips are one-way trips that count only once—either as an entry or exit, but not both. The reason is that one end of a neighborhood trip is inside the neighborhood. Thus, one way to calculate through trips is to divide the vehicle volume counts of through trips by two.

However, a through trip is generally longer than a neighborhood trip because the through trip both enters and exits the neighborhood while the neighborhood trip only enters or exits. The nature of through trips in Downtown North is discussed on pages 10-13 of the Dowling Associates Final Technical memorandum—Data collection and Analysis, October 8, 1999. Figures A1 and A2 from that memo show that the majority of through trips in Downtown North either transit the full length of the neighborhood between Alma and Middlefield, or a substantial part of that length to Lytton. The average length of a neighborhood trip is about half the length or width of the neighborhood (to/from the geographical center of the neighborhood). Thus, it is fair
to assume that a through trip should be weighted approximately twice what a local trip is in order to account for the greater impact of the through trip on the neighborhood (number of households affected, noise, emissions, etc). When counting through trips using exits and entries (i.e., volume hose counts) the double-weighting is automatically accomplished because a through trip measures twice in a volume count as discussed above. Thus, through trip percentages can be also be calculated by using just entries and exits without dividing the through trip entries/exits by two. This is a second method of calculating through trips. Both methods were used in the Downtown North study.

Downtown North Initial Through Traffic Determination (1999)
The number and percentage of through trips on particular streets in a grid pattern can only be measured by an origin-destination study. Such a study can be done by license plate matching or by personal surveys. Both methods are very time-consuming and expensive and hence are usually used only for large projects and/or in very limited fashion. Ideally, a license plate survey should be done for all neighborhood gateways in both directions for a 12-14 hour period (6 a.m.–8 p.m.). However, such a study would be very costly.

For the initial determination of the amount of through traffic in Downtown North, a very limited license plate survey was done because of budgetary limitations. Dowling Associates measured through traffic only westbound in the AM peak period. The details of this study are contained in the above-referenced memorandum, and are graphically shown in Figure 7 of that memorandum. The survey showed that an average of 60 percent of the traffic entering the neighborhood from Middlefield in the AM peak period was through traffic. This calculation was made based on the number of entries (and in the reverse the number of exits). This is an acceptable method based on the assumption that a through trip can be weighted at approximately twice the length of a local trip, as explained above under “through trip calculations”.

Staff then used the following assumptions to arrive at the conclusion that an average of 60 percent through traffic existed on all or a portion of the east-west routes of Hawthorne, Everett and a portion of Palo Alto Avenue for a substantial period of time (12-hour daytime period): (i) even though the volume in the eastbound AM direction might be different than the westbound, the through traffic percentage would be similar; (ii) through traffic percentages in both directions in the PM peak period would be similar to the AM; (iii) even though volumes are lower in the non-peak periods, the through traffic percentage would be similar during those periods as well. Staff believes these are reasonable assumptions because traffic counts show that the hourly traffic volumes on Lytton, Hawthorne and Everett are relatively high and constant all day long, with peaking in the AM and PM periods. Given the traffic volumes and congestion on Lytton and University and other downtown streets on all weekdays, it is reasonable to assume that drivers’ desire to cut through Downtown North streets exists all day long, in both directions, and not just at peak periods or only in one direction. Evenings and weekends usually are not considered in defining the proportion of through traffic because volumes are markedly less compared to weekdays. It is important to note that staff usually makes a through trip determination as a percentage of total traffic, rather than the actual volume of through trips.
Neighborhood Average Through Trip Calculation

The 60 percent through traffic determination is only for the primary cut-through routes (Hawthorne and Everett and a portion of Palo Alto Ave). It is presumed that other streets in the neighborhood, especially north of Hawthorne, have lower traffic volumes as well as lower proportions of cut-through traffic. In neighborhood traffic calming projects, the problem is always found on a limited set of specific routes through the neighborhood—not the neighborhood as a whole. For example, in the Lytton neighborhood study, the primary route was Lytton/Palo Alto Ave/Chaucer. In Evergreen Park, the routes were Park Boulevard and College. In College Terrace, the routes were certain north-south streets. Though the problem to be solved occurs only a couple of major routes, the solution must involve the entire neighborhood, especially with a street closure project. Thus, the reason for a neighborhood study is not to deal with the problem—rather, it is to deal with the impacts of the solution. This fact makes a neighborhood study particularly difficult because it affects and requires by-in from a large segment of the neighborhood that may not have the traffic problems for which the study is being conducted.

The discussion in the preceding paragraphs shows that the average neighborhood-wide level of through traffic in the neighborhood is not particularly germane to the study. Nevertheless, it is a simple measurement tool that can substitute for an expensive and complex origin-destination study. The average level of through traffic in a neighborhood can be calculated by the “cordon count” method, in which traffic counts are made at every neighborhood vehicular access point (gateway). This results in the total number of exits and entries generated by the neighborhood, plus through trips. Neighborhood trips can be approximately calculated by applying trip generation rates to all activities in the neighborhood. The trip generation analysis is very approximate since trip generation data is widely variable and numerous assumptions must be made. The remaining trips are assumed to be non-neighborhood, or through trips. This method yields an approximate average neighborhood-wide through traffic percentage.
Calculation of Neighborhood Average Through Trip Percentage in May 1999

Internal neighborhood trips were calculated as follows for the 1999 planning study scenario (updated with current census data)\(^1\).

- \# exits and entries
  - 1022 mf residences x 6 trips/unit less 10% bike/walk/transit = 5520
  - 510 sf residences x 10 trips/unit less 10% bike/walk/transit = 4590
  - 58 businesses interior & along Lytton, estimate avg 2000 sf each x 35 trips/Ksf on neighb streets = 4060
  - 680 non-resident parkers (est 800 including turnovers) x 2 trips = 1600
  - TOTAL Approximate Neighborhood Trip Generation (includes non-res parkers) = 15,770

Neighborhood cordon count measured in May 1999 (Figure 4 in Dowling Assoc Tech Memo, with 2003 counts for Byron and Kipling) = 27,800

Difference between cordon count and estimated trip generation represents approximate number of exits and entries caused by through trips (27,800 – 15,770) = 12,030

Approximate through trips = 12,030/2 = 6,000

Neighborhood average percentage of through trips based on exits and entries = 12,030/27,800 = 43%

Calculation of Neighborhood Average Through Trip Percentage Before Trial February-March 2003

For the Downtown North study, staff used this cordon count method for performance measure #1 to determine the change in through trips before and after the trial:

The Downtown North neighborhood cordon count of average daily traffic (sum of daily counts at all neighborhood access streets along Middlefield, Lytton and Alma) will be reduced by an average of 20 percent. This translates into an approximate reduction of through trips (cut-through traffic) of 65 percent.

The cordon count method yields a reasonably accurate calculation of the percentage change in average neighborhood through trips over a short time period because the same assumptions for trip generation are used for the before and after calculations, thus greatly reducing the influence of the assumptions on the calculated differential. It is then assumed that the calculated decrease in average neighborhood through traffic represents the same decrease on the primary problem streets where 60 percent through traffic was measured in the license survey (Hawthorne, Everett

\(^1\) Sources of data:
- Trip generation data from ITE Trip Generation Manual, 6\(^{th}\) Edition
- Number of residences from 2000 U.S. Census
- Number of businesses estimated from mailing labels
- Number of non-resident parkers from Police Department survey 4/99
and Palo Alto Ave). An origin-destination study is therefore not needed when this simple surrogate method is used.

For the 2003 before calculation, economic activity had decreased dramatically from 1999 in the most sustained economic downturn since the Depression. Staff believes this is the primary cause of the neighborhood cordon count decreasing about 15 percent between 1999 and 2003 (rather than an expected increase). Lacking any other measures, staff used the decrease in the Dow Jones Industrial Average between mid-1999 and mid-2003 as an indicator of decreased economic activity and, hence, traffic levels. The DJIA dropped approximately 20 percent between those two periods (approximately 10,500 to approx 8,500). Accordingly we lowered some of the neighborhood trip generation estimates by about 20 percent to recognize that vacancy rates had probably increased businesses trip-making had probably decreased. Non-resident parking was not decreased based on staff observations of on-street parking in mid-2003. Internally generated neighborhood trips were therefore recalculated as follows for the February 2003 before trial scenario.

<table>
<thead>
<tr>
<th>Description</th>
<th># exits and entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1022 mf residences x 6 trips/unit less 10% bike/walk/transit</td>
<td>4415</td>
</tr>
<tr>
<td>less 20% for less activity and increased vacancy</td>
<td></td>
</tr>
<tr>
<td>510 sf residences x 10 trips/unit less 10% bike/walk/transit</td>
<td>3670</td>
</tr>
<tr>
<td>less 20% for less activity and increased vacancy</td>
<td></td>
</tr>
<tr>
<td>58 businesses interior &amp; along Lytton, estimate avg 2000 sf each</td>
<td>2900</td>
</tr>
<tr>
<td>x 25 trips/Ksf on neighb streets (28% decrease)</td>
<td></td>
</tr>
<tr>
<td>680 non-resident parkers (est 800 including turnovers) x 2 trips</td>
<td>1600</td>
</tr>
<tr>
<td>TOTAL Approximate Neighborhood Trip Generation (includes non-res parkers)</td>
<td>12,585</td>
</tr>
</tbody>
</table>

Neighborhood cordon count measured February-March 2003: 23,900

Difference between cordon count and estimated trip generation represents approximate number of exits and entries caused by through trips (23,900–2,585) = 11,315

Approximate through trips = 11,315/2 = 5,660

Neighborhood average percentage of through trips based on exits and entries for before scenario: 11,315/23,900 = 47%

Staff cautions that this before scenario should not be directly compared to the 1999 planning scenario because of the four-year time difference, the changed economic conditions, and staff’s very rough estimates at changing the neighborhood trip generation calculations to show less economic activity. The germane and accurate comparison is between this before scenario and the after scenario presented below, since the time difference is short and the calculation parameters are the same in each scenario.

Calculation of Neighborhood Average Through Trip Percentage After Trial September-October 2003

The above method used for the before calculation was used for the after calculation. The calculation concludes with the percentage reduction in through trips between the before trial and after trial scenarios. An important assumption here is that the reduction in neighborhood entries...
and exits during the trial period is due primarily to elimination of through trips. Staff assumed that most neighborhood trips (i.e. by Downtown North residents, businesspeople and parkers) still continued to be made in the same numbers after the street closures were installed. It is possible that some former Downtown North drivers changed modes to walk, bike or transit as a result of the street closures, but we assume that is a negligible number and it could not be measured.

### # exits and entries

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL Approximate Neighborhood Trip Generation (includes non-res parkers)</td>
<td>12,585</td>
</tr>
<tr>
<td>(from before scenario)</td>
<td></td>
</tr>
<tr>
<td>Neighborhood cordon count measured in September-October 2003</td>
<td>13,700</td>
</tr>
<tr>
<td>Percentage change in neighborhood cordon count before to after</td>
<td>-43%</td>
</tr>
<tr>
<td>= (23,900-13,700)/23,900</td>
<td></td>
</tr>
<tr>
<td>Difference between cordon count and estimated trip generation</td>
<td>1,115</td>
</tr>
<tr>
<td>represents approximate number of exits and entries</td>
<td></td>
</tr>
<tr>
<td>caused by through trips (13,700 – 12,585)</td>
<td></td>
</tr>
<tr>
<td>Approximate through trips = 1,115/2 = 560</td>
<td></td>
</tr>
<tr>
<td>Percentage reduction in through trips before to after = (5660-560)/5660 =</td>
<td>-90%</td>
</tr>
<tr>
<td>Neighborhood average percentage of through trips</td>
<td>8%</td>
</tr>
<tr>
<td>based on exits and entries for after scenario = 1,115/13,500</td>
<td></td>
</tr>
</tbody>
</table>

The above calculation was the basis for the conclusion about through traffic reduction as measured by performance measure #1 and stated on page 4 of Attachment A of the January 21, 2004 staff report to the PTC:

This measure was satisfied. The neighborhood perimeter (cordon) count of all entries and exits decreased from 23,900 to 13,700 (45 percent) between February and September 2003. It is assumed that most of this reduction was in through trips (i.e., trips with neither origin nor destination in the neighborhood). This is a decrease of about 10,000 entries and exits, or about 5,000 through trips. Before the trial plan, we estimated daily through trips at about 5500–6000, so the trial plan reduced through trips by about 90 percent. (Note: through traffic calculations are estimates based on theoretical trip generation combined with actual traffic counts. Traffic volume measurements can easily vary by ±10 percent from one day to the next, with additional seasonal variations. Roadway conditions, including unknown construction activities outside the area, could also affect travel patterns and volume counts. During the six months between the before and after measurements, longer-term factors other than the trial plan installation could change traffic volumes—e.g. improving economic conditions, opening of IKEA, etc. Nevertheless, due to the large calculated decrease in through trips (90 percent) compared to the goal (65 percent), it is reasonable to conclude that the goal has been attained and most likely substantially exceeded.

CS