Transportation Impact Study Standards

CHAPTER 6 – TRANSPORTATION IMPACT STUDY

6.00 GENERAL

Intent - The chapter provides directions for land owners or land development applicants to conduct a Transportation Impact Study (TIS) to assess the effects that a particular development submittal will have on the Village's transportation network. These standards are designed to be consistent, and provide proper traffic planning and engineering practices when land use actions are being considered within the Village. It provides a standard process, set of assumptions, set of analytic techniques, and presentation format to be used in the preparation of such studies.

Applicability - This chapter applies to all development proposals that exceed the minimum generated traffic threshold, seek direct access to an arterial street, or required by the Village for a localized safety or capacity deficient issue.

6.01 RESPONSIBILITY, MEETINGS, WARRANTS, AND WAIVERS

Responsibilities for a Transportation Impact Study (TIS) - The responsibility for assessing the traffic impacts associated with a proposed land use action rests with the land owner or land development case applicant. The assessment of these impacts shall be within the TIS as specified herein, prepared under the supervision of a Registered Professional Engineer in the State of Colorado with adequate experience in transportation planning and traffic engineering. Upon submittal of a draft TIS, the Village will review the study data sources, methods, and findings based on these study standards, the Village's Comprehensive Plan, Transportation Plan, the Parks, Trails and Open Space Master Plan, and associated studies. Any necessary revisions will be incorporated prior to submitting a final study.

For all State Highways within the study area, the Applicant may also be required to meet the impact study guidelines set by the Colorado Department of Transportation (CDOT).

Scoping Meeting - The Professional Engineer preparing the TIS shall meet with the Community Development Department in a pre-submittal scoping meeting before beginning the study to discuss analytic parameters and procedures. Prior to this meeting, the applicant's Engineer should have identified site location, proposed site uses, and preliminarily, daily and peak hour trip generation at build-out. In the scoping meeting with the Village staff, the following parameters, and others, may be discussed:

- Previous TIS prepared for the site, if any
- Determine the limits of the study area for the impact analysis
- Identify intersections within the study area to be analyzed
- The appropriate peak hours for evaluation
- Proposed access and its relationship to adjacent properties and their existing/proposed access
- The appropriate trip generation rates and trip distribution at build out
- Trip adjustment factors, if any
- Determine the horizon years for the analysis
- Proposed phasing plan, if applicable
- Sources and methodology for developing short and long-range background traffic forecasts
- Anticipated street improvements, to be constructed by applicant
- The need to evaluate traffic accident history and potential safety issues

- The need to evaluate pedestrian / bicycle facilities, movements and safety

Warrants for a Transportation Impact Study - One of the main factors in determining if a TIS is required is "trip generation," which is defined as a single or one direction trip with either the origin or destination inside the study area. The trip generation is essentially all inbound and outbound trips that are anticipated to be created by the proposed development.

- **Transportation Study -** Any development proposal shall submit a TIS when the average daily trips (ADT) are expected to exceed 100 ADT or the peak hour trip generation is over 40 inbound and outbound trips, and if any new access is requested for an arterial street. Furthermore, all development proposals requiring access to a State Highway are required to also comply with the Colorado Department of Transportation (CDOT) traffic study requirements.

- **Additional TIS Analysis** - Further study may also be required by the Village for localized safety or capacity deficiencies for the following reasons:
  1. There is an existing traffic problem such as a high level of accidents, or the intersection is in need of a traffic signal, or turn lanes
  2. Neighborhood sensitivity or adjacent areas that may be perceived as impacted
  3. Current or projected level of service of the street adjacent to the development, which will be affected
  4. Proximity of access to existing driveways or intersections
  5. Property has been vacant for more than a year
  6. Change in land use

- **Transportation Memorandum -** A transportation memo may be considered in lieu of a TIS if the following requirements are met;
  1. The projected average daily trip generation is less than 40 peak hour trips, and
  2. Any new access requests are for only local streets, and
  3. If the property is being redeveloped the increase in the number of vehicular trips for the proposed use does not exceed the trip generation from the existing use by more than 20 peak hour trips or 100 ADT, and
  4. Pedestrian and bicycle facilities exist or will be constructed on or adjacent to the site, or the proposed use will not generate any new pedestrian or bicycle trips.

Transportation Impact Study Waiver- If the applicant seeks to waive the TIS, or specific portions of the study waived, then the applicant *must* schedule a meeting with the Director of Community Development. A written waiver request *must be* submitted to the Director at least four working days prior to this meeting. The Director, or designee shall consider, as a minimum, the following items in the preparation of the rationale statement:

- The potential adverse impacts of the proposed development on the local and regional transportation system are not increased by granting the waiver.
- The proposed development does not create a safety issue.

The applicant or any citizen materially affected by the proposed waiver may appeal the decision of the Community Development Director. The appeal will be approved or disapproved by a majority vote of the City Council.

6.02 TRANSPORTATION IMPACT STUDY REQUIREMENTS AND FORMAT

The information provided in the TIS shall include the following sections outlined below. The study shall be typed and bound with pages numbered, and clearly identify the data and information in

the appropriate sections. In addition, the study shall contain a table of contents, lists of figures and tables, all necessary maps, and shall indicate any map pockets and included drawings. The appendices shall include all trip generation worksheets, traffic analysis worksheets, existing traffic counts, and any other supporting data.

Executive Summary - The TIS shall provide an executive summary that provides an overview of the study and discusses the principal findings and recommendations of the report. Data within the summary should be presented in text, maps and tables, and presented graphically as needed to accurately reflect the summary of the study. The summary shall be prepared as a condensed stand alone document.

Project Description - A description of the proposed project will be prepared and include the following;

- Purpose of the study
- The study area
- Type of proposed land use
- Size of the proposed project (number of dwelling units and square footage of buildings)
- Identify horizon years
- Timing or proposed phases with anticipated completion date

In addition, a description of how bicycle and pedestrian traffic will be accommodated within the proposed site plan and adjacent streets or trails. This description shall include a discussion of how the proposed bike and pedestrian facilities will connect into the existing network of sidewalks, trails, and bike facilities thus creating a continuous network to adjacent land uses. Condition of sidewalks (attached/detached), pathways, trails, and bike facilities shall also be discussed.

Project Location and Zoning - Include a vicinity map detailing the property location, a conceptual site plan reflecting the boundaries of the project or development, a description and figure depicting the proposed vehicular access locations, and information detailing the designated zoning district, general terrain and physical features of the site and the surrounding area.

Study Area Boundaries - The study area for a project shall include all streets and transportation routes, including streets/driveways, sidewalks and trails providing access to the site, or that are located adjacent to the project. The study area shall also include the nearest arterial/arterial intersection(s), adjacent driveways, and internal roads/drives. In addition, the study area will be determined on engineering judgment and an understanding of existing and future land use and traffic conditions in the vicinity of the project. The following shall be considered by the Village in defining the study area:

Road Issues - Major streets and intersections either current or future years, where

1. The project contributes 10 percent impact (vehicle delay) during the peak hours to any approach leg of the intersection where the intersection is currently operating at a acceptable level of service, or
2. The project contributes a 5 percent impact (vehicle delay) during the peak hours to any approach leg of the intersection where the intersection is currently operating at an unacceptable level of service.
3. Local safety issues exist or would be created by the proposed development.

Land Use Issues

1. Adjacent and neighboring land uses
2. Major projects within the vicinity.
3. Projects with access to an arterial roadway.

4. Residential areas that may be impacted by the proposed development.

Existing Roadway and Transportation Network Description - Describe and include street orientations, functional street classifications and lane configurations, street and intersection geometries, and all existing and proposed driveways and accesses proposed for the subject property. Similar information for the adjacent property shall be provided as well, if pertinent, on the same map.

Traffic control measures, including signage and striping, speed limits, parking restrictions, sight distance limitations, traffic signals, transit routes, the presence of bicycle and pedestrian facilities, and any other related traffic operations information and planned or approved improvements shall also be included.

Analysis Horizons - Each TIS shall address two analytic horizons, Design Year 1 and Design Year 20.

Design Year 1 (DY-1) - The first horizon is the proposed project completion date. This horizon shall be referred to as DY-1. In this design year, the immediate impacts of the development on the street system are investigated. If the project is planned to be developed in phases then additional horizon years may require additional analysis at the completion of major phases.

Design Year 20 (DY-20) - This is a long-range 20 year projection intended to evaluate the implications of the fully developed proposed project on the long-range traffic conditions. To forecast future traffic conditions current traffic counts shall be increased to account for local and regional growth.

6.03 TRAFFIC VOLUMES

Existing Traffic Volumes / Traffic Counts - Current A.M. and P.M. peak hour traffic counts, as specified by the Village, shall be obtained for the streets within the study area. Counts shall be obtained between Tuesday and Thursday during a non-holiday weekday, or as directed by the Community Development or Public Works Department based on the proposed land uses. Traffic counts may require seasonal adjustments depending on when the data was collected and if the project is considered to be in an affected area (e.g. school, special event or tourism). For example, if the study area includes a school or route to school the traffic counts may be adjusted to account for school traffic. Peak hour traffic volumes should be conducted over a two-hour period and shown in 15 minute increments to clearly identify the peak hours. Peak volumes should also be separated into individual turning movements at intersections (signalized and unsignalized) in the study area. Traffic count data for both daily and peak hours and analysis worksheets consistent with operational analysis techniques outlined in the current *Highway Capacity Manual* should be provided in the Appendix. Figures illustrating the turning movement volumes for study area intersections shall also be included. Weekend or noon hour counts and average daily trips may also be required where appropriate or when requested by the Community Development or Public Works staff.

These traffic counts shall be no more than one year old from the date of the application submittal. Sources for the traffic counts shall be explicitly stated, such as CDOT counts, new counts by applicant, or Village traffic counts.

Background Traffic - For DY-1 the traffic projections shall be the sum of existing traffic volumes plus the established background traffic growth rate determined by Community Development. DY-1

volume also needs to account for any additional traffic from nearby development projects that may be completed and generating traffic by DY-1. Background traffic projections for DY-20 shall be based on a growth rate factor established by Community Development and include other trip generations that are not accounted for in DY-1. This may include new developments likely to be generating trips in this time period and approved projects that have not been constructed within or near the study area. Long range traffic projections can also be obtained from CDOT or the Denver Regional Council of Governments (DRCOG) long range travel demand forecast model. Contact Community Development staff if the applicant is considering these or other sources to determine the background growth rate. Figures illustrating the peak hour background turning movement volumes for each design year and intersections in the study area, including project access points shall be included.

Project Traffic

- **Trip Generation Rate -** Trip generation for the proposed development should be calculated from the latest data contained within the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*. Other industry publications, such as ITE Journal or other sources may be approved by the Village. In the event that rates are not available for a proposed land use, the rates are inconsistent with proposed land use, or more specific rates are available from local sources, the applicant shall recommend and provide sufficient justification for a generation rate, following the procedures prescribed in the ITE *Trip Generation Manual*. In all cases the trip generation rate must be acceptable to the Village.

- **Trip Generation Table -** The applicant shall prepare a trip generation table listing each land use that requires trip generation analysis at build out. For each trip generation summary include a description of each land use type, the ITE land use code (if used), the size and unit measure for each land use, average trip generation rate for total daily traffic and peak hour traffic (a.m., noon and/or p.m. peak hour traffic generation may be required), and the resultant total trips generated for each time period and each land use. The data source used for the trip generation rates shall be stated.

- **Adjustments to Trip Generation Rates -** After first calculating trip generation at full ITE rates or pre-approved rates from other professional sources, trip making reduction factors may be used. These factors fall into two categories: those that "remove" or "move" generated trips, and those that reassign some portion of generated trips to the background stream of traffic. In all cases, the underlying assumptions of the ITE Manual's rates must be recognized and considered before any reductions are claimed.

  Two specific trip categories will be considered. The first category is for internal site trips, transit use, or Transportation Demand Management (TDM). The second category is how the traffic study assumes rates for mixed land uses that result in lower trip generation when applying individual rates to each land use. If reductions are claimed, analytic support to show how the figures were derived shall be provided:

  1. *Internal Site Trips or TDM*: Analytic support documentation of internal site trips, or TDM trips, such as transit use, bike trips, or walking trips shall be provided to show how trip adjustments are derived. Overly optimistic assumptions regarding transit use and TDM actions will not be accepted unless accompanied by documentation that outlines specific implementation proposals, that will become a condition of approval.
  2. *Pass-by Trips:* The second category may be considered when trips to the proposed development currently exist as part of the background traffic stream, referred to as pass-by trips. Pass-by percentages identified in the ITE Trip Generation report or other

industry publications will be considered with appropriate explanation and documentation

Pass-by traffic must continue to be assigned to site driveways and access points, but is not additive to the background stream of traffic. Smaller passerby percentages than documented rates may be appropriate if other trip making reduction factors are claimed. A technical appendix, table or map that illustrates the re-diversions of pass-by trips is required which may be submitted as a legible hand written work sheet(s).

- **Project Trip Distribution -** Project trip distribution can be based on the professional engineer's judgment applied to one or more of the following: the site's location within the Village, DRCOG traffic forecasts, market analysis, existing traffic flows, or applied census data. Regardless of the estimates the procedure and the logic for estimating the trip distribution must be well documented. The resulting trip distribution shall be identified and illustrated with a graphical figure detailing the percentages making each movement, at each intersection in the study area.

- **Project Trip Assignment -** The project traffic will be assigned to the street system according to the trip distribution established above. The trip assignment shall develop anticipated traffic volumes for each of the movements identified by the trip distribution and each of the designated design years identified in the analysis. The resulting traffic volumes shall be illustrated with graphical figures detailing the anticipated volumes making each movement, at each intersection in the study area.

- **Total Traffic -** Total traffic shall be determined for each of the analysis horizon design years identified for the study. Total traffic projections shall include project traffic, background traffic, and existing traffic. The future total traffic shall be depicted on figures for each design year and identified peak hours. These figures shall also present turn movement volumes at study area intersections and project access points.

6.04 PROJECT IMPACTS

The principal objective of the transportation impact study is to identify a proposed development's impact on the transportation system and necessary improvements to assure safe and reasonable operating conditions in the future. The key elements to be considered include:

1. Street classification and daily traffic volume
2. Peak hour intersection level of service
3. Appropriateness of access locations and future traffic signals
4. Specific treatments for site intersections and other key intersections in the study area
5. Turn lane storage requirements
6. Appropriateness of acceleration or deceleration lanes
7. Safe mobility of bicycles and pedestrians.

Traffic Impacts - Overall needs and incremental needs induced by the proposed land use action shall be identified. The impact section shall detail the proposed facility improvements and the operating conditions that result. Three conditions are to be evaluated for each design year, as follows:

- **For DY – 1:**
  1. Background traffic on "*background committed*" network; this analysis presents a description of how the street system would operate without the proposed land use action.

2. Total traffic on "*applicant committed*" network; this analysis is required as it describes how the street system operates with the proposed land use action and accompanying roadway improvements, in place.
3. Total traffic on "*mitigated*" network; if the above analysis does not yield the target peak hour level of service, further examination of possible improvements necessary to yield such a level must be undertaken.

- **For DY – 20:**
  1. Background traffic on "*planned*" network; this analysis is required in all cases, as it presents a description of how the street system would operate in the long range future without the proposed land use action.
  2. Total traffic on "*applicant committed*" network; as with DY-1, this analysis is required to provide a description of the future operations of the street network with the proposed land use action in place.
  3. Total traffic on "*mitigated*" network; if the above analysis does not yield the target peak hour level of service, it will be necessary to further examine possible improvements to achieve such a level.

- **Definition of Target Peak Hour Level of Service (LOS) -** The LOS of an intersection ranges from A to F, characterizing the operational conditions of the traffic flow. LOS A represents the free-flow conditions where vehicles experience little to no delays. LOS F indicates the worst-case scenario with high congestion, a complete breakdown of traffic flow and high vehicular delays. Although LOS A through C may be the desired levels, LOS D is considered acceptable in urban areas during the peak hours. Traffic conditions with LOS of E or F are generally considered unacceptable and represent significant travel delay, increased accident potential, and inefficient motor vehicle operation. For these reasons, LOS D is the established peak hour target LOS for the Village, which is consistent with the American Association of State Highway and Transportation Officials for developed areas, the Colorado Department of Transportation (CDOT), and the Arapahoe County Transportation Plan.

  For each design year, the project impact analysis shall include "*background committed*" and "*planned*" transportation facilities that are part of the Village's Capital Improvement Program, or improvements which have appropriated and obligated funds by other agencies, cities/counties, or special districts. Transportation improvements committed to by the applicant ("*applicant committed*"), including on-site facilities, site-adjacent improvements, and potentially off-site improvements shall be included in the analysis. However, all potential improvements mentioned above must be anticipated for completion by the design year being analyzed otherwise they can not be included in the analysis. The Village will check to assure that "*applicant committed*", or "*mitigated*" improvements proposed with the land use action are identified in the "Recommendations" section of the report and become a condition of approval and part of a development improvement agreement (DIA). A reference page listing all identified transportation improvement projects, the agency constructing the improvements, the anticipated completion date, and the source of the listed improvement needs to be included in the Appendix of the report.

6.05 ANALYSIS AND FORECASTED TRAFFIC VOLUME

Using the traffic volumes forecast, a general evaluation shall be made and general capacity required for each design year. Incremental differences attributable to the proposed land use action shall be identified. A map showing generalized capacities for each condition/situation analyzed shall be presented for each design year.

Peak Hour Intersection Level of Service (LOS) - Peak hour intersection LOS shall be analyzed for signalized and unsignalized intersections on arterial and collector level streets within the study area. In some instances local level street intersections may also be analyzed. The analysis shall be conducted using methodology specified in the most current version of the *Highway Capacity Manual.* Peak hours for analysis will typically include AM and PM weekday peak hours. However, other analysis time periods, such as a weekday noon-hour peak or a weekend peak hour, shall be used where appropriate for the proposed land use action. The applicant is advised to consult with Village staff in the scoping meeting to review the acceptability of analysis time periods.

The goal of this analysis is to identify through and turning lane needs at these intersections for the different design year scenarios. A map for each design year showing intersection lane configurations and level of service under each scenario shall be presented. All level of service worksheets shall be included in the Appendix.

Signalized intersection LOS analyses shall use the existing timing and phasing of the intersections for all scenarios. If the analyses are to deviate from existing timings or phasing, then a detailed signal progression analyses for the affected corridor shall be provided. In general terms, the Village's target LOS is D during the peak periods. If LOS D or better for all intersections is maintained then the proposed development will not be required to provide LOS-related traffic analysis for "mitigation" improvements in the two design year scenarios.

If the background traffic scenario analysis for DY-1 and DY-20 exceeds the target LOS (D), the proposed land use action must demonstrate that the project does not further degrade the LOS once the project traffic is added to the traffic volume. If conditions deteriorate further, the applicant shall be required to mitigate the project's impact so as to achieve no additional impact. The City may also utilize the Exaction and Dedication ordinance to address the impact.

The results of the LOS analyses for each scenario and each design year shall be summarized into one or more tables that illustrate the differences in LOS for each scenario. At a minimum, these tables shall list the LOS results for each intersection, as well as the appropriate time delay values for each intersection. Below is an example of a LOS table.

Table 1 - Example LOS table

Scenario	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
2010 Existing	C	22.6	C	31.1
2012 Background	C	31.5	D	37.4
2012 Total	D	39.5	D	49.6
2012 Mitigated	na	-	na	-
2030 Background	D	48.0	D	51.8
2030 Total	E	61.4	F	82.3
2030 Mitigated	D	52.2	D	54.7

* Note: all improvements that are proposed in the "Total" and "Mitigated" scenarios must be reflected as a note to the table and attributed to the correct scenario. These improvements will become a condition of approval and part of the DIA.

Access Locations and Traffic Signals - The design, number, and location of access points to a public street must be submitted for approval by the Community Development Director. If a proposed land

use action seeks access to a State Highway the CDOT access Permit process shall be followed. The number of access points must be kept to a minimum and be designed to be consistent with the type of street. Access points will be reviewed and approved on the following information:

- Access locations shown on the plan set.
- Proposed traffic turning movements.
- Analysis of on site stacking/queuing and impacts to adjacent streets.
- Geometric design of the access and proposed improvements to the street system in accordance with these standards.
- Safety concerns regarding limited sight distance (Line of sight triangles for determining sight distances and landscape restrictions shall be drawn on the plan sets.)
- Compliance with the CDOT State Highway Access Code and any adopted access management plans if access is requested for a State Highway.
- Signalization requirements and design in accordance with these guidelines.

The appropriateness of traffic signals, access locations and type must be established.

- Each arterial intersection/full access point in the study area must be evaluated, using the warrants in the *Manual on Uniform Traffic Control Devices* (MUTCD), to determine if signalization will be necessary for each design year. Traffic signals specifically warranted by the proposed land use action shall be identified.
- The acceptability of the traffic signal locations must be demonstrated. Any new traffic signal installation must be reviewed and evaluated by the Village's Public Works Department.
- If the access to the proposed development is proposing a traffic signal, or will necessitate modifications to a traffic signal, the following additional analysis is required.
    1. A signal progression (time-space) analysis to assure that any site access approaches or intersections proposed for signalization are properly located.
    2. An intersection capacity operation analysis for all signals included in the progression analysis, and providing complete input and output reports, data and assumptions.
    3. the signal timings, phasing and data used in each analysis shall be consistent
    4. highway traffic signal progression analysis including progression bandwidth, efficiency and level of service determinations, assumptions and data with complete input and output menu reports provided and including all existing and anticipated future signals within 1 mile of the proposed access
    5. A signal cycle length of between 60 and 120 seconds and consistent with the existing corridor signal operation and function shall be used for the analysis or as determined by the Village.
    6. Analysis will use the posted speed limit(s) but may submit an additional analysis if it can be shown that a different speed is more efficient for capacity, highway delay and travel time.
    7. The highway bandwidth used shall be consistent with the requirements of the assigned street classification or access category
    8. Signal phasing will normally assume lead phasing. Lag phasing may not be included unless specifically authorized
    9. The green time allowed for the cross street shall be no less than the time necessary to accommodate pedestrian movement.
    10. Analysis of storage queue lengths for auxiliary lanes at signalized intersection within the study area.

Any access, which would reduce the desirable bandwidth if a traffic signal were installed, shall be identified. In general terms, that access should remain unsignalized and have turning movements limited by driveway design or median islands, unless the impacts to traffics operation are made even worse with a median or restricted driveway. The implications of the proposed land use action

upon the adequacy of the arterial signal progression must be identified. A map showing signal locations for each design year shall be provided. Distances between signalized intersections (centerline) shall be indicated. Signal progression worksheets (time-space diagrams) shall be included in the Appendix.

Turn Lane Storage Requirements - Turn lane storage lengths may need to be identified for the "mitigation" scenario, based on forecasted turning volumes, capacity analyses, AASHTO analytic techniques, and the Highway Capacity Manual. Appropriate documentation of the calculations must be provided.

Appropriateness of Acceleration or Deceleration Lanes - All proposed project entrances on arterials shall be evaluated as to whether an acceleration lane or deceleration lane is required per the most recent edition of the CDOT State Highway Access Code. In some instances proposed access points on a collector level street may also require the analysis.

Safe Mobility of Bicycles and Pedestrians - All proposed land use actions are required to provide safe facilities on-site and/or off-site for bicycle and pedestrian mobility. Pedestrian and bike facilities shall be reviewed and discussed for the following related items:

- School routing plans per the MUTCD or Village school route maps
- The demand and need for pedestrian and bicycle facilities adjacent to the project area and within the study area.
- Street design standards and the associated elements (refer to the Village's Design and Construction Standards).
- Geometric improvements and recommended traffic control devices to accommodate bicyclists and pedestrians.
- Directness and continuity of bicycle and pedestrian facilities.
- Safety conditions such as adequate lighting, separation from motor vehicles, and surface condition.

Special Analysis/Studies - This section provides the Village with opportunities to request specific focused traffic analysis germane to the proposed land use action. Additional analysis could include access control, access spacing, accident/safety concerns, emergency routes, cut through traffic, and residential quality of life issues.

Neighborhood Transportation Impact Evaluation - The TIS may be required to include a focused analysis of the potential project related impacts on adjacent residential neighborhood quality of life issues such as, potential cut through traffic, and increase speeding/volume concerns. If it is determined that a neighborhood transportation impact evaluation is required the following procedure should be followed.

1. Examine existing transportation conditions within the neighborhood. This should follow the same procedure as set forth earlier for the transportation impact analysis. Daily and peak hour traffic volumes should be collected for the local streets to be included in the analysis.
2. Determine project generated traffic for all modes within the neighborhood and show on a figure.
3. Determine total traffic projections for the local streets. This should follow the same procedures as described earlier, including other projects and area wide growth.
4. Determine if the proposed land use action would create significant impacts to the residential streets using the criteria stated earlier.
5. If necessary, develop measures, including but not limited to traffic calming techniques, to mitigate any significant impacts.

6. The neighborhood TIS should also discuss how pedestrians and bicyclist would access the proposed project to/from the adjacent neighborhood(s), and the need for special facilities to enhance direct pedestrian and bicycle connectivity.

6.06 RECOMMENDATIONS

this section shall describe the location, nature, and extent of all transportation improvements that the applicant's engineer recommends in order to yield reasonable operating conditions and/or achieve the target LOS in each design year with the proposed land use action approved as requested.

The applicant's engineer shall submit a "Recommended Improvements Summary Sheet" similar to Attachment A to present the project recommendations. One sheet may be used for both design years if all improvements can be conveniently describe thereon. If not, one or more sheets should be completed for each design year.

All transportation and recommended improvements should be identified on the summary sheet, including "*background committed*", "*planned*", "*applicant committed*", and "*mitigated*". Each project should be briefly described as to its location, the type of project, flow-line and right-of-way/easement needs. Also, commitment to the improvement shall be identified, either by the Village, local governments, districts, or by the applicant (this also may include the "*applicant committed*" and "*mitigated*" projects). As previously stated only improvements by the Village, other agencies, or special districts which funds have been committed shall apply. Identification of a project as "*not currently committed*" may be an appropriate description for needed projects. Please refer to the Village's Exactions and Dedications section of the Land Development Code. However, the goal of the recommendations shall be to identify a program of improvements that will support the proposed land use action in each design year.

Supporting Documents - Provide detailed descriptions and an aerial of all proposed and recommended improvements. Include basic design details showing the length, width and other pertinent geometric features of any proposed improvements.

6.07 CONCLUSION

A conclusion shall be included as part of the report that provides a clear and concise description of the study findings and recommendations.

CHAPTER 6 – TRAFFIC IMPACT STUDY

ATTACHMENT A

Recommended Improvements Summary Sheet

Improvement Description (Type, Location, …)[1]	Responsible Party			
	Background Committed[2]	Planned[3]	Applicant Committed	Mitigated
Design Year 1 (DY-1)				
Design Year 20 (DY-20)				

[1] Describe improvement type and location (e.g. intersection widening, number of lanes needed, right-of-way needed). Example: Widen Caley Avenue at Syracuse Street for a westbound right turn lane. Additional 12 feet of right-of-way is needed along Caley Avenue. Be certain to include any necessary bicycle or pedestrian improvements.

[2] The responsible party or project must be identified in this table for any improvements assigned in this column.

[3] The responsible party or project must be identified in this table for any improvements assigned in this column.