

## ARTICLE 3 IMPACT STUDIES

3

Article 3, Impact Studies provides tools and evaluation techniques for complex development projects. It includes coordination of design and funding of public improvements in response to specific development applications. It is most useful to large developers, land planners, design professionals and engineers.

# TITLE 17 - UNIFIED DEVELOPMENT CODE

### ARTICLE 3 IMPACT STUDIES

- 3.1 Transportation Impact Studies
- 3.2 [RESERVED]
- 3.3 [RESERVED]

### 3.1 Transportation Impact Studies

- 3.1.1 General Provisions
- 3.1.2 Levels of Study
- 3.1.3 Study Parameters
- 3.1.4 Evaluation Elements

#### 3.1.1 General Provisions

- a. **Purposes.** In addition to the general purposes of these regulations, this Article has the following specific purposes. To:
1. Assess the impact which a new development, change in land use, zone change, or an access modification will have on the existing and proposed transportation system, both at the immediate location and in the general area.
  2. Provide information and guidance as plans are developed and decisions made for the approved plan.
  3. Determine the travel demand generated by a proposed development
  4. Identify deficiencies in the existing and proposed transportation systems.
  5. Assess pedestrian, bicycle, transit and truck connections as a critical component of managing transportation systems.
  6. Identify of improvements necessary to maintain acceptable levels of service.
  7. Minimize burdens on the public that result form transportation impacts of proposed development.
  8. Ensure that transportation and land use decision are linked in accordance with the comprehensive plan of the City, and the long-range transportation plans for the community.

- b. **Applicability.** Except as specified below in Section 3.1.2., the requirements of this Article apply to:
1. A change in land use;
  2. A proposed zoning change;
  3. Modification of access points to public streets; and
  4. Development or subdivisions of land.
- c. **Applicant Responsibilities.** An applicant for any applicable development application shall have the following responsibilities:
1. **Transportation Worksheet.** A Transportation Worksheet (Appendix C) shall be completed and submitted with all applications for development approval. No worksheet is required for residential projects proposing 25 dwelling units or less and instigating no substantial access changes on a collector or arterial roadway.
  2. **Scoping Meeting.** After the applicant has completed the Transportation Worksheet, the applicant shall contact the Planning and Development Department and arrange for a meeting to determine base assumptions and the level of TIS required.
    - (a) **Purpose.** The scoping meeting shall determine the parameters for the study of transportation impacts for a specific development project, and to document those parameters. The parameters determined in the scoping meeting represent general agreement between the City and the applicant, but they may not be all inclusive. The City retains the right to require any additional information and/or analysis to complete the evaluation of the proposed development project.
    - (b) **Determination of Study.** The City and applicant shall mutually agree to the level of detail and extent to which the study addresses each of the following:
      - (1) Study area for the impact analysis.
      - (2) Other developments within the study area.
      - (3) Existing intersection counts.
      - (4) Intersections to be studied in detail.
      - (5) Background traffic volume forecasts (Buildout: 20 to 25 years).
      - (6) Transit, bicycle, or pedestrian issues such

as location and design of transit stops, pedestrian and bicycle access to transit stops, major bicycle or pedestrian destinations such as schools, parks and neighborhood activity centers, or other similar multi-modal considerations.

- (7) Special analysis needs (non-traditional peak hour volumes for some uses, neighborhood impacts, access management plans, or other traffic reduction programs), and
- (8) Data availability and requirements. Conclusions of the scoping meeting will be documented and distributed to the applicant by the city.

3. **Preparation of Study.** The applicant is responsible for the study, which shall be prepared by a qualified traffic engineer who is specialized in the preparation of Transportation Impact Studies and is licensed by the Wyoming State Board of Registration for Professional Engineers and Professional Land Surveyors to practice engineering in Wyoming.

4. **Study Presentation.** Four copies of the traffic study shall be submitted. Reports shall be 8½" x 11" format, with maps no larger than 11" x 17". Additional copies may be required for large or complex projects. The exact number required should be verified at the scoping meeting.

d. **City Responsibilities.** The City and its engineering staff serve in a review capacity. The City can use the findings of the impact study to suggest or require roadway improvements, changes to site design, and/or operational improvements. The applicant shall revise and resubmit the study as necessary to address review comments provided to the applicant by the City or other affected agencies.

### 3.1.2 Levels of Study

The following levels of analysis apply: (These categories are intended as guidelines and may be revised, when warranted, by the City Engineer.)

- a. **No Transportation Impact Assessment or Study Required.** The City Engineer may elect to not require a study in the following circumstances:
  1. **Exception.** A Transportation Worksheet and a Transportation Impact Assessment or Study are not

required for residential projects consisting of less than 50 dwelling units and instigating no substantial access changes on a collector or arterial roadway.

2. **Waiver.** Upon submittal of a Transportation Worksheet (Attachment A) by the applicant and written acceptance by the City Engineer, the study requirement may be waived if all of the following are satisfied:
  - (a) Daily vehicle trip-end generation is less than 500 and the peak-hour trip generation is less than 50;
  - (b) There are no additional access requirements on collectors, arterials, or State Highways;
  - (c) 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 200 daily vehicle trip-ends;
  - (d) Any change in the type of traffic to be generated (i.e., the addition of new truck traffic) does not adversely affect the traffic currently planned for, accommodated within and adjacent to the property;
  - (e) The scale or use of the proposed development or redevelopment is not likely to cause less-than-acceptable levels of service on the adjacent public streets, accesses, and intersections; and,
  - (f) The proposed development or redevelopment is not in the vicinity of a street or intersection with a history of safety and/or accident problems.

- b. **Transportation Impact Assessment.** A Transportation Impact Assessment (TIA), in lieu of a more detailed study, will be considered if both of the following requirements are met:
  1. Daily vehicle trip-end generation is between 500 and 1,000, and/or the peak-hour trip generation is between 50 and 100; and
  2. Any new access requests are for local streets.

- c. **Transportation Impact Study.** A full Transportation Impact Study (TIS) may be required for any development that meets one of the following criteria:
  1. Daily vehicle trip-end generation is greater than 1,000 or the peak-hour trip generation is greater than 100;
  2. Access(es) designated as high-volume driveways (50 peak-hour trips) onto Arterials or State Highways are being requested; or
  3. Where large, complex projects are planned or a project is phased over a multi-year build-out, it may

be appropriate to prepare a TIS for the initial land-use action followed by periodic updates for specific phases. The TIS must include overall phasing of improvements to coincide with project phasing. Updates to the TIS shall be submitted with the land-use applications for the specific phases.

- d. **Revisions or Updates.** A revision or update to an approved TIS may be required when previously approved land-use action proposes an expansion, a change to access, or a change in use where new trip generation estimates exceed the original trip-end generation estimates. If the currently approved study was prepared within the last two years, an amendment letter addressing the changes may be accepted and satisfy the requirements of this guideline. The letter must address:
1. An estimate of site trip generation;
  2. Existing site trip generation; and
  3. The differences between anticipated estimates and existing trip generation.

If the original study is older than two years and access and trip generation has not changed, then an amendment to the TIS is required. If the original study is older than two years, and access has changed or trip generation has increased, than an entirely new study will be required by the City Traffic Engineer.

<b>Original Report is -</b>	<b>Access Changed* or Trip Generation Increased</b>	<b>Access Not Changed and Trip Generation Not Increased</b>
<i>Less than 2 years old</i>	Letter Amendment Required: Identify and discuss any items that changed	Letter documenting change (no other reports required).
<i>Greater than 2 years old</i>	New Study	Letter Amendment Required: 1. New local ground counts 2. New Trip Generation 3. New LOS Analysis 4. Meet all current requirements of this TIS guideline

\* Changed access includes proposed new access or refinement of general access locations not specially addressed in original proposed development.

### 3.1.3 Study Parameters

- a. **Summary.** The Summary shall be provided as a condensed, stand-alone document. Use the "Summary of Traffic Impact" sheets included in Appendix D. Maps and tables required or provided in individual sections of the report shall be placed in the Summary in the order described and provided in the text of the report. Individual sections of the report may be referenced only as necessary to document a source of information.
- b. **Project Description.** A description of the proposed project shall include the type of land use and size of the proposed project (number of dwelling units or building square footage), proposed phasing, and anticipated completion date. A figure depicting the proposed site plan shall also be included, and the proposed vehicular access locations will be described. This figure shall provide the following:
1. Surrounding Street Roadway Arterial Classification
  2. Number of Existing and Proposed Travel Lanes
  3. Existing and Proposed Street Width
  4. Existing and Proposed Right-of-way Dimensions
  5. Existing and Proposed Multi-use Driveways and Site Access Points (with Turning Movements)
  6. Traffic Control
  7. Speed Limits
  8. Existing and Proposed Access
  9. Locations of Parks, Schools, activity centers, and other notable destinations within 1/4 mile of the project edge, and

identify sidewalks, bike routes, lanes, or paths that would be used to get from the project to each destination. Also identify how pedestrian and bicycle access is provided within the project site to facilities at the boundaries.

#### 10. Cheyenne City Bus Routes and Stops

Similar information for adjacent property shall be provided as well, if available, on the same map. The data presented in this report shall be identical in every respect to the site plan submitted for development approval. For situations where a site plan does not exist, a prototypical site roadway and access system should be assumed for purposes of the study. Subsequent updates will be necessary when a site plan becomes available. This section will also include a description of how pedestrian and bicycle travel will be accommodated within the proposed site plan. This section will also identify how access to the Cheyenne Transit Program (CTP) is provided.

#### c. **Analysis Horizons.** Three study horizons are required for a Master or Full TIS analysis:

1. Existing (current);
2. Short-range (one year after build-out); and
3. Long-range (20 to 25 years, based on current Cheyenne Area Master Transportation Plan).

It may be acceptable for the short-range and long-range horizons to be identical for some large projects.

#### d. **Study Area.** The limits of the transportation network to be studied shall be based on the size and extent of the application for development approval, the existing and future land uses and traffic conditions on and near the site. The exact limits of the study area are to be based on good engineering and transportation planning judgment, and an understanding of existing and future land use and traffic conditions at and around the site. The limits of the study area shall be agreed upon at the scoping meeting. At a minimum, the factors to be considered for the establishment of limits of the study should include:

1. All adjacent streets, intersections, and high-volume driveways;
2. Nearest offsite major intersection(s);
3. Internal roads, including establishing the road classification;
4. Pedestrian and bicyclist destinations (existing or planned) within 1,320 feet of the site;
5. Any pedestrian or bicycle routes within 1½ mile of a

school (residential land uses only)' and

6. Any Cheyenne Public Bus routes and stops within 1,320' of the project.

#### e. **Existing and Proposed Uses in Vicinity of Site.** The applicant shall identify existing and anticipated land uses in the general vicinity of the site in order to understand other influences to area traffic patterns. A list of the applicable development approvals shall be included. (This information shall be obtained from the City's records.) Specific attention shall be paid to property adjacent to the site and any undeveloped land in the study area. A map shall be prepared for the project vicinity that graphically depicts the location of approved or proposed developments. Developments within the project study area but in other jurisdictions shall also be identified and documented on the map.

#### f. **Existing and Committed Transportation Improvements.** The applicant shall prepare a map showing the planned surface transportation improvements for the short-term and long-term planning horizons. Committed/funded improvements by the City and previously approved developments shall be identified for the short- and long-term horizon years. The long-term improvements shall be those documented in the City's Transportation Master Plan and any other long-term improvements adopted through the Cheyenne MPO and/or included in the State Transportation Improvement Program. The description of improvements shall include the nature, extent, implementation schedule, and the party responsible for the improvement.

#### 3.1.4 Evaluation Elements.

TISs and TIAs shall utilize sound and commonly accepted traffic engineering standards and procedures and shall utilize the latest edition of the Institute of Transportation Engineers (ITE) trip generation rates—unless better information is available or can be obtained at reasonable cost. TISs and TIAs shall address the following items in sufficient detail (based on the agreed-upon parameters outlined in the scoping meeting) to adequately and accurately represent the traffic conditions and resultant impact of the proposed development request.

#### a. **Transportation Impact Study.** The key elements of the project impact study (TIS) shall include the following evaluations:

1. *Conformity with the adopted Transportation Master Plan.* The applicant shall identify the roadway improvements within the study area per the City's Transportation Master Plan.
2. *Existing Traffic Conditions.* The applicant shall provide a description of the existing traffic conditions within the study area and shall include the following:
  - (a) *Traffic Counts.* A map shall be prepared, which presents a.m. and p.m. peak-hour and daily traffic volumes. These volumes shall be no more than two years old — less if the development is in a high-growth area. The source of existing traffic volume information shall be explicitly stated (City counts, new counts by applicant, County counts, etc.). Summaries of current traffic counts shall be included in the description's appendix.
  - (b) *Existing Peak-hour and Daily Level of Service.* Existing a.m. and p.m. peak-hour intersection levels of service shall be determined for signalized and unsignalized intersections within the study area based on procedures described in the latest edition of the Highway Capacity Manual. The existing arterials shall also be analyzed based on a daily volume/capacity ratio analysis where the threshold capacities are defined by arterial designation per the following table. Volume/capacity ratios that exceed 1.00 shall be identified. It should be noted that these are general thresholds for planning purposes only, and a supplementary peak-hour analysis shall be considered. These daily volume/capacity ratios shall be recorded on the existing volume map. Roadway links shall be analyzed. Acceptable maximum traffic volumes allowed for the specific class of roadways are per the following table:

Facility Type	Lanes	Threshold Capacity
Local Residential	2	2,500 ADT
Local Commercial / Industrial	2	3,500 ADT
Collector	2	7,500 ADT
Minor Arterial	2	550 each way peak hour
Arterial	4	1,600 each way peak hour

It is recognized that some of the City's streets currently experience traffic volumes greater than

each roadway's classification design volume. The objective of this analysis is to identify whether the volume (as a point of reference for considering impacts from the proposed development) exceeds the threshold.

- (c) *Crash Analysis.* A three-year accident record shall be collected for adjacent roadways and intersections within the study area. Based on existing traffic volumes, an accident rate for accidents per million vehicle mile of travel for links and accidents per million vehicles at intersections shall be calculated by year. Geometric deficiencies for high-accident locations shall be identified. As part of the analysis, the applicant shall identify problems that currently exist and how the proposed improvements will mitigate these problems.
3. *Future Traffic Conditions without Proposed Development.* Long-term a.m. and p.m. peak-hour and daily link planning horizon traffic forecasts shall be estimated. The short-term planning horizon is one year after full occupancy. The short-term planning horizon traffic forecast shall be the sum of existing traffic volumes plus cumulative development traffic plus ambient growth. The short-term planning horizon traffic forecasts shall also include cumulative development traffic within the study area. The short-term planning horizon year ambient growth-rate traffic forecasts shall be based on:
  - (a) Proportion between existing traffic volumes and build-out regional (Wyoming Department of Transportation) model forecasts.
  - (b) Extrapolation from historical traffic counts to current counts, and/or
  - (c) Planning analysis that considers trends in the area's circulation system through either a proportion or extrapolation estimate.

Whatever method is used to develop the annual growth rate for determining ambient traffic, it is important that the method be documented with sufficient detail to clarify the methodology and replicate the findings. The map of the committed and funded improvements (for each planning horizon) shall be used as a base for determining short-term and long-term planning horizon levels of service. The applicant may identify improvements that would mitigate unacceptable levels of service under the traffic conditions without the proposed development.

In addition to needed improvements, identification of when such improvements are needed is also important. The time that improvements are necessary could be defined by when a traffic threshold is reached or by potential year.

4. *Trip Generation.* Development traffic shall be analyzed based on the traditional trip generation, distribution, and assignment process described as follows:
  - (a) *Project Trip Generation.* The applicant shall estimate project trip generation (total daily traffic and a.m./p.m. peaks) for interim years and build-out based on the development approval application of number and size of units. Trip generation shall be calculated from the latest data contained within the Institute of Transportation Engineers' Trip Generation Report or other industry publications such as the ITE Journal. Data limitations, data age, choice of peak-hour or adjacent street traffic, choice of independent variable and choice of average rate versus statistical significant modification shall be presented and discussed. In the event that data is not available for a proposed land use, the applicant shall conduct a local trip generation study following procedures prescribed in the ITE Trip Generation Manual and shall provide sufficient justification for the proposed generation rate. This rate must be acceptable to the City's Engineer. For shopping centers, trip generation shall be based on both the shopping center trip generation algorithms and the application of trip generation rates to individual land uses. The greater of the two methods shall be used in the analysis.
  - (b) *Adjustments to Trip Generation Rates.* After first generating trips at full ITE rates, trip-making reduction factors may be used. These factors fall into two categories:
    - (1) *Reassignment of Trips:* This category of adjustments applies when trips to the proposed development currently exist as part of the background traffic stream, referred to as a pass-by trip. Pass-by percentages identified in the ITE Trip Generation Manual or other industry publications may be used. This traffic must continue to be assigned to site driveways and access points, but is not additive to the background stream of traffic.

A technical appendix that illustrates the redirection of pass-by trips is recommended.

- (2) *Remove or Move Trips:* This category of adjustments is for internal site trips, transit use, and TDM (transportation demand management) actions. In general, reductions are not recommended. However, if reductions are claimed, analytic support to show how the figures were derived must be provided.

In all cases, the underlying assumptions of the ITE Trip Generation rates must be specifically described in order for these reductions to be considered and claimed. Optimistic assumptions regarding transit use and TDM actions will not be acceptable unless accompanied by specific implementation proposals that will become a condition of approval. Such implementation proposals must have a reasonable expectation of realization within a 5-year period after project initiation.

- (c) *Trip-generation Budget.* Major concern will occur if the traffic study identifies a trip-generation rate that is less than what ultimately is experienced once the development is built and occupied. Because entitlement has been granted, the impacts of the traffic from underestimating the trip generation is experienced by the community; modifications or improvements, if possible, become the burden of the public. It is recognized that the trip generation process is ultimately dependent on a number of market and social factors; however, it is imperative that the traffic impact study be sufficiently conservative to account for full impact of the proposed development.
5. *Trip Distribution.* Trip distribution may be based on the WYDOT modeling, market analysis, existing traffic flows, applied census data, and professional judgment. Regardless of the estimates, the procedures and logic for estimating the trip distributions must be well documented. The trip distribution patterns must be presented for each phase if changes in roadway network, access or land use are proposed.
6. *Project Trip Assignment.* This section shall present the forecast the traffic assignment based on the development's trip generation estimates and

project trip distribution. The traffic forecasts shall be graphically presented and include: a.m. peak-hour, p.m. peak-hour, and total daily site-generated traffic. If trip generation is different for the short-term and long-term planning horizons, both shall be shown on separate graphics. "Pass by" traffic shall be included at driveways and access points.

7. *Future Traffic Forecasts with the Proposed Development.* The applicant shall present a graphical summary of the short-term and long-term horizon year traffic plus the proposed development traffic for the a.m. peak-hour, p.m. peak-hour, and daily conditions. These volumes shall include turn movements at the key intersections. The base map for this exhibit shall reflect the respective transportation network by planning horizons.
8. *Future Peak-hour Level of Service and/or Peak-hour Intersection and Driveway Level of Service.* An a.m. and p.m. peak-hour intersection level of service analysis shall be conducted for study-area intersections and driveways. This analysis should be based on procedures established in the most current Highway Capacity Manual. Synchro intersection level of service is both acceptable and desirable to assess the impacts of intersection levels of service as part of a system of signalized intersections. Levels of service for signalized intersections shall be based on the signal timings developed for the signal progression analysis. All level of service analysis worksheets shall be included in the Appendix of the submitted study. The principal objective of the intersection level of service traffic impact analysis is to identify whether the traffic from the proposed project when added to the existing, plus short- and long-term planning horizon traffic will result in a significant impact and an unacceptable level of service. For definition purposes, the threshold for acceptable level of service is C. Significance is defined as: 1) when the added project traffic causes the level of service to deteriorate below level of service D, or 2) when the short-term or long-term horizon year traffic without the project is below level of service D and the project traffic causes a 2% increase in the volume/capacity ratio or delay. For unsignalized intersections, the minimum level of service permitted for outbound left turns is E. An analysis of maximum queue length shall also be performed; and if the queue exceeds five vehicles, then a separate left-turn lane with adequate storage

shall be provided.

9. *Appropriateness of Access Locations and Circulation.* The TIS shall address the appropriateness of the proposed access points. This assessment shall be consistent with requirements set forth in Articles 4 and 6 of these regulations. If the proposed access is to be signalized, then a progression analysis using Synchro shall be conducted to insure that the proposed access can be accommodated within the optimum progression along the arterial on which the access is proposed.
10. *Identification and Location for Turn Lanes or Acceleration/Deceleration Lanes at Accesses or Intersections.* The TIS shall identify recommendations and reasons for acceleration and deceleration lanes—including taper lengths, storage length, and other geometric design requirements per the City's Road, Street and Site Planning Design Standards.
11. *Sight Distance.* The TIS shall provide an evaluation and recommendation for intersection and driveway stopping sight distance and intersection sight distance per Articles 4 and 6 of these regulations.
12. *Pedestrian and Bicycle Analysis.* The TIS shall provide in sufficient detail the project's proposal to provide pedestrian and bicycle connections within the site to the local off-site pedestrian and bicycle destinations, using the Pedestrian and Bicycle Guidelines in Appendix E. These destinations include, but are not limited to, schools, parks, local commercial centers, and bike trails. This written and mapped assessment shall describe the directness of the route to and from various parts of the project, the continuity of the pedestrian and bicycle system to reach these destinations and the design elements of the street crossings to assure safe pedestrian and bicycle crossings. If the continuity between the project's pedestrian and bicycle system and that of the off-site destination is incomplete, the applicant shall identify what improvements are necessary to mitigate these continuity or street-crossing impacts. It is further required that if any roadway improvements are proposed, such as adding a left- or right-turn lane, the study should address methods to mitigate the impacts on the pedestrian and bicycle system in these areas—explaining how the routes are to cross these proposed improved streets and intersections. Locations for crosswalks, both internal and external to the site, shall be identified.

13. *Cheyenne Public City Bus Connections.* The applicant shall contact the Cheyenne Public City Bus Office to determine existing and future bus transit routes and stops within the study area. Specific stops within or adjacent to the site (such as signs, pads, shelters, etc.) shall be identified and proposed improvements. This analysis shall also identify direct and continuous pedestrian sidewalks and pathways to reach these stops from the site.
14. *Traffic Control.* The TIS shall provide recommended traffic-control devices for intersections; these may include stop-control and yield-control signs, school flashers, crosswalks, traffic signals or roundabouts. These recommendations shall be in conformity with the City standards, AASHTO and other appropriate professional transportation engineering documents. All proposed signal and stop signs shall require a signal or stop sign warrant analysis per the Manual on Uniform Traffic Control Devices. As signal warrants only describe the minimum requirements for considering a signal, a progression analysis shall be conducted to determine that the impact of the new signal can be accommodated without significant impact to the corridor's signal progression.
15. *Progression Analysis for Signalized Intersections.* A progression analysis is required for all projects which propose the addition of a new signal. Whereas the signal warrant analysis identifies the minimum requirements of whether a signal might be warranted, the signal warrant analysis does not determine if the signal can be accommodated in the overall traffic flow of the corridor. Therefore, the acceptability of the signal locations must be demonstrated through a signal progression (time-space) analysis. The analysis shall consider any existing access or intersections or a possible future signal location along the arterial for a distance of at least one mile in each direction of the proposed signal. (This data is available from the city.) The maximum cycle length that will be permitted is 110 seconds. A travel speed of 45 mph on Principal Arterials and 35 mph on Minor Arterials, unless the existing posted speed limit is less, should be used. A Principal Arterial bandwidth of 50% and a Minor Arterial bandwidth of 40% are considered desirable and must be used where existing conditions allow. Where intersections or other accesses have no signals presently, but are expected to have signals, a 60% mainline, and 40% cross-street cycle split should be assumed. Where more detailed information is available from turning movement projections, other split assumptions may be made. Any access that 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 traffic operation and safety are made even worse by doing so. Distances between signalized intersections (centerline) shall be indicated. Signal progression worksheets (time-space diagrams) shall be included in the Appendix of the submitted study. If it is determined that the minimum green band is reduced by five percent or less, then the signal would be permitted. If the green band for the arterial is reduced by greater than five percent, then the intersection design will need to be modified or relocated to minimize the impact.
16. *Other items as requested by the City Engineer.* In the initial required scoping meeting with the City Engineer, specific additional issues might be raised which require further analysis. Additional concerns might include cut rough traffic and residential quality-of-life concerns, truck/bus traffic estimates and pavement design, routes to schools, emergency routes, etc.
- b. **Transportation Impact Assessment.** At a minimum, the following issues shall be considered for submittal in a TIA. Requirements for these issues are defined in the above section on TIS requirements.
1. Existing Traffic Conditions:
    - (a) Traffic Counts,
    - (b) Traffic Growth,
    - (c) Crash Analysis,
    - (d) Peak-hour level of service and/or peak-hour intersection and driveway level of service,
    - (e) Future peak-hour level of service and/or peak-hour intersection and driveway level of service, and
    - (f) Appropriateness of access locations.
  2. Location and requirements for turn lanes or acceleration/deceleration lanes at the access, including recommendations for taper lengths, storage lengths, and other geometric design requirements per Local Entity or WYDOT requirements,
  3. Sight distance evaluations and recommendations

- (intersection, stopping, passing),
4. Continuity and adequacy of pedestrian and bike facilities within the study area,
  5. Appropriateness of the existing roadway signing and striping,
  6. Other items as requested by the Local Entity Engineer and agreed upon in consultation with the Applicant's Traffic Engineer, and
  7. Neighborhood and public input issues.
- c. **Mitigation/Alternatives.**
1. *Improvement Descriptions.* TISs and TIAs shall describe the location, nature, and extent of all transportation improvements that the applicant recommends to yield reasonable operating conditions in each horizon year with the land-use action approved as requested. To identify mitigation and alternatives, the following terms apply:
    - (a) Planned: Improvements that are already planned and have committed funding, including those identified in short-term capital improvement programs by the City, State, or others.
    - (b) Applicant Committed: When existing plus cumulative traffic, with planned and background improvements, results in unacceptable levels of service, the applicant shall identify mitigation measures to offset project impacts.
    - (c) Necessary: Improvements required to mitigate background plus applicant traffic to establish acceptable levels of service, regardless of the amount of traffic contributed by the project.

The reason that "necessary" improvements must be explored is that often the "planned" improvements, plus the improvements that the applicant typically understands and commits to, are not adequate to provide a satisfactory level of service. The applicant shall assure that all practical solutions have been considered when developing the list of "necessary" improvements, so that the resulting operating conditions will approach the accepted level of service.
  2. *Transportation Network Plan and Recommended Improvements.* The applicant shall provide a scaled drawing of the recommended improvements on a transportation network plan. One sheet may be used for both interim and long-term design years if all the improvements can be conveniently described. If not, one or more sheets should be completed for each design year.
    - (a) In general the acceptable level of service for all post-development transportation systems is C. However, all applicable modes of transportation shall be considered and the function of the entire network shall be evaluated in the analysis and recommended improvements, including the Pedestrian and Bicycle Guidelines in Appendix E.
    - (b) Examples of vehicular traffic considerations and improvements include: road widenings, turn lanes, acceleration and deceleration lanes, intersection improvements, traffic control, design-speed adjustments, modifications to access points and truck routes.
    - (c) Examples of pedestrian and bicycle consideration and improvements include: safe, comfortable, and convenient pedestrian services, shorter blocks, tree-lined sidewalks, smaller corner radii, well-defined crosswalks, median refuges, bike lanes, on-street parking and shared-use path connections. Also, design elements that lead to low traffic speeds on local streets should be considered.
  3. *Costs.* For purposes of identifying improvement possibilities (either by the applicant, City, or State) necessary to yield an acceptable level of service, the cost of the improvements shall not be considered a limiting constraint within the context of the study. However, the goal of the evaluation is to identify cost-effective solutions that yield a reasonable level of service. Extremely high-cost solutions may not be cost-effective, but it is important to at least identify solutions so decision makers are cognizant of existing options.
  4. *Design Details.* All recommended improvements shall include right-of-way needs (for roadways), signal or turn-lane improvements (for intersections), and, at a sketch planning level, cost of the improvement. Also, commitment to the improvement shall be identified, either by local governments, districts, or by the applicant (this may include both the "applicant committed" and "necessary" projects). Identification of a project as "not currently committed" may be an appropriate description for many needed projects, including some of those that are "planned." However, the goal of the recommendations shall be to identify a firm program of improvements that will support the proposed land-use action and background traffic in each design year.

## ARTICLE 3

### IMPACT STUDIES

### 3.1 TRANSPORTATION IMPACT STUDIES

It is further required that all geometric improvements, such as pavement markings, signs, adding through or turn lanes, adding project access and assorted turn lanes, acceleration lanes, and changes in medians, shall be presented in a schematic scaled drawing, preferably on a current aerial map. Sufficient dimensions shall be identified to facilitate review.

---

**3.2 [RESERVED]**

---

**3.3 [RESERVED]**