TIA PROCESS GUIDE

HOW TO USE THIS GUIDE

The TIA Process Guide is a resource for all EITs and engineering interns to use in completing a standard TIA and documenting the progress. The guide includes information on input/ data needs by task, assumptions that require client approval prior to project initiation, project milestones requiring approval from the Project Manager, and common tasks associated with each step of a typical TIA. These tasks encompass the technical analyses, reporting, quality assurance and quality control, and client and jurisdictional comment response processes common to all TIAs.

Flow Chart Components

1. Inputs/ Data Needs
2. Software Needs
3. Analysis Process
4. Reporting Process
5. PM Approval Requirements

Software Needs

ANALYSIS
- Microsoft Excel
- Vistro
- Synchro

REPORTING
- Microsoft Word
- AutoCAD/ Microstation
- Maptitude

BEFORE you get started

Confirm with your Project Manager that the following assumptions (listed below) have been confirmed with the client. If needed, a draft email is available in the standard TIA documents folder.

Confirming these assumptions at the outset of the project is an important step that will **reduce the need to repeat tasks due to miscommunication,** and will **provide Alliance Transportation Group with leverage in acquiring payments for additional services** if a client changes information after the analysis has been completed.

ASSUMPTIONS

1. Site Plan
2. Build-out Year/ Project Phasing
3. Access Points

What Can I Get Started On NOW?

Before you receive any data inputs from the client, you can **begin drafting the introduction to the TIA report**, including the **study purpose and methodology**, as well as the **area conditions section** of the report, particularly the **descriptions of existing thoroughfares and intersections.**

When do I need APPROVAL from the PROJECT MANAGER?

GROWTH RATE - TRIP GENERATION - TRIP DISTRIBUTION

INPUTS/ DATA OVERVIEW

		RECEIVED?	EXISTING CONDITIONS	FUTURE CONDITIONS	REPORTING
TMC	Turning Movement Counts	☐	Calculate PHF	Calculate Trip Distribution	Existing Volume Figures Site and B+S Volume Figures
BO	Build Out Year/ Project Phasing	☐		Set up Future Year No Build Networks	Background Volume Figures Site and B+S Volume Figures
SP	Site Plan (with Access Points)	☐	Set up Existing Network; Analyze Existing Intersections and Driveways		Study Area Figure Site Plan Figure
LU	Proposed Land Uses	☐	Calculate Trip Generation		Site and B+S Volume Figures
JUR	Jurisdiction Requirements	☐		Repeat Future Year Conditions Analysis for Additional Years	Existing Volume Figures
ST	Signal Timings (if applicable)	☐	Analyze Existing Intersections and Driveways		

TASK DESCRIPTIONS

Calculate **PHF**:

Calculating the Peak Hour Factors (PHFs) is comprised of averaging the PHFs for all movements at an intersection (found in the TMC files) and use the averaged PHF for all movements at that intersection. This is done for all study intersections. Projects with known site traffic PHFs should also be considered and incorporated on a project to project basis.

Set up **Existing Network**:

The existing intersection geometries, volumes, and PHFs should be coded into Vistro as well as an existing base Synchro file. Once the existing Vistro network is completed and exported to Synchro, the base Synchro file with the correct geometries (i.e. signal timings, street names, taper lengths, turn bay lengths, etc.) should be merged with the exported file.

Analyze **Existing Intersections and Driveways**:

Using Synchro, obtain the existing LOS and delay for all existing study intersections. For signalized intersections, this is found by clicking the Timing Setting button (or pressing F5 on your keyboard) and looking at the Intersection Delay (s) and Intersection LOS on the table shown on the left. For unsignalized intersections, this is found by clicking the HCM 2010 button and looking at the HCM Intersection Delay on the table shown on the left. Intersection LOS for unsignalized intersections is determined based on the HCM LOS criteria (found in the Standard TIA Template: LOS Section).

Calculate **Trip Generation**:

Unless the client can provide/ estimate site trips, the trip generation is done using the ITE Trip Generation Manual and accompanying spreadsheet. This spreadsheet is located with the standard reference documents. Fill in the land use code (found in the ITE Trip Generation Manual (located in the engineering library) and the units (typically 1000 sq. ft., dwelling units, employees, etc.), and then use the adjusted total trips calculated by the spreadsheet. Reductions for the following trips are calculated by this spreadsheet and should be applied accordingly:

- Pass-by trips;
- Internal capture; and
- Transit trips.

Calculate **Trip Distribution**:

Generally, how this task is carried out should be based on specific data, requirements, and existing TMCs for each TIA. Typically, the trip distribution is calculated based on the distribution demonstrated by the existing traffic volumes. However, this can be applied in a variety of ways and requires engineering judgment to ascertain which method is best for a particular TIA. If future traffic patterns are expected to significantly change in the future, a traffic demand model select link analysis should be considered.

Calculate **Growth Rate:**

Typically, this is accomplished using either the TxDOT ADT count website (http://www.txdot.gov/apps/statewide_mapping/StatewidePlanningMap.html) or the Louisiana count maps (http://wwwapps.dotd.la.gov/engineering/tatv/) and identifying adjacent ADT counts. Counts for at least 3 previous years should be entered into the standard growth rate sheet, which will average the counts and supply a growth rate. Anything higher than 2% or lower than 1% should be approved by the client/reviewing jurisdiction before proceeding.

Set up **Future Year No Build Networks**:

This entails saving as the existing Vistro and Synchro networks and modifying the volumes and geometries to reflect future conditions. Future networks should include the grown up existing volumes (or the existing volumes multiplied by a growth rate, entered in Vistro) plus the site volumes (also entered in Vistro) as well as any background project volumes (if applicable). Any intersections which do not currently exist but are expected to be built by the future analysis year should be included.

Create **Study Area Figure**:

This is done by exporting the study area (with some surrounding area including as well) from Maptitude to an AutoCAD DXF file. This can then be inserted into the figure border, the street names can be added, and the study intersections emphasized.

Create **Volume Figures**:

Using the volume figure template, volume bubbles output from the Vistro reports can be copied and pasted into the figure in AutoCAD or Microstation. This is done for the AM and PM peaks for the existing, background, site, and background + site volumes. When pasting the bubbles from Vistro into AutoCAD/Microstation, they should first be pasted into Paint and then into AutoCAD/Microstation. This eliminates poor graphic resolution.

PROCESS OVERVIEW

ANALYSIS

EXISTING CONDITIONS ANALYSIS

Initials	TASK	
☐	Calculate PHF	TMC
☐	Set Up Existing Network	SP
☐	Analyze Existing Intersections And Driveways	SP ST

FUTURE CONDITIONS ANALYSIS

Initials	TASK	
☐	Obtain/ Calculate Growth Rate	
☐	Set Up Future Year AM and PM No-build Networks	BO
☐	Analyze Future AM and PM No-build Networks	

Initials	TASK	
☐	Calculate Trip Generation	LU
☐	Calculate Trip Distribution	TMC

Initials	TASK	
☐	Set Up Future Year AM and PM Build Networks	
☐	Analyze Future AM and PM Build Networks	

Initials	TASK
☐	Make Improvements

Initials	TASK	
☐	Perform Cost Estimate with pro-rate share (if applicable)	

Initials	TASK
☐	Assemble TMCs for Appendices
☐	Assemble Synchro Reports for Appendices

JUR

(Repeat for Additional Required Analysis Years)

REPORTING

EXISTING CONDITIONS REPORTING

Initials	TASK	
☐	Existing LOS Tables	
☐	Draft Introduction and Area Conditions Section	
☐	Study Area Figures	SP
☐	Site Plan Figures	SP
☐	Existing Volume Figures	TMC JUR

FUTURE CONDITIONS REPORTING

Initials	TASK	
☐	Background LOS Tables	
☐	Draft Background Traffic Section	
☐	Background Volume Figures	BO

Initials	TASK	
☐	B+S LOS Tables	
☐	Draft Site Traffic Section	
☐	Site Trip Distribution Figure	
☐	Site and B+S Volume Figures	TMC BO LU

Initials	TASK
☐	Cost Estimate Tables
☐	List of Improvements

Initials	TASK
☐	Tabulated Recommendations
☐	Conclusions

Initials	ONGOING TASKS
☐	Respond to Client Comments
☐	Respond to Jurisdictional Comments
☐	Quality Control/ Quality Assurance — See QA/QC Checklist and TIA Style Guide in TIA Handbook

FINAL APPROVAL

ASSUMPTIONS*

- ☐ Land Uses/ Trip Generation
- ☐ Site Plan
- ☐ Build-out Year/ Growth Rate
- ☐ Access Points

*Project Manager should initial upon client/ jurisdictional confirmation of assumptions.

PM APPROVAL*

- ☐ Growth Rate
- ☐ Trip Generation
- ☐ Trip Distribution

*Project Manager should initial upon approval.

DATA INPUTS

- TMC — Turning Movement Counts
- BO — Build Out Year
- SP — Site Plan (with Access Points)
- LU — Proposed Land Uses
- JUR — Jurisdiction Requirements
- ST — Signal Timings (if applicable)