



22nd APEC TRANSPORTATION WORKING GROUP MEETING

Singapore

7-11 April 2003

TPT-WG22/SCSE/RSEG/4.2

**STEERING COMMITTEE: SAFE AND ENVIRONMENT-FRIENDLY
TRANSPORTATION SYSTEMS**

ROAD SAFETY EXPERTS GROUP

**TPT 01-2003 Initiatives for Improving Road Safety
Phase 1: Project Work Plan**



Initiatives for Improving Road Safety Phase 1: Project Work Plan

Asia Pacific Economic Cooperation (APEC)
Transportation Working Group

Prepared by:
G. Ho Engineering Consultants
March 20, 2003



Table of Contents

1.0	Introduction.....	1
2.0	Proposed Work Plan.....	2
2.1	Start-up.....	4
2.2	Stage 1: Review of background material and additional data collection.....	4
2.3	Stage 2: Matching safety initiatives to safety issues and evaluation.....	7
2.4	Stage 3: Formulate preliminary organizational and funding requirements.....	11
2.5	Stage 4: Prepare compendium of road safety initiatives.....	14
2.6	Documentation	15
3.0	Study Schedule.....	16
4.0	Preliminary Table of Contents (for project report).....	17

List of Figures

FIGURE 1	Proposed Study Methodology
FIGURE 2	Road Transportation System Elements
FIGURE 3	Cost-Effectiveness Matrix

List of Tables

TABLE 1	The Haddon Matrix
TABLE 2	Road Safety Countermeasures Summary
TABLE 3	Study Program and Deliverables



1.0 Introduction

This document presents the Work Program for Phase 1 of the Initiatives for Improving Road Safety project.

The study methodology outlined in the proposal submitted was used as the guiding document in developing the current draft Work Plan. The proposed task descriptions and the anticipated completion dates were updated and expanded based on the award date and the new information obtained from the client. These are detailed in Section 2 (Work Plan) and Section 3 (Schedule), respectively. A framework of the project “output” is presented to illustrate the study team’s vision of the final project deliverable, aiming to provide common directions and possible resources of road safety initiatives that can be followed and utilized to assist APEC Member Economies to improve road safety.

Finally, in Section 4, a draft Table of Contents for the project report is submitted to demonstrate our understanding of the project requirements to initiate input from the Project Advisory Committee and to provide focus to the project objectives.



2.0 Proposed Work Plan

We propose to conduct the assignment in six logical and systematic steps. These steps have been re-organized since the submission of our proposal to reflect additional information available.

- Start-up
- Stage 1: Review of background material and additional data collection
- Stage 2: Matching safety initiatives to the safety issues and evaluation
- Stage 3: Formulate preliminary organizational and funding requirements
- Stage 4: Prepare compendium of road safety initiatives
- Documentation

The proposed study methodology is illustrated schematically in *Figure 1*. Each step is divided into manageable tasks and sub-tasks, as described in detail in the following sections.

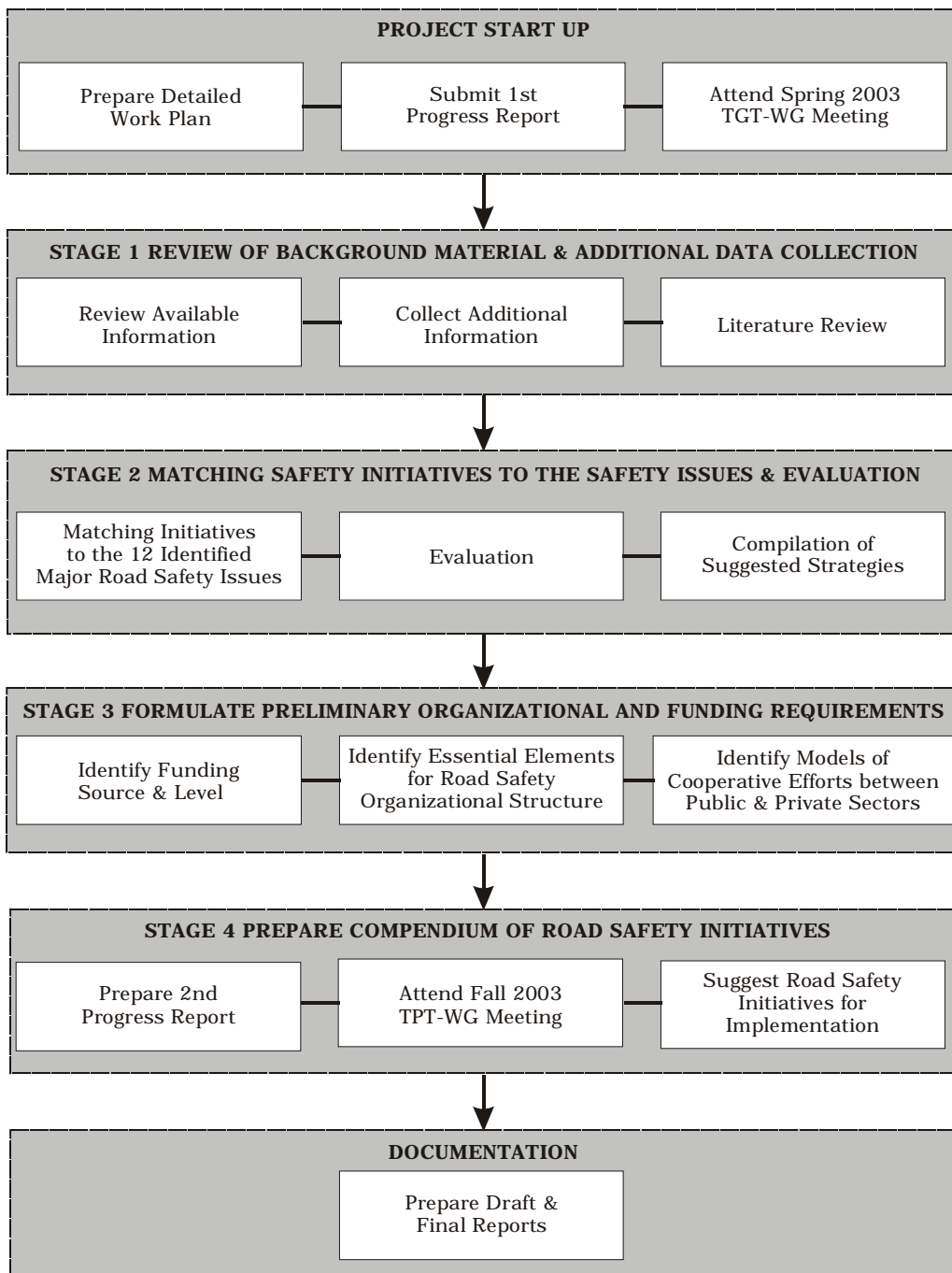


FIGURE 1 - Proposed Study Methodology



2.1 Start-Up

Our Study Team members participated in a “brainstorming” session to further develop the work plan for the first progress report. We look forward to discussing the work plan at the April 7, 2003 meeting of the Road Safety Expert Group (RSEG). The Project Manager of our team will attend the TPT-WG Spring meeting to discuss the project work plan and other details with the Project Advisory Committee.

Outcome: Agreed Work Plan

2.2 Stage 1: Review of Background Material and Additional Data Collection

Task 1.1 Review Available Information

We have conducted a preliminary review of the two reports prepared by the RSEG, namely:

- Survey of Countermeasures for Improving Road Transportation Safety in the APEC prepared by Chinese Taipei, November 2002 (*APEC Report 1*); and,
- Final Report For Phase I - Questionnaire of Road Safety Expert Group, Chinese Taipei, November 2002 (*APEC Report 2*)

On that basis we have concluded that the majority of the information needed to conduct this assignment is already collected. In this task, detailed review of the two RSEG reports will be undertaken to:

- a) Identify any additional information or data requirements. For example, we will need additional elaboration on resources available for road safety from the private sector or “other” organizations from a number of the APEC Member Economies; and,
- b) Fully acquaint ourselves with the current road safety initiatives, organizational models and funding levels of the Member Economies as a platform for a common approach.



Task 1.2 Collect Additional Information

Based on the results of the review in Task 1.1, APEC Member Economies will be contacted to collect additional required information or data. For example, only 6 of the Member Economies responded to Report 1. We believe it would be useful to try collecting information from those Economies that had not previously responded.

This information will be solicited through the use of a brief questionnaire distributed to all Member Economies. We will rely on the TPT-WG and the RSEG to provide contact information for each APEC Member Economy, and the information will be collected via e-mail.

Once we have prepared the draft questionnaire survey form, we will circulate it to the Project Advisory Committee for comments prior to distribution. We recommend that the TPT-WG RSEG distribute the survey form to obtain a higher response rate. The survey will be accompanied by a brief covering letter explaining the survey purpose and context, and encouraging a response. We recommend that the Project Overseer sign the letter to encourage a higher return rate. We will provide a three-week time frame to receive responses, before follow-up (weekly e-mail reminders to those who have not responded). We will make every effort to collect road safety information for this project, however this will be affected by the eventual survey response rate.

At this stage of the project, we require more information regarding:

- More specific road safety programs and available resource levels (human and financial); and
- Partnerships and cooperative relationships.



As an illustration, the questionnaire may include questions such as:

- In your Country, who are the organizations with primary responsibility for Road Safety Programs?
- How are the programs funded?
- What partnerships exist with other agencies?
- Are your Road Safety programs funded through public or private sector automobile insurance premiums?
- Are there other forms of private sector funding available (e.g., 3M Corporation, Ford Motor Company)?

Task 1.3 Literature Review

A literature review of recent road safety initiatives conducted by other international agencies and organizations will be completed. The international agencies and organizations targeted for this task include: the World Bank, Asian Development Bank, the Global Road Safety Partnership, the European Union, the Organization for Economic Co-operation and Development (OECD) and the World Health Organization (WHO).

The review of road safety initiatives undertaken by other international agencies/organizations will assist in developing a conceptual framework for the formulation of the road safety initiatives for the APEC region and help avoid duplication of our efforts. Further, this approach may provide opportunities for international cooperation and the dovetailing of APEC road safety initiatives with other international road safety initiatives. We have initially identified and obtained the following documents for review:

- Global Road Safety Partnership, “ Review of Road Safety Management Practice”, 2002
- OECD, “Safety on Roads, What’s the Vision”, 2002
- Business Partners for Development, “Tri-sector Partnership Results and Recommendations, Putting Partnering to Work”, 1998-2001
- WHO, “A 5-year WHO Strategy for Road Traffic Injury Prevention”, 2001

Stage 1 Outcome: A complete understanding and screening of the current road safety initiatives, organizational structures and funding levels to support future tasks.



2.3 Stage 2: Matching Safety Initiatives to Safety Issues and Evaluation

Task 2.1 Matching Safety Initiatives to Safety Issues

We will review the range of countermeasures and initiatives resulting from the previous RSEG work (APEC Report 1), as well as generate additional countermeasures that have the potential to address the twelve major safety issues identified by the RSEG based on the expert opinion of the Study Team. At this stage, safety initiatives that do not address any of the twelve major safety issues will be discarded and additional countermeasure may be added. This task will be conducted in a workshop setting involving the Study Team members.

This task will ensure that all road safety initiatives identified in this project address the twelve identified major safety issues in the APEC Member Economies and will have some degree of success of implementation with positive outcomes. To reiterate, the twelve major safety issues are:

1. Best way to collect and share accident data
2. Improvement of road network and traffic safety facilities
3. Roadside cut slope management
4. Speeding
5. Impaired driving
6. Vehicle overloading
7. Encouraging people to fasten seat belt and wear a motorcycle helmet
8. Safety of pedestrian
9. Safety of elderly people
10. Community approach to reduce road related injury and fatality
11. Accident black-spot approach to reduce accidents
12. Raising the attention of all societies to road safety problems



To assist in the logical grouping of the potential countermeasures, a holistic approach will be used that covers the three fundamental elements of the road transportation system—the road user, vehicle and the road (sometimes referred to as *the man-vehicle-environmental system*) as shown in *Figure 2*. This system provides a concise conceptual framework to analyze and evaluate all road safety initiatives.

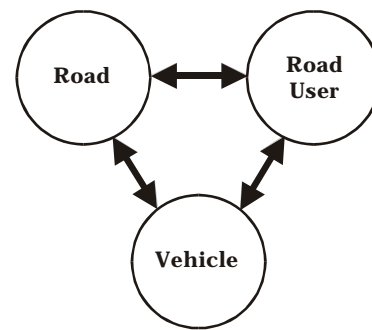


FIGURE 2: Road Transportation System Elements

The proposed framework can be further refined using the Haddon Matrix, which combines the three elements of the system with phases of a crash. An example of the Haddon Matrix is shown in *Table 1*.

TABLE 1: The Haddon Matrix

THE SYSTEM	PRE-CRASH	CRASH	POST CRASH
ROAD USER			
VEHICLE			
ROAD			

Moreover, all road safety initiatives can be further categorized into the three E’s of road safety: education, enforcement and engineering, also using the Haddon Matrix. In other words, each cell of the Haddon Matrix would contain road safety initiatives that are categorized by the three E’s of road safety.

For example, for the cell detailing road user and pre-crash would contain the following elements that are associated with preventive initiatives (i.e. “before collision”):

1. Enforcement: Automatic Speed Enforcement Camera Deployment
2. Education: Campaign to discourage aggressive driving behaviour
3. Engineering: Implement area-wide traffic calming schemes



Using a combination of the above techniques, as appropriate for each individual issue and range of potential countermeasure, we will be able to identify not only the current individual focus of the road safety efforts in the APEC Member Economies, but also the commonalities and the potential gaps where additional road safety initiatives may be needed to address the twelve safety concerns identified by the RSEG.

Outcome: A range of relevant measures that address the twelve identified major safety issues, logically categorized in a matrix similar to that presented in Section 4 as the basis for the ensuing work. The final relevancy of including any of the identified proposals in a specific program will then be decided upon in the subsequent stages of the project, based on a set of evaluation criteria (Task 2.2) supplemented by our preliminary understanding of the organizational and funding requirements (Task 3.1, 3.2 and 3.3 with information from Task 1.1).

Task 2.2 Evaluation

The road safety initiatives developed in the previous stage will be evaluated using a set of criteria developed during the course of the study. Road Safety Initiatives that meets the evaluation criteria will be suggested for inclusion and implementation in the APEC Region.

A number of evaluation criteria are proposed (not exhaustive list):

- **Economic feasibility:** will the initiative likely be cost-effective and achieved a positive benefit-cost ratio?
- **Acceptability:** will the local community readily accept the initiative?
- **Political and institutional acceptability:** is the initiative likely to attract political and management support?
- **Legal:** is the initiative legal as defined by local laws?
- **Compatibility:** is the initiative compatible with other road safety strategies and local programs and initiatives?



- **Affordability:** can the initiative be accommodated within the budget, if not can it be deferred or a less costly solution be found?
- **Technical feasibility:** does the initiative provide a solution to the problem that was diagnosed and did the initiative achieve success elsewhere?
- **Replicability:** How well can the initiative be replicated (with some localization) in many communities?
- **Sustainability:** Will the initiative be sustainable?

The evaluation criteria will be circulated to the Project Advisory Committee for comments and input prior to the evaluation.

The following process illustrates, using the economic feasibility criterion and the engineering measures component as an example, our proposed evaluation approach. The identified road safety engineering initiatives resulting from the previous task will be reviewed for their cost-effectiveness and safety effectiveness. The safety effectiveness will be reviewed based on empirical evidence (i.e., using results of other before-after studies of road safety schemes). The initiatives will be screened using a cost-effectiveness matrix as shown in FIGURE 3. The matrix as shown in Figure 3 provides a framework to evaluate a number of common road safety engineering schemes.

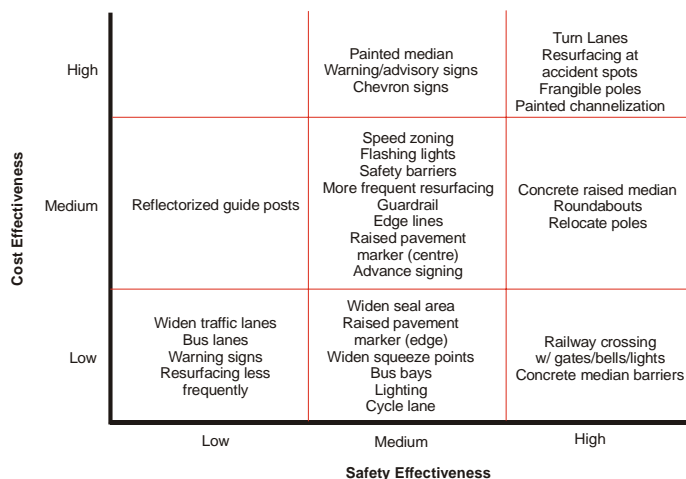


FIGURE 3: Cost-Effectiveness Matrix

A similar matrix and process may be used to select the education and enforcement initiatives with minimum of medium to high accident reduction effectiveness and cost-effectiveness, amongst other criteria. Other evaluation criteria may only require a simple scoring evaluation.



Task 2.3 Compilation of the Suggested Strategies

Each team member will review the identified initiatives based on the proposed evaluation criteria. Once the individual evaluation effort is completed, we will hold a one-day workshop amongst the Study Team members to achieve consensus on the evaluation results, and to compile the identified best road safety strategies for pilot implementation projects in Phases 2 and 3 of the project.

2.4 Stage 3: Formulate Preliminary Organizational and Funding Requirements

This work will be mainly based on the results of the work completed to date (*APEC Report 2*), supplemented where necessary by additional information obtained through the questionnaires and the synthesis from Stage 1. The intent is to compile the framework of organizational and funding requirements to implement the initiatives identified above. Iterations and minor adjustments may be required to assure consistency prior to finalizing the plan.

It is surmised that, while the framework needs to be as realistic as possible, the subsequent phases of the project, namely “Developing individual action plans for Member Economies” and “Pilot study to implement low-cost highly effective measures for voluntary Member Economies” will primarily consist of testing and developing the organizational, funding and partnering framework to suit individual economies in order to implement the adopted safety initiatives.

Task 3.1 Identify Potential Funding Sources and Levels

We will review the funding sources and the corresponding funding levels reasonably expected from the various members. At this point we may again contact the specific APEC Member Economies for additional information. This task will enable the study team to identify the appropriate funding level and sources required for implementing various road safety initiatives identified as worth pursuing.



Task 3.2 Identify Essential Elements for Road Safety Organizational Structure

When coping with road safety problems on a large scale, adequate administrative and social structures have to be effectively organized. There is no ideal organizational model that would fit every APEC Member Economy. We surmise that the ultimate choice will depend on the social structure, tradition and culture of the individual economies. Thus we propose to identify the essential elements that are available or reasonably expected to be available/committed to successfully implement fundamental road safety initiatives involving various levels of governments, non-governmental and public agencies and private companies.

The organizational structure in most Member Economies reflects general national organizational potentials and can hardly be changed or prescribed. Therefore, it is a question of responsibility and level of communication between the road safety actors that moulds proper organizational structure. For example, inert, top-to-bottom structures are more likely to be applicable to the lesser-developed economies, while more flexible, two-way oriented structures may be more favourably accepted by more-developed countries.

This task would therefore enable the study team to identify the potential “building blocks” of an effective organizational structure for implementing road safety initiatives.

We have obtained from the World Bank a “checklist” of the various roles and responsibilities of different organizations in road safety. The checklist will be used in conjunction with the APEC information to understand and determine the “gaps” in organizational structure and involvement.

Task 3.3 Identify Public/Private Sector Models of Cooperative Efforts

We will identify the private sector partners in the various APEC Member Economies that play an important role in road safety. For example, we seek to identify models that would make economic sense for the private sector to become a major participant in road safety initiatives. We are aware of successful models that demonstrated economic feasibility in the more developed economies such as Australia, New Zealand, Canada, and the United States. These models are based on the involvement of the motor insurance industry participating in road safety initiatives. We will evaluate whether these models and the role of the motor insurance industry are viable private sector partners in road safety initiatives in the APEC Region. We are hopeful that we would identify feasible public private partnership models for road safety initiatives in the APEC Region.



We are also aware of several international companies who have invested in road safety activities on a global scale. These companies include 3M Corporation and the Ford Motor Company.

At the end of this stage, a workshop will be held amongst the Study Team members to share information and identify major issues that needs to be dealt with, as well as developing the final framework for the Compendium of Road Safety Initiatives.

Deliverables: Second progress report documenting the study approach and findings from Stage 1, 2 and 3 to the APEC Secretariat and members of the Advisory Committee. Attend Fall 2003 TPT-WG Meeting to discuss project progress with Project Advisory Committee.

2.5 Stage 4: Prepare Compendium of Road Safety Initiatives

At this stage, the Study Team will relate the “preferred” road safety initiatives to organizational and funding options and finalize the Compendium of Road Safety Initiatives.

The Study Team’s envisioned outcome of the assignment will be a program matrix presenting all the essential information and elements of a compendium of road safety countermeasures that will address the 12 identified major safety issues. The matrix is illustrated in Table 2. In addition, we will provide directions in the “importance” of each countermeasure. The direction will be based on the Study Team’s expert opinion, and include assigning a potential success factor to each measure. The potential success factors will be ranked as “average”, “above average” and “excellent”.

We expect to provide a compendium that will contain countermeasures that will form the “core” of a successful road safety strategy made up of individual programs in engineering, enforcement and education. In addition, we will identify “enhancement” programs that provide additional impact to economies that have the resources and are more advanced in developing the road safety culture. For example, Intelligent Transportation Systems (ITS) have demonstrated safety benefits in addressing certain types of safety problems. However, such a program may not be affordable or appropriate for less mobilized economies



TABLE 2: Road Safety Countermeasures Summary

Major Safety Issue		Engineering	Enforcement	Education	Training	Publicity
1. Data	Core	1.... 2....				
	Enhancement					
2. Road Network	Core					
	Enhancement					
...						

In addition to the program matrix, we will attempt to provide sufficient information regarding models of cooperative relationships and potential partnerships that could assist APEC Member Economies to seek resources to improve road safety as requested in the RFP. For example, we may be able to solicit additional information from the Hong Kong Police in developing a systematic approach to solicit donations and identify potential donors for road safety funding. Lastly, based on our findings, we will also provide information on organization roles and responsibilities that are needed for the Member Economies to successfully implement the countermeasures.

The intention is to offer a menu of options that the Member Economies can draw on depending on their particular local circumstances. In other words, we will provide a “shopping list” of road safety initiatives that are low-cost highly effective for the Member Economies to choose from and the list will correlate with the role of the “lead” agency and the resource requirements. For example,

- Initiative: Speed Enforcement using Automatic Cameras
- Lead Agency: Police
- Funding Requirement: \$500,000 per annum per 1,000 km of roads
- Potential Success Factor: Average



2.6 Documentation

The Study Team will provide the Project Advisory Committee with the Draft Final Report which will incorporate the key elements of all previous progress reports. An overview of the study objectives and procedures will be provided, along with all the study findings, interpretations and suggestions. The Draft Final Report will include an Executive Summary. An electronic copy of the Draft Final Report will be prepared and submitted to the Project Advisory Committee for review. An electronic copy of the Draft final report will be submitted to the APEC Secretariat.

Deliverable: One electronic copy of the Draft Report (in Acrobat format).

Upon receiving the comments on the Draft Final Report, the study team will review them and incorporate them as much as possible into the Final Report. Reasoning will be provided for comments not incorporated. A Final Report will be prepared and submitted to the Advisory Committee and to the APEC Secretariat. The Final Report will be the final deliverable of this project.

Deliverable: Five Hard Copies of the Final Report, and One Digital Copy (in Acrobat format) to the APEC Secretariat. One electronic disk copy of the final report for each APEC Member Economy.



3.0 Study Schedule

The Study Team has revised the detailed study program for the completion of this project, as shown below. We expect the full completion of the project by February 2004. The scheduled dates of the meetings and deliverables are also highlighted in Table 3.

TABLE 3: Study Program and Deliverables

TASK DESCRIPTION	Month Ending													
	Feb 03	Mar 03	Apr 03	May 03	Jun 03	Jul 03	Aug 03	Sep 03	Oct 03	Nov 03	Dec 03	Jan 04	Feb 04	
Prepare Work Plan & Analytic Framework		■ ★												
Submit 1st Progress Report		★												
Attend Spring 2003 TPT-WG Meeting			★											
1.1 Review Available Information			■	★										
1.2 Collect Additional Information			■	■	■	★								
1.3 Literature Review			■	★										
2.1 Matching Safety Initiatives to Safety Issues				■	★									
2.2 Evaluation					■	★								
2.3 Compilation of Suggested Strategies						■	★							
3.1 Identify Funding Source & Level						■	■	★						
3.2 Identify Essential Elements of Org. Structures						■	■	★						
3.3 Identify Models of Cooperative Efforts						■	■	★						
Submit 2nd Progress Report							■	★						
Attend Fall 2003 TPT-WG Meeting									★					
4.0 Prepare Compendium of Road Safety Initiatives									■	★				
Prepare Draft Report									■	■	★			
Final Report													■	★

★ Anticipated Task Completion Date
 ■ Activity



4.0 Preliminary Table of Contents

The preliminary Table of Contents for the project report is provided in the Work Plan to generate discussion amongst the Project Advisory Committee, as well as assisting the Study Team in focusing on the relevant issues. It should be noted that the preliminary Table of Contents is subject to change and we are open to suggestions by the Project Advisory Committee.

APEC Compendium of Road Safety Best Practices “Work-in-Progress” Table of Contents

1. Introduction

- RSEG’s multi-phased approach (how this phase fits into the plan)
- purpose and scope of the report

2. Modern Road Safety Strategies and Concepts

- overview of the “state of current thinking” in road safety (examples of what is possible)
- conceptual discussion of key (practical) success factors

3. Road Safety Analysis

- describe general evaluative approach, evaluation criteria data sources, etc
- identify 12 safety issues framework, survey results and short-listed initiatives

4. Best Practices Profile

- matrix of best practices organized by the 12 safety issues and major initiative; includes “score” based on evaluation criteria

5. Opportunities and Challenges

- identify and discuss key success factors for APEC nations (not country-specific)

6. Conclusions & Recommendations

- main findings and recommendations for RSEG regarding initiatives that can be implemented in the APEC region for road transportation safety improvement