



USAID | **WEST BANK/GAZA**
FROM THE AMERICAN PEOPLE

PALESTINIAN AUTHORITY CAPACITY ENHANCEMENT PROJECT

AN INITIAL ASSESSMENT OF ROAD SAFETY IN THE PALESTINIAN NATIONAL AUTHORITY

FUNDED BY USAID

March 2009

Contract No. DFD-I-06-05-00219-00

PACE No. FO-D-2009-003

TABLE OF CONTENTS

PREFACE	i
ACRONYMS	ii
EXECUTIVE SUMMARY	iii
SECTION I. EXISTING ROAD SAFETY ENVIRONMENT	1
A. Introduction.....	1
B. Initial Observations	1
C. Methodology of the Review	2
D. Review of Road Safety Functional Areas	3
1. Planning and Programming.....	3
a. Ministry of Transport	3
b. Municipalities.....	4
c. Ministry of Public Works and Housing.....	4
d. Local and Governorate Sponsored Road Safety Committees.....	5
e. Proposed Higher Council of Traffic.....	5
2. Crash Data Collection and Analysis	5
a. Crash Data Collection	6
b. Crash Data Analysis.....	7
3. Education and Information.....	7
a. Public Education	7
b. Information.....	8
4. Vehicle Registration and Licensing	8
5. Driver Licensing and Training.....	8
a. Driver Licensing.....	9
b. Driver Training	9
6. Traffic Law Enforcement.....	10
7. Vehicle Testing and Control	10
8. Road Infrastructure and Environment.....	11
9. Vehicle Overloading and Control	11
10. Emergency Services.....	12
a. Palestinian Red Crescent Society	12
b. Civil Defense.....	12
SECTION II. INITIAL PRIORITIZED ROAD SAFETY NEEDS	13
A. Improve Road Safety Planning and Programming.....	13
B. Improve Crash Data Collection	14
C. Improve Crash Data Analysis.....	14
D. Increase the use of Seat Belts by Palestinian Drivers	14
E. Improve Pedestrian Safety.....	15
F. Conduct Several Pilot Road Safety Audit Reviews.....	15
G. Institute an Axle Load Administration and Enforcement Study.....	16
H. Develop Protocol and Provide First Aid Training to First Responders	16
SECTION III. ADDITIONAL ISSUES FOR CONSIDERATION	16
A. Organizational Review	16
B. Road Safety Advisors	16
ANNEX 1. PERSONS INTERVIEWED	i

PREFACE

Built on existing public sector reform efforts, the United States Agency for International Development designed the Palestinian Authority Capacity Enhancement (PACE) project to develop a more professional and competent public administration and civil service within the Palestinian National Authority (PNA), and to provide more effective, efficient and responsive services and benefits to the Palestinian people.

The project has two major thrusts: a short-term focus on the delivery of improved services and a medium-term focus on capacity enhancement of government institutions. Embedded advisors have been placed in the Palestinian Land Authority, Ministry of Transport, and Ministry of Public Works and Housing. A fourth embedded advisor also will be working with the Ministry of Finance starting from April, 2009. Three short-term interventions, to be completed in the first year, have been selected to have quick and visible impact on the lives of Palestinians across the West Bank. The interventions are designed to produce immediate, visible results in the form of a reduction in the backlog of land registration transactions, increased fiscal accountability, expedited vehicle and driver registration, improved responses to corruption complaints, and improved maintenance of roads. A communication plan will ensure that Palestinian National Authority institutions carry out public outreach activities and communicate the improved services to the Palestinian people.

The interventions designed for the Ministry of Transport include 1) streamlining the driver's license and vehicle registration process 2) conducting preparatory work necessary to identify and document the existing road safety environment in the Palestinian National Authority 3) identifying initial road safety needs on a prioritized basis and 4) facilitating the start-up of the Higher Council of Traffic.

This report on road safety by Gary L. Roberts, Ph.D. was written during a visit to the West Bank from 14 February to 26 March, 2009. The author acknowledges and thanks all those institutions and individuals that granted interviews and freely engaged in discussions concerning road safety in the territory governed by the Palestinian National Authority. Responsibility for the arrangement and content of this report including any recommendations rests entirely with the author.

ACRONYMS

CD	Civil Defense
HCT	Higher Council of Traffic
MOPWH	Ministry of Public Works and Housing
MOT	Ministry of Transport
PACE	Palestinian Authority Capacity Enhancement
PALPL	Palestinian Police
PNA	Palestinian National Authority
PRCS	Palestinian Red Crescent Society

EXECUTIVE SUMMARY

This study has the following purposes:

1. Identify and document the existing road safety environment in PNA, and
2. Identify initial road safety needs on a prioritized basis.

Casual observation on almost any street or road in the Palestinian areas will present you with the realization that the majority of the driving public has no clear interest or intention of operating in a manner that would suggest a climate of compliance to basic traffic regulations and safeguards. This is the result of minimum traffic enforcement targeted at moving violators, inadequate application of standard traffic engineering practices aimed at traffic control, and lack of adequate communication regarding the rules of the road as laid out in existing traffic law and regulations.

Road safety program development has not been addressed in any coordinated manner to date. The ministries and agencies that have various responsibilities commonly associated with road safety have a "stand alone" approach to road safety if any, staying within the purview of their perceived responsibility and authority and at a level limited by the capacity and capability of their staff.

Planning for road safety activities and improvements is not undertaken, and implementing road safety activities has a low priority in most ministries and agencies. Even discrete road safety activities, which could result in the development and application of simple low cost counter measures, do not appear to have been undertaken by any responsible authority.

The ability to design and implement a national approach to road safety, often called a Strategic Plan, simply is not evident in any PNA Ministries currently dealing with road related issues. The challenge for PNA will be to develop and support local road safety institutions and strengthen the quality of public and private sector responses to road safety so that in the future the public will not be overwhelmed by the consequences of doing nothing in the present to address road safety.

The resources available to PNA to fund road safety efforts are limited. This requires the initial road safety effort to focus on issues that address basic structural shortfalls in the road safety improvement mechanism and then move on to issues that will provide the largest return in crash prevention and casualty reduction for the effort expended.

The findings of this report support eight road safety interventions. The first five interventions address structural shortfalls that must be addressed before going forward, and the remainder provides the best probability of reasonable returns in the medium term.

Interventions that address structural shortfalls include:

- Improve PNA ability to plan and manage road safety by establishing the Higher Council of Traffic and phasing in its operating capacity consistent with identified road safety needs.

- Improve the process of crash data collection by introducing a small format crash booklet to be used by the police to capture data at the crash site and to submit that data to the court when required.
- Institute the analysis of crash data by obtaining necessary software and producing the normal complement of road safety statistic reports and analyses required by stakeholders with an interest in road safety.
- Design and conduct a discrete study to quantify commercial vehicle traffic and estimate the possible extent of axle load damage to the pavement and supporting structures.
- Develop a protocol for the activities of first responders at vehicle crash sites and provide training in its application to all first responders as soon as possible.

Interventions that address crash prevention and casualty reduction include:

- Increase the level of seat belt use by Palestinian drivers through coordinated efforts to inform the public of the requirement to use seat belts and phased police enforcement of the existing seat belt regulations.
- Increase pedestrian safety through coordinated efforts to inform drivers and pedestrians of the rules and regulations concerning pedestrians and phased police enforcement of those existing rules and regulations.
- Introduce a pilot program of Road Safety Audit Review, for screened hazardous locations, that will simultaneously audit safety requirements and provide training in the Road Safety Audit Review process to the personnel of the responsible local road authority involved.

SECTION I. EXISTING ROAD SAFETY ENVIRONMENT

A. Introduction

The expanding population and urbanization in PNA will be accompanied by a corresponding increase in the number of registered vehicles and licensed drivers. Increased driving exposure will result in more vehicle crashes. In particular, as commercial trucks increase in number, the potential for the number of serious crashes increases. Also, as the vehicle population extends to parts of the country where motorization has not traditionally been prominent before, the interaction between motorists and pedestrians will lead to increased pedestrian injuries and fatalities during the period of adjustment when neither drivers nor pedestrians completely know what to expect from the other.

The World Bank and the World Health Organization both accept that road crashes cost the economy of a Lower Income Country from 1% to 3% of its Gross National Product. In 2007 the Gross National Product of PNA was reported as US\$4 billion¹ making the loss to the economy of PNA in the range of US\$ 40 million to US\$ 120 million. Even the low end of the estimates represents a substantial yearly loss, which hopefully will be appreciated by PNA and reflected in a willingness to view future expenditure on road safety as an investment that will reduce both economic and social losses.

In 2007 there were 3776 reported crashes resulting in 484 crashes per 10,000 licensed vehicles and 19.2 fatalities per 10,000 licensed vehicles. These numbers are very high when compared to both the United States with 233 crashes per 10,000 licensed vehicles and 1.6 fatalities per 10,000 licensed vehicles and Israel with 214 crashes per 10,000 licensed vehicles and 1.8 fatalities per 10,000 licensed vehicles. While the number of vehicle crash-related fatalities per 100,000 population is relatively low at 3.75 compared to other health problems, there can be little comfort in this fact, since this low number is exclusively because of the comparatively small number of vehicles now in use in the country.

In simple terms a broad comparison of 2007 crash data between Israel and PNA indicates that 2 percent of Israeli crashes resulted in a fatality while 4 percent of Palestinian crashes included a fatality. Economic development and increased vehicle registration and use go hand in hand, so it is likely that the number of fatalities resulting from vehicle crashes will increase substantially in coming years if a national commitment to road safety is not secured now.

“The significant problems we have cannot be solved at the same level of thinking with which we created them” Albert Einstein

B. Initial Observations

The driving behavior commonly observed included proceeding in the wrong direction on clearly marked one way streets, complete disregard for lane discipline and turning maneuvers, disregard for pedestrians in marked cross walks, numerous incomplete turns and the corresponding traffic obstructions, gridlock activity caused by entering

¹ Gross National Product for PNA is taken from Palestinian Central Bureau of Statistics quarterly reports

the box when it is clear that the previous traffic could not clear, double and triple parking and numerous other driving maneuvers that would be classified as offences in any standard formulation of rules of the road regardless of the legal jurisdiction. Seat belt use is an excellent example of the current situation.

The PNA has legislation (Articles 62 and 63 of Traffic Law No.(5) of 2000) requiring occupants of motor vehicles to use seat belts, but two informal surveys² indicate that over 95% of vehicle drivers and front seat passengers are not using the seat belts fitted to the vehicle. It was commonly revealed during this review that a seat belt was used in area C due to enforcement by Israeli Police but not in area A and B where there is no enforcement. The use of seat belts is the single greatest factor in the reduction of casualties for occupants involved in vehicle crashes.

C. Methodology of the Review

The methodology adapted for this review involves the identification and classification of current activities and responsibilities of Palestinian Stakeholders within the functional areas usually associated with road safety improvement. In addition, published road safety studies and recommendations were reviewed and assessed to develop data relevant to the situation in PNA. Functional areas that are usually associated with road safety include:

- Planning and Programming,
- Crash Data Collection and Analysis,
- Information and Education,
- Vehicle Registration and Licensing,
- Driver Training and Licensing,
- Traffic Law Enforcement,
- Vehicle Testing and Control,
- Road Infrastructure and Environment,
- Vehicle Overloading and Control, and
- Emergency Services.

Documentation of the current road safety environment serves as the framework for the development and implementation of a comprehensive and viable road safety program to reduce fatalities, injuries and property damage for Palestinian road users.

Numerous discussions were held with individuals representing both the public and private sector having responsibility for the development, implementation, and evaluation of the functional elements that would normally be part of a coordinated approach to road safety. The public and private agencies contacted include:

- Ministry of Transport,
- Acting Executive Director of the Higher Council of Traffic,
- Ministry of the Interior,
- Ministry of Health,
- Ministry of Education,
- Ministry of Public Works and Housing,
- Ministry of Information,

² This informal study was conducted in two one hour observation periods 14 days apart in the Ramallah Governorate.

- Ministry of Finance,
- Ministry of Local Government,
- Palestinian Police,
- Environmental Protection Authority,
- Palestine Capital Market Authority,
- Palestinian Fund for the Compensation of Road Accident Victims,
- Municipality of Ramallah,
- Palestinian Federation of Insurance,
- Palestinian Red Crescent Society,
- Driver Training Syndicate,
- Bus Syndicate, and
- Taxi Syndicate.

The schedule of interviews and meetings conducted during the review in PNA is shown in Appendix 1. This schedule depicts the comprehensive approach undertaken to collect information and data to document the existing road safety environment in PNA.

In the approach to raise awareness concerning the importance road safety plays to the social and economic well being of any country, it is necessary to define and characterize the existing situation. The remaining headings in this section document the existing road safety environment and reference the ministries and agencies currently engaged in those policy and service delivery areas associated with road safety.

D. Review of Road Safety Functional Areas

1. Planning and Programming

The existing organization and approach regarding road safety planning and programming is weak and carried out under a multi-ministerial approach without dedicated coordination and in the absence of a clear vision. Various government ministries along with private sector agencies are responsible for activities and regulation commonly associated with improving road safety.

Planning for road safety activities and improvements is not undertaken and implementing road safety activities has a low priority in most ministries and agencies. Even discrete road safety activities, which could result in the development and application of simple low cost counter measures, do not appear to have been undertaken by any responsible authority.

The lead responsibility for planning and coordinated programming of road safety rests with Ministry of Transport (MOT) and is shared by the Ministry of Public Works and Housing (MOPWH), and the municipalities under the Ministry of Local Government. A brief description of their current responsibilities follows.

a. Ministry of Transport

The MOT has responsibility for several significant areas of road safety including:

- Vehicle registration and licensing,
- Driver training and licensing,
- Vehicle testing and control,

- Vehicle overload and control, and
- Road infrastructure planning and design³

In all these functional areas with the exception of road infrastructure planning and design, the MOT appends its authority to operate and regulate from Traffic Law No.(5) of 2000, which as the name implies was approved in 2000 but not implemented until 2004 with regulations approved in 2005. New transport legislation and regulations have been drafted addressing all these areas as well as authority for road infrastructure planning and design. This legislation and regulations are awaiting approval by the Council of Ministers and the President.

b. Municipalities

The various municipalities are responsible for road planning and construction within their defined jurisdiction. This includes planning and programming all traffic safety aspects normally included under the definition of traffic engineering such as: pavement markers and striping, signage, planning and managing the repair, rehabilitation, and reconstruction of the roadway system within the municipality, road safety audit reviews, and black spot location and analysis. The authority to carry out municipal responsibilities is contained in Law No. (1) 1977 On Palestinian Local Authorities.

Municipalities are responsible for parking but rely on PALPL to take the lead. They would like to have some sort of parking patrol similar to meter maids in other jurisdictions but they fear the public would not accept this without coordination with MOT and Ministry of Interior. They have considered their own towing and impound operation but are unsure if these operations would be safe for their employees.

At present the municipalities do not have the capacity to engage in serious road safety activity planning, and it appears that although there are staff members with education and experience in civil engineering, traffic safety is not represented in their capabilities. However minor exercises could be undertaken to develop simple effective plans to address already identified and widespread problems such as sidewalk obstructions to pedestrian travel, and vehicles illegally parked on the roadway for whatever reason.

c. Ministry of Public Works and Housing

The MOPWH is responsible for planning and programming road maintenance and traffic engineering on the roadways located outside of the legally designated jurisdiction of the municipalities. The authority to carry out these responsibilities is contained in legislation remaining from the Jordanian Mandate. However, new legislation has been drafted and is awaiting approval by the Council of Ministers.

As in the case of the municipalities, the MOPWH does not have the capacity or capability to engage in any directed road safety activity. This would include planning and programming all traffic safety aspects normally included under the definition of

traffic engineering such as: pavement markers and striping, signage, road safety audit

³ Current responsibility for these areas rests with the MOPWH but will be shifted upon ratification of the proposed Transport legislation to the Ministry of Transport.

reviews, and black spot remedial action.

d. Local and Governorate Sponsored Road Safety Committees

It has been reported by several sources that in the past there were locally-constituted road safety committees, some of which were by all accounts quite active and productive such as the committee located in Nablus. These committees represent a valuable safety resource and local planning experience that should be fostered and supported in conjunction with the expected national coordination and facilitation effort.

e. Proposed Higher Council of Traffic

The PNA has already recognized the importance of road safety and the necessity to provide a mechanism to promote coordination and facilitation as evidenced by Article 118 under Traffic Law No. (5) of 2000, authorizing the creation of a Higher Council of Traffic. This action was followed up by a decision of the Council of Ministers No. (31/36/09/M.W./A.Q.) of 2005 Concerning the Establishment of the Higher Council of Traffic and Its Regulation and finally by a letter issued by the Council of Ministers dated 9 October, 2008 directed to the Ministers of Transport and Interior asking that they take the necessary measures for implementation of the *Draft Decision on the Establishment of a National Committee for Traffic Safety*.

The mandate of the proposed Higher Council of Traffic (HCT) includes:

- Formulating public policy with respect to road safety and developing plans, methods and techniques for its implementation;
- Defining the tasks and responsibilities of the ministries, bodies and authorities that assume the implementation of the plans supporting road safety policy; and
- Establishing local Traffic Safety Committees.

Preliminary activities by the MOT to establish the HCT are currently being supported by PACE.

2. Crash Data Collection and Analysis

There is a single authority, the Palestinian Police (PALPL), responsible for documenting vehicle crashes on PNA roadways. This will somewhat simplify the process of standardizing crash site procedures and data collection, data coding, and data distribution for analysis.

Crash data collection and analysis is a basic requirement to provide direction and reality to the approach of improving road safety. Without adequate and accurate data it will not be possible to:

- Develop a national road safety strategy and road safety action plans;
- Identify and quantify dangerous behaviors;
- Identify and quantify hazardous locations (black spots);
- Design effective countermeasures to address dangerous behavior and locations;
- Develop appropriate police enforcement strategies to address dangerous behaviors; and

- Evaluate effectiveness of countermeasures and strategies.

a. Crash Data Collection

Crashes are investigated if those involved or witnesses notify PALPL. The Traffic Law No. (5) of 2000 requires notification in case of a fatality but there are no clear regulations or policies aimed at crash site protocol or data collection. Most notifications are lodged with PALPL as the result of insurance company requirements to have a police report in order to collect on the claim. The PALPL investigated 3674 crashes in 2008 but believe the number of crashes is certainly undercounted by a significant amount as most of what happens in area C and some of what happens in area B is not reported to them. This can be the case even when a crash involves a fatality. In addition there is often considerable lag time on the part of the Israeli Police when reporting crashes that occur in areas patrolled by them. This usually means that the crash site has been cleared before the PALPL arrive to investigate.

The PALPL have a dedicated three digit (100) telephone number for notification of crashes. Upon arriving at the scene if PALPL feel that medical attention is necessary they call (101) for Emergency Medical Services provided by the Palestinian Red Crescent Society (PRCS). The PALPL first responders currently have no first aid training themselves but this has been requested from PRCS. If rescue type services are required (driver or passenger extrication from a severely damaged vehicle) PALPL officers at the scene call (102) for the Civil Defense Team (CD). The PALPL report that often these other first responders arrive at the scene before them. This would be logical since a victim with injuries or a witness who observes injuries might be expected to call PRCS first.

The PALPL have 13 officers they consider to have expert experience in crash investigation, and these officers are assigned to the more involved cases. There are no standard operating procedures for investigating crashes but these are currently being considered. The PALPL would like assistance with this if possible.

There are no standardized forms for crash investigation and data collection. Each officer takes notes, statements from those involved and witnesses, and sketches the scene as he sees fit. This often results in some details of the crash not being recorded and requires that the crash site be revisited. When this happens the original set of circumstances and evidence are no longer available and the quality of the crash report suffers. The only standard reporting form is the one used if a vehicle crash case goes to court and often its quality also suffers if the original information was not documented in an appropriate manner. Officers are equipped with cameras and the use of photographs is acceptable in court.

The PALPL expressed considerable interest in working with MOT to develop a standard form to capture crash data needed by PALPL and HCT and agreed in principle to collecting and coding the crash data as a first step to creating a road safety database. The PALPL would expect the crash data forms to be supplied by MOT or HCT and that the standard form would act also as the court document.

There is one interesting note regarding crash data currently being logged by PALPL officers. It is not regular practice to indicate that the driver was Driving Under the Influence even if this is the case. If the relatives of the victim gain this knowledge, when these cases go to court, it can result in an attempt to harm the driver involved.

b. Crash Data Analysis

The analysis of existing crash data collected by PALPL is limited to the production of aggregate statistics by PALPL indicating number of crashes, number of injuries, and number of fatalities. No analyses are being undertaken to support road safety planning or programming, identify dangerous behaviors, identify hazardous locations or undertake basic road safety research.

3. Education and Information

Education and information in a broad sense encompasses all aspects of providing the public better access to any type of information regardless of content or age of the recipient. This includes structured public education such as primary and secondary education or general information promotion using radio and television spots to deliver a public service message.

a. Public Education

The Ministry of Education is responsible for public education in PNA. The current operation of the Ministry includes 1300 schools offering classes to 1,200,000 students. School attendance is compulsory and free of charge in grades 1(age 6) through 10 (age 15) but not grades 11 and 12.

Road safety education is handled in a disbursed way across the subject areas in grades 1 to 6 including various examples of life experience. There are specific curriculum items in grades 7 through 10 that address road safety directly.

In 400 schools, chosen as a result of perceived danger levels to students from road traffic or road design considerations, there are special teams (Road Safety Teams) consisting of 5 to 7 students and one teacher acting in the capacity of crossing guards. These teams get 20 hours of training annually to support the crossing guard activities.

The Ministry of Education has also tried interactive CDs and short video clips. It has also been supplied with a road safety training manual for instructors produced by the Roads and Environment Safety Center under funding provided by United Nations Development Programme-Programme of Assistance to the Palestinian People. This manual provides information to school teachers about road safety and the creation and delivery of road safety material including sample lesson plans and study exercises.

Providing structured training to children is a long term intervention and requires programs and activities designed by qualified personnel who understand the psychology and delivery issues involved with children's education. Given the number of children currently being educated and the fact that there is some level of road safety content at each grade level would suggest that structured education intervention is not an area that should be considered a priority for short term activities. The establishment

of the HCT will afford an opportunity to collect additional data and community input in order to formulate medium and long term strategies aimed at public education.

b. Information

Information is conveyed by the use of many forms of mass media to inform the public about an issue of importance. In the past there have been public service announcements produced and aired in PNA by various organizations. Road safety has not been a major target of public service advertising in the past but this approach offers the best avenue to spread the message of road safety to a wider audience.

The authority for the operation of radio and television stations in PNA resides with the President's Office. The current providers consist of PNA television and Radio along with 25 private television and 30 private radio stations. These providers are permitted and regulated by the Ministry of Information, which would screen and approve any public service spots considered for broadcast. The Ministry's interest in any public service issue is only to facilitate the delivery of the message not to initiate or suggest any campaign.

The Ministry of Information has supported both nationally and locally directed campaigns in the past, and air time provided by the national broadcast services would usually be offered free of charge if the nature and subject of the campaign was thought to be acceptable. No clear directives classifying acceptable messages are available but Ministry officials indicated that public service spots aimed at informing the public of current regulations and promoting the use of seat belts for instance would qualify as legitimate public service broadcasts. In addition the Ministry could also provide a roll out of any campaign that was thought to be of value, consisting of a press conference with the responsible parties in attendance and including a request that private broadcasters also run the public service spots.

The use of mass media offers an attractive possibility for positive short term intervention in support of road safety in PNA. However, past research clearly indicates that the use of road safety campaigns regardless of their target have often proven ineffective when not accompanied by a substantial and visible enforcement effort on the part of the traffic police.

4. Vehicle Registration and Licensing

This function is controlled by MOT through its Licensing Department. In 2008 the Licensing Department accounted for approximately 150,000 transactions, processed by 144 employees in 12 West Bank offices, one located in each Governorate.

The usual processes to validate ownership, transfer ownership, registration, sale and renewal of annual license and other specialized activities provide adequate control of vehicle administration at the present time. The delivery of these services are currently being streamlined under PACE, and the resulting improvements will lead to increased customer satisfaction and more effective operations.

5. Driver Licensing and Training

a. Driver Licensing

This function is also controlled by MOT through its Licensing Department. The work consists mainly of testing applicants and issuing a renewal or new driver's license in one of six basic license classes including; private, motorcycle, truck, bus, taxi and agricultural tractor. The customer services delivered during the testing and issuing of a driver's license are also included in PACE efforts.

The theoretical knowledge and practical skill of drivers, licensed or not, operating on PNA roadways is called into question simply by the daily observation of road traffic activity. It is not apparent at this point whether the testing of these drivers is a significant contributing factor to the current chaotic traffic situation.

At this time there is insufficient data available to provide an informed opinion and additional investigation will be necessary. Absolute understanding of and compliance with the traffic regulations and the general rules of the road are essential to any serious attempt to improve road safety in PNA. Information classifying and quantifying the issuance of a driver's license such as attempts to pass, level of effort, regional anomalies, and performance on the written and practical test procedures will need to be reviewed in future visits.

b. Driver Training

This function is controlled by MOT through its Department of Driving Schools and Institutes. The responsibility of MOT includes licensing the driver training schools, driving instructors, and developing and updating the driving school curriculum. Currently there are approximately 200 driving schools in PNA licensed by MOT. These schools are holding approximately 662 vehicles for use by student drivers but discussions indicate that many of the vehicles are out of service for one reason or another. Drivers must receive a minimum of 20 training sessions each consisting of 40 minutes of instruction in order to qualify to take the licensing examination.

The driving schools represent that they all use the same standard curriculum approved by the MOT. The association of driving school operators generally referred to as the Driving Schools Syndicate indicates that they are actually the body designing the curriculum, and MOT accepts what they have produced. Unlike many other jurisdictions the insurance industry has no input to the basic structure of driver training or the design of the curriculum. There is no standard text or work book used by the students. Each school is free to use what ever material they think best. In addition there is no published legal version of the Rules of the Road or Highway Code for PNA, which is provided in most other jurisdictions by the authority responsible for road traffic regulations and driver's licenses or the national road safety organization.

As in the case with driver licensing, it is not apparent at this point whether the instruction of drivers is a significant contributing factor to the observed lack of driving discipline. This issue also will need to be reviewed in future visits.

The concerns of the Driving Schools Syndicate with regard to road safety include

inadequate signs, unrecognizable markings and striping, inoperative signals, pedestrians in the roadway, and lack of public (municipal) facilities for practice driving.

6. Traffic Law Enforcement

The PALPL traffic operation has 600 officers in the West Bank and issued 50,000 citations in 2008. Unfortunately the PALPL do not analyze citation data or produce statistics classifying the nature and circumstances of the issued citations. Many of the officers have not received directed training regarding the current traffic law and regulations and a large number have no first hand experience with driving.

There are no administrative procedures in place to classify common offenses in a manner that would allow civil adjudication on a fee rather than fine basis. This requires each offender to appear in court in order to discharge his liability. This seriously overloads the court system unnecessarily. In most other jurisdictions these offenses would be handled on a fee payment basis with perhaps points accruing to the driver's license of the offender.

Currently the PALPL have no breathalyzer equipment. If blood alcohol level testing is necessary, it is done by physically sampling the driver's blood. The PALPL also do not have speed measuring devices such as hand held laser or radar units.

The PALPL are currently the authority engaged in vehicle parking enforcement but have no removal equipment. PALPL officers call private operators to remove illegally parked vehicles if necessary. The Municipalities also have the authority to remove vehicles but to date have not exercised it.

7. Vehicle Testing and Control

This function is controlled by MOT through its Department of Vehicle Engineering. Vehicle safety inspections must be undertaken annually for private vehicles less than 20 years old and twice yearly for older vehicles. Public service vehicles less than 10 years old must be inspected annually and twice yearly if they are more than 10 years old. Inspections are conducted by 7 privately owned facilities that are licensed by MOT. The MOT expects two additional facilities to commence operating by the end of 2009.

The inspection facility visited was laid out in good order and the testing equipment was of a standard design ordinarily found in this type of facility. The facility conducted 50 to 80 vehicle inspections a day. The fees collected are set by MOT depending on vehicle class.

The items inspected provide adequate safety protection based on the spot check philosophy (it is safe at the time of inspection). If the vehicle passes the inspection a color coded (by year) safety sticker is issued, punched for date of inspection and affixed to the interior side of the windshield in the upper right corner. This is not a self destructive sticker, so it can be removed and installed on another vehicle. If the vehicle fails, the facility issues a condition report indicating the items that were not within specification. It is then the owner's responsibility to address these items in whatever manner necessary to correct the defects.

This was a reasonably well run private sector facility, and there is no reason to believe

that a government operation would provide any better safety coverage. This is an accepted approach to vehicle inspection and is found in many other jurisdictions.

Some road safety practitioners see no reason to require annual vehicle inspections given the statistics regarding crashes directly caused or materially influenced by vehicle mechanical failure. The existing approach was first implemented by the Israeli government during their control and is seen as necessary in order to coordinate with vehicle inspection policy often enforced on roadways in the West Bank that are controlled and patrolled by Israeli Police.

8. Road Infrastructure and Environment

The potential for crash and injury reduction through low cost engineering measures at hazardous locations is especially high in PNA where resource constraints limit major road improvement programs. These low cost measures include improved signage, renewed or improved pavement marking, tree removal, utility pole repositioning improved intersection geometry, and improved guide rail applications.

Road Safety Audits and Road Safety Audit Reviews are not currently used in PNA. In addition no analysis of high crash locations (black spots) appears to have been undertaken by any jurisdiction in PNA. These types of reviews and analyses are necessary to determine what factors are related to specific crash location experience and would identify the drivers, vehicles, and roadway elements that need critical evaluation as causal factors.

Visual surveys of a limited number of urban and rural roads undertaken in the first three weeks of the review identified specific deficiencies such as pavement markings, intersection layout, pedestrian crossings, signs, and utility pole placement.

There is no comprehensive and organized Road Design Manual for current use. In all probability the numerous design notes that are being used could be seriously deficient in improved geometric and other elements designed to improve road safety.

9. Vehicle Overloading and Control

The authority for the control of vehicle overloading and commercial truck traffic rests with MOT through its Department of Vehicle Engineering. This is the same group responsible for annual vehicle safety inspection.

The number of overloaded heavy vehicles is unknown. The existing transport legislation and regulations authorize the weighing of vehicles to determine overload but apparently no ministry or agency within PNA governmental structure carries out such operations. In addition, there appears to be no permit control of any kind on heavy commercial trucks even those carrying hazardous cargo.

The control of axle load limits is inextricably linked to the crucial requirement to minimize total transport costs (services and infrastructure) to the national economy of PNA. The limits placed on axle load have considerable influence in determining the overall efficiency and effectiveness of the road transport sector. Not only do they control parameters such as the size, capacity and strength of roads and bridges, but they also

regulate the unit cost of transport and set the framework for competition in the market.

The link between axle loading and roadway deterioration is well documented and quantified.⁴ Repeated axle loading has a cumulative effect on the conduct of the roadway structure. As a result, conventional roadway design allocates a predetermined number of standard axle loadings over the life of the roadway. When this number of standard axle loadings is exceeded, the design life of the roadway is reduced and severe overloading can shorten the life of pavement by 75 percent or more.

One of the major responsibilities of any institution controlling road use is to minimize the cost of road construction and maintenance and to maximize the life cycle of the roadway. This explains the view held universally by road authorities that the substantial investment made in roadway and bridge infrastructure must be protected from the damage caused by overloaded axles. The most effective method available to achieve this end is to control axle load limits at or below the design level of the roadway in order to prolong the life of the roadway structure.

10. Emergency Services

Road safety inputs under this classification include ambulance service provided by PRCS and rescue services from Civil Defense (CD).

a. Palestinian Red Crescent Society

The PRCS is the major provider of emergency medical services in PNA. They have been authorized by the Ministry of Health to act as the agency in control of emergency medical services. All ambulances and EMS personnel must be tested and licensed by the PRCS. The PRCS is the only organization interviewed that required its drivers and front seat passengers to wear seat belts.

PRCS offers ambulance service 24 hours a day, every day through a network of 37 stations consisting of 9 main stations and 37 substations. It operates a fleet of 120 ambulances of which 15, one in each Governorate, are fully equipped as Intensive Care Units. Like PALPL, PRCS has a dedicated three digit (101) telephone number for Palestinians to call for emergency medical service.

No charge is made for ambulance runs to vehicle crash sites but if the owner of the vehicle has insurance that covers ambulance service, PRCS will seek payment. Other emergency calls are usually billed at NIS150 as an attempt to recover at least a portion of the cost.

b. Civil Defense

Civil defense falls under the direct control of the Ministry of Interior and is responsible for fire fighting and rescue services. This includes extricating vehicle occupants from a badly damaged vehicle. Like PALPL and PRCS, the CD has a 3 digit (102) telephone number so that the public can contact them easily. There is now an effort by CD to raise a joint command center for all three emergency numbers 100, 101, and 102. We

⁴ "The AASHO Road Test: Pavement Research". Special Report 61E, Highway Research Board, Washington D.C., 1962

suggested that perhaps a better approach would be a combined team from PRCS and CD in the same vehicle providing a more effective call response but this is not being considered by the CD at this time. CD personnel do not have first aid training as the CD does not consider first aid its responsibility.

Civil Defense has a network of 40 stations and plans the addition of 9 more before the end of 2009. Only four of these (Ramallah, Bethlehem, Jenin, and Nablus) are equipped with rescue vehicles. The current rescue response vehicles are medium-sized two-axle trucks and not suited for travel on all existing roads. There is a plan to field smaller size vehicles such as passenger vans or box body pickups equipped with appropriate rescue equipment to offer improved access to all crash and emergency sites.

Emergency services are now widely considered to encompass the full spectrum of emergency activities including recognition of the emergency, easy communication access to the services, provision of pre-hospital care and hospitalization and any resulting rehabilitation. The investigation of hospital care and rehabilitation is outside the scope of this initial review but will be considered in subsequent reviews coordinated by the proposed HCT once it is established.

SECTION II. RECOMMENDED ROAD SAFETY INTERVENTIONS

The universal situation with respect to road safety all over the world is that the size of the road safety problem outstrips the resources each government feels are available to cope with the problem. Therefore, a priority use of resources is critical. In the setting of priorities, it is essential that resources be directed into areas that are simultaneously important enough to warrant consideration, and for which there is a feasible countermeasure having sufficient potential effectiveness to warrant the investment.

The recommended interventions presented here in order of decreasing priority are by no means an exhaustive list of the road safety needs in PNA that should or could be undertaken to prevent crashes and reduce casualties. They do, however, include for the most part low cost activities that in the short and medium term offer a reasonable probability of improving road safety understanding. They also represent an Initial Priority Action Plan aimed at addressing structural concepts basic to road safety improvement and institutionalizing an approach to provide national road safety coordination and facilitation.

A. Improve Road Safety Planning and Programming

Any long term improvement in the overall road safety situation in PNA will require a government-wide coordinated safety plan that provides a comprehensive framework and specific goals and objectives for reducing road crashes, fatalities and injuries on all Palestinian roads. This Road Safety Plan should be developed in a collaborative process including input from both private and public stakeholders having an interest in improving road safety. In general such a road safety plan is a data-driven, four to five year comprehensive effort that integrates engineering, education, enforcement and emergency services. These 4Es as they are known internationally, are the elements proven to reduce crashes and the casualties resulting from road crashes.

The capacity and capability to produce such a long term plan and strategy at present

does not exist and will require the ability to coordinate and facilitate the input of all interested stakeholders and in particular the line Ministries responsible for implementation. This can best be addressed by establishing the HCT and phasing in its operating capacity in a manner consistent to addressing the rest of the Initial Priority Action Plan.

B. Improve Crash Data Collection

The collection and coding of data required for crash analysis should be done by PALPL as they are the agency responsible for crash investigation and will have first hand access to the data that needs to be collected and coded.

The database items to be collected should be agreed by a committee composed of four members (HCT Secretariat, PALPL, MOH, and the Insurance federation) taken from the HCT organization. This will require that all the data elements necessary for the PALPL and the road safety database be clearly identified and provision made for their collection. For example, PALPL will require data elements that specifically identify those involved in the crash while the HCT will only require data classifying those involved for their analysis. The same data collection form should also serve the PALPL as a court document so work is not duplicated.

The collection document should be in the form of a small booklet that will be kept on file with PALPL and available for use in court proceedings if required. A sample Crash Book and coding form should be produced for approval by all parties once agreement is reached.

Once the Crash Book has been accepted, the HCT secretariat should enter into an agreement with PALPL to collect and code the information necessary to support a viable road safety database and the HCT will furnish the crash books and coding forms. The PALPL will require training in the use of the crash books and coding sheets once the system is ready for implementation.

C. Improve Crash Data Analysis

The algorithms and processes required to analyze road safety data are complex in nature. For this reason the management of the database and analysis computations should be done using off the shelf software designed for this purpose. There are reliable easy to use software packages available. The most popular being Maap, which is produced by the Transport Research Laboratory in the United Kingdom. The HCT, with assistance from PACE, should be responsible for obtaining software that can produce the normal complement of road safety statistic reports such as tabulations, cross tabulations, stick diagrams, black spot locations and any other reports required by stakeholders with an interest in road safety analysis.

The analysis software will require crash site location data. If Geographic Information System and Global Positioning System remain unavailable in PNA, the location coding will need to be developed by HCT, with PACE assistance, using maps with X and Y coordinates. In addition, it will be necessary to train PALPL officers to correctly code the crash location on the data coding sheets for HCT.

D. Increase the use of Seat Belts by Palestinian Drivers

In the short and medium-term the single most important behavior change associated with reducing the fatalities of occupants in vehicle crashes is the increased use of seat belts by drivers and front seat passengers.

The HCT should coordinate and facilitate meetings between the MOT, PALPL, and the PACE communication personnel to reach an agreement on the production and implementation of a mass media road safety campaign to increase seat belt use. This effort should focus on 1) informing the driving public of benefits associated with wearing seat belts 2) informing the driving public of the existing seat belt regulations and 3) a phased PALPL effort to increase enforcement activities.

E. Improve Pedestrian Safety

Though the data to support a high number of pedestrian casualties is not readily available, discussions with PALPL and PRCS indicate that such casualties are numerous. Observation also supports the confusion accompanying pedestrian activities on Palestinian roadways.

HCT should coordinate and facilitate meetings between the MOT, Municipalities, PALPL, and PACE communication personnel to reach an agreement on the production and implementation of a mass media road safety campaign to increase pedestrian safety. This effort should focus on 1) raising awareness of pedestrians to the improved personal safety possible from following the regulations 2) informing both pedestrians and the driving public of the current regulations and 3) a phased PALPL effort to increase enforcement activities. .

Municipalities should immediately undertake their responsibility to provide sidewalks without obstruction to pedestrians and improve pavement markings and information signs at cross walks and other pedestrian junctions so pedestrian safe zones are clearly visible to drivers. This would also eliminate confusion about where pedestrians should legally cross the street.

F. Conduct Several Pilot Road Safety Audit Reviews

In the absence of a consolidated road crash data base to point the way in determining hazardous roadway locations, it will still be possible to identify and reduce crash potential by applying the use of the Road Safety Audit Review. The main advantages of the Road Safety Audit Review are 1) that it is proactive and seeks to identify and rectify safety problems before the crash occurs and 2) that often there is no cost involved other than local personnel input. Ordinary black spot identification is the result of crashes that already have occurred. Road safety audit Reviews attempt to address issues before they become problems.

The HCT should establish contact with the once active Governorate-sponsored local road safety committees in an attempt to catalog any that are still viable or interested in reactivating.

As part of the process to establish contact with these committees, HCT should request that the committees nominate what they consider to be the 5 worst sites (intersections,

simple junctions, commercial areas, school zones) or sections of roadway within their jurisdictions. The sites submitted should be clearly described with respect to location and why they were nominated for the list.

These sites would be reviewed and additional cross reference checks undertaken by the HCT with PACE assistance in order to identify 3 to 5 areas for a pilot application. The Road Safety Audit Review would then be conducted and serve not only to assess the safety of the site but also as a training exercise for the personnel of the responsible local road authority.

G. Institute an Axle Load Administration and Enforcement Study

A comprehensive Axle Load Enforcement Program should be based on the design of the existing roadway, bridge capacity, and the level of commercial truck activity. A small study of truck activity and legal registered axle and gross vehicle weights should be carried out by MOT in consultation with the MOPWH, Ministry of Local Government (Municipalities) and PALPL to determine the level of truck traffic and estimate the possible extent of axle load damage to the pavement and supporting structures. The results of this study would inform MOT as to the way forward to institute appropriate counter measures if required.

H. Develop Protocol and Provide First Aid Training to First Responders

An agreed protocol between the agencies providing first responders to vehicle crashes does not currently exist. Developing such a protocol and providing training in its application to all first responders should be addressed as soon as possible. First responders involved in drafting this type of protocol should at a minimum include the PALPL, CD, and PRCS.

The PALPL and CD personnel responding to road traffic crashes are not properly trained to provide emergency first aid at the crash site. Training in basic first aid should be made available to PALPL, CD and any other non-medical personnel likely to be responding to road traffic crashes.

SECTION III. ADDITIONAL ISSUES FOR CONSIDERATION

A. Organizational Review

In the meetings held with Directors General of Departments within the MOT for the road safety review, a number of regulatory and operating issues not necessarily dealing directly with road safety were discussed. The view and ideas expressed in these open exchanges would support the consideration of further study into the possibility of reorganizing the MOT into two operating arms, one focusing on policy and the other focusing on an operating authority structured to improve service delivery to Palestinian clients and streamline regulatory procedures.

B. Road Safety Advisors

In the limited time available for the initial review of road safety, we did not identify any capacity or capability in many of the subject areas required to improve road safety and institutionalize its future in PNA. It is recommended that discussions be held, with the Donors usually interested in providing road safety support, aimed at securing road safety technical assistance for the HCT and the MOT. An effort of this type to establish a body responsible for national coordination and facilitation of road safety is typically provided technical assistance for 3 to 5 years. The culture of road safety requires particular attention to established operating procedures and policies and is not a process usually ascended to in the short term. Providing technical assistance to the HCT members and its Secretariat during its first 36 to 48 months of full operation will considerably shorten the institution's learning curve and increase the probability for a sustainable facilitation and coordination operation.

