IMPACT OF ROAD CONSTRUCTION AND MAINTENANCE ACTIVITIES ON ROAD USERS AND THE ADJACENT LAND USE

Association mondiale de la Route

AIPCR VIA VITA PIARC

World Road Association

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PIARC TC 4.3.3

- Road Pavements Technical Committee
  - Developing guidance on the impact of road works on adjacent land use
  - Multi-national collaborative effort
  - Final work to be reported by December 2006

Summary of Major Construction Impact

Noise

Safety

Summary of Major Construction Impact

Pollution

Vibration

Summary of Major Construction Impact

Roadway Availability

Nuisance

Preliminary Information Survey

- How important is each of the following issues to your agency?
  - Noise
  - Safety
  - Pollution
  - Vibration
  - Roadway Availability
  - Nuisance

Survey Results Summary

Item	Planning	Design	Production	Transportation	Placement	Maintenance
1) Noise	4	4	3	3	4	4
2) Safety						
User	5	5	5	5	5	5
Worker	4	4	5	5	5	5
3) Pollution						
Air	3	3	5	4	4	4
Water	4	3	4	4	4	4
Soil	3	3	4	4	4	4
4) Vibration	3	3	3	3	3	3
5) Availability						
Capacity	4	4	3	4	4	4
Working Hours	4	4	3	4	4	4
6) Nuisances						
Access	4	4	3	4	4	4
Aesthetics	3	3	2	2	2	2
Lighting	2	2	2	2	4	3
Odors	2	2	2	2	2	2

Detailed Targeted Survey

- Do you have specific documentation on:
  - Regulations
  - Guidelines
  - Best Practices
  - Code of Practices
  - Others?
- Copy or reference, summary document, abstract

Regulations and Guidelines

- Describe the regulations/guidelines, etc.
  - Prescriptive (method based)
  - End result specification
  - Performance based
  - Others

Compliance and Enforcement

- What do you measure to ensure compliance with the requirements
  - Specific criteria such as allowable noise levels, air pollution, user delay, etc.
- Is there a bonus for bettering the requirement or penalty for non-compliance
  - Contractor performance indicators
  - Monetary
  - Others

Evolvement of Current Approach

- How was the current approach developed
  - What was done in the past?
  - If it was changed, why was it changed?
  - How was it changed?
  - What was the driving force behind the change (global requirements, regulations, economics, etc.)

How is Innovation Introduced

- Describe how innovation is introduced (for example):
  - Contractual requirements
  - Specifications
  - Management changes
  - Technical advancements
  - Technology transfer

Expected Future Approach

- Do you see any changes in the approach in the future?
- What do you think will be driving these changes?
- Who do you expect will be responsible for the changes:
  - Government
  - Agency?
  - Contractors?
  - Producers?
  - Others

Past Innovations

- What innovations have been implemented in the past?
  - Describe the innovation
  - Pros (better quality, less traffic disturbance, shorter construction, etc.)
  - Cons (increased planning costs, complexity, schedule, coordination and organization more difficult, etc.)

Past Innovations

- What innovations have been implemented in the past?
  - What criteria were used to decide to implement this innovation?
  - Who pays for the innovation, who benefits from the innovation?
  - Who assumes the risk of innovation?

Future Innovations

- Are you satisfied with the current situation?
- Do you need to change?
- How are you stimulating innovation?

Case Studies

- Surveys outlined two case studies to ask agencies how they would treat two specific construction situations
  - Urban construction and a mobile asphalt plant
  - Rural construction in an environmentally sensitive area

Preliminary Results

- Noise
  - Most agencies have specific regulations and guidelines to limit noise during roadway construction activities
  - Guidelines and regulations range from the use of a maximum noise limit for all road activities to complex matrices providing maximum noise levels by roadway/highway functional class and day versus night conditions

Preliminary Results

- Safety
  - Driver safety during roadway construction is typically governed by guidelines for traffic and work zone safety
  - Worker safety for most jurisdictions is governed by law
  - Many agencies have specific documentation and guidelines to protect workers during construction

Preliminary Results

- Air Pollution
  - Most road authorities include environmental protection clauses in their specifications
  - Most require a contractor to produce an Environmental Management Plan for a construction project

Preliminary Results

- Water Pollution
  - Most agencies have very strict laws, rules and guidelines with regard to water pollution and runoff from construction worksites

Preliminary Results

- Soil Pollution
  - Most agencies have very strict laws, rules and guidelines with regard to soil pollution
  - Many agencies are turning to recycling activities to help eliminate the need to disturb the soil during pavement rehabilitation projects

Preliminary Results

- Aesthetics
  - The majority of agencies do not consider aesthetics of the construction site in the design and construction of pavement projects
  - Aesthetics of the final product, however are given substantial treatment
  - Current focus on context sensitive design

Overall Aesthetics

Preliminary Results

- Lighting
  - Lighting not generally considered during road work except for safety lighting during nighttime construction
  - Construction lighting can be an issue for homeowners but is only usually considered when a specific complaint is received

Preliminary Results

- Odors
  - Agencies typically cover odors under air pollution regulations and guidelines
  - Most agencies indicated that odors are not considered for construction and rehabilitation projects

Preliminary Results

- Evolvement of Current Approach
  - Current approach to detailing with the impact of road construction and rehabilitation has evolved through rules and regulations as a result of pressure from land and homeowners

Preliminary Results

- Past Innovation
  - There is a wide range in the way agencies treat innovation
  - Some agencies sponsor innovation projects as a result of a real or perceived need
  - Many agencies sponsor contractor innovation proposals

Planning Innovation

- Lane Rentals
- A + B (Cost Plus Time Bidding)
  - (Cost) + (B x Road User Cost / Day)
- Advanced public notification to reduce traffic congestion (FTMS)
- Traffic staging (median crossovers)
- Shoulder paving for traffic
- Speed limit enforcement (photo radar)

Construction Innovation

Pre-cast concrete slab replacement

Construction Innovation

Cold In-Place Recycling

Construction Innovation

Expanded Asphalt Stabilization

Construction Innovation

Moveable Construction Barrier

Preliminary Results

- Future Innovation
  - Efforts are needed to develop more effective systems/measures/materials /tools for traffic regulation during construction
  - Need to reduce the number/time of construction work
  - Further tightening of requirements to minimize impacts driven by higher community expectations

- Your Input to the Study is Most Welcome
  - Please Contact: TC 4.3.3

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