

Maintaining Worker Situational Awareness: Focus on Fatigue and Electronic Device Use

INTRODUCTION

The Bureau of Labor statistics (BLS) data shows that fatal injury rates among construction workers is almost three times that of all occupations (1). In 2013, highway, street, and bridge construction workers were 8% (64/796) of all fatally injured construction workers. Of these 64 fatally injured workers, 42 (65%) were involved in traffic incidents and 11 (17%) came in contact with objects and equipment (2). The incidence rate of nonfatal occupational injuries and illnesses among the highway, street, and bridge construction industry is 4.3 per 100 full-time workers, which is 23% higher than the average across all industries (3.5 per 100 full-time workers) (3). A recent analysis of BLS data showed that 53% of fatally injured workers at road construction sites were struck-by a vehicle (10% were drunk) or mobile equipment, of which 59% cases involved a dump truck (4). Among the rest of the fatal injuries, 6% were due to objects falling on the worker, 5% were due to falls from bridges or overpasses, and another 5% were due to electrocution. Additionally, the data showed that flaggers represented 11% of worker occupational fatalities. Loss of situational awareness undoubtedly contributed to many of these worker accidents.

Situational awareness is a worker's ability to capture cues and clues from what is happening around them, then being able to put them together to mean something, and predicting future events, especially potential risks/threats. This is especially important to maintain safety in a constantly changing high risk environment such as the roadway construction work zone. The growing emphasis on accelerating work activities and avoiding normal peak travel times so as to minimize work impacts on the traveling public increases potential for worker fatigue due to more hours of work, and shifting of work times to nights and weekends. Also, prevalence of electronic communication and entertainment devices, along with increased use of, and even reliance on electronic devices as part of work tasks creates a potential for losing situational awareness. Approaches to maintaining situational awareness on the job needs to be very site and situation specific; it depends on the nature of work, environmental conditions, and the individual. Workers need to be trained in recognizing threats and taking measures to reduce their risks. Whereas, managers, agencies, and companies need information on reducing risks of these threats through policies, assessment protocols, and management strategies.

This white paper presents available information and guidance on maintaining worker situational awareness with a focus on fatigue and electronic device use.

WORKER FATIGUE

Fatigue^a is estimated to be a contributing factor in one-third of occupational accidents (5). Studies have established that the performance effects of fatigue are similar to that of drinking; i.e. degraded decision-making, slower reaction times, reduced attention to tasks, forgetfulness, etc (6). Lapses in attention start to increase after one has been up for 16 hours straight, and may be 5 times higher than normal after staying up for 24 hours straight. In addition to impacting the safety and productivity at work, in the long term sleep restriction and extended hours of work may affect the individual's cardiovascular and mental health (7).

A series of focus-group discussions with construction workers in the United States indicated that workers often felt fatigued to the point that they had safety concerns when they worked 10 hours per day for 3 to 4 consecutive days (8). Currently, the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) does not have a specific standard for extended or unusual work shifts (i.e. shifts of more than eight consecutive hours during the day, five days a week with less than eight-hour rest) (9). OSHA does recognize the hazards of worker fatigue and expects employers to do the needful when a worker shows signs/symptoms of fatigue. Fatigue management in the workplace is a shared responsibility between the employers and employees. Although many factors that impact worker fatigue are under the control of the employer, some are not. It is therefore critical that employers and employees partner in developing the best strategies, policies, and procedures for fatigue management in their particular work setting. The employer must arrange schedules of work that provide sufficient opportunities for rest, provide training to support fatigue management, and implement procedures for monitoring and managing fatigue risks. The employee has the responsibility to use the available time to be rested and fit for duty, to attend training and implement recommendations, and to report cases of fatigue for future improvement of the management system.

An integrated fatigue risk management system (FRMS) that combines schedule management, risk assessment, training/education, and fatigue countermeasures is an effective approach to balance safety, productivity and cost (10). FRMS should be based on sound fatigue control principles rather than customs or practices, and accommodate the unique characteristics of the work environment. When adopting an FRMS for a highway construction work site, the seasonal nature of work, and the likelihood of unpredictable schedule changes due to various factors such as weather, unforeseen obstacles, re-works, and so forth should be incorporated in the process. The size and composition of the FRMS however will depend on the size of the company and complexity of the work. One approach to develop a FRMS can be as four successive step process that will over time lead to several layers of defense to prevent fatigue and fatigue-induced errors from developing into incidents. This is illustrated in Figure 1 and discussed below: (11)

^a Worker fatigue discussed in this paper refers to a state of perceived weariness that can result from prolonged working, heavy workload, insufficient rest and inadequate sleep.

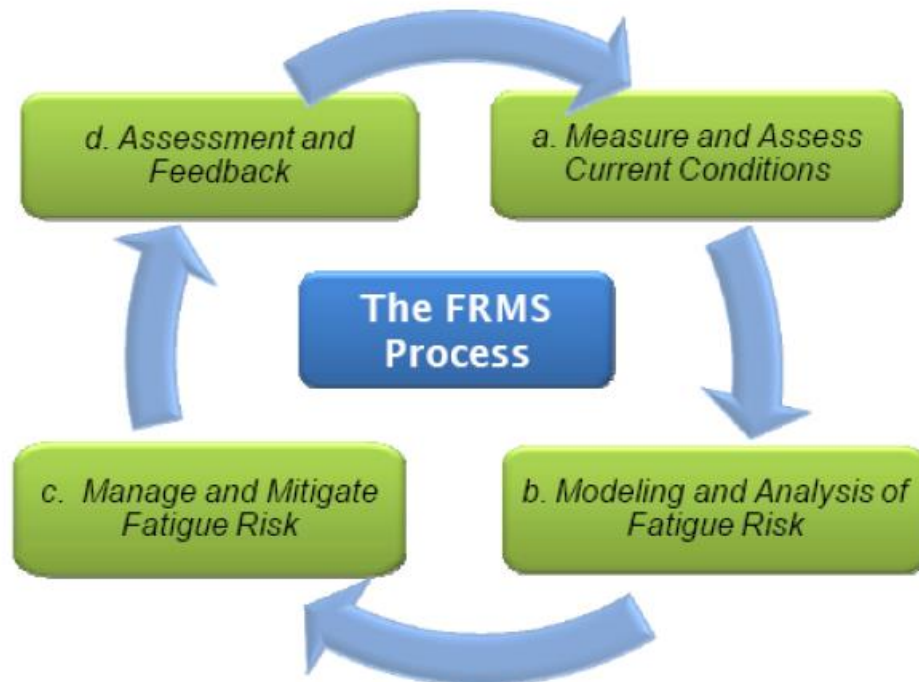


Figure 1. Fatality Risk Management System Framework (11).

- a. **Measure and assess current conditions.** The starting point for any FRMS is measuring and assessing the level of fatigue risk associated with current work patterns and operations. This can be done by collecting worker surveys or reviewing reports of incidents and near misses. It is also important to understand the general prevailing attitude towards fatigue among workers as well as management and assess existing policies/ procedures for fatigue risk management (if any).
- b. **Modeling and analysis of fatigue risk.** Modelling likely schedule scenarios and variations and analyzing the likely associated fatigue risk can help find the specific contributing factors. Various tools (such as Transport Canada's FRMS toolbox) based on biomathematical modeling are available and are frequently used in the aviations industry (12).
- c. **Managing and mitigating fatigue risk.** Based on the findings of the first two steps, a collaborative approach involving the workers and other interested parties such as trade union, should be taken to plan construction activities that incorporate knowledge of fatigue's impact on workers, and to devise and implement countermeasures to control factors causing fatigue and manage any instances of worker fatigue. Countermeasures include worker and manager education and training along with organization practices and procedures outlined in Table 1 and Table 2 that can be tailored to specific project or work site.
- d. **Assessment and feedback.** To complete the cycle, changes to the fatigue control policies and procedures are to be evaluated on how successful they were in reducing fatigue and managing risk. Continuous feedback and monitoring in a conducive no-blame, no-

punitive environment, promotes a safety culture that encourages reporting and learning. Existing organizational practices associated with systematic evaluation and management of a problem, including worker surveys can be employed to obtain feedback.

Worker training and education is a key element in raising general understanding of fatigue effects and developing appropriate workplace-specific solutions. Ensuring that employees understand and embrace their responsibilities to report for duty well rested is just as important as arranging schedules that provide sufficient rest opportunities. In addition to information on recognizing and managing fatigue, training and education efforts should also target the worker's attitude towards fatigue. It is important to emphasize that fatigue can accumulate over multiple days or nights and it is not possible to “will” oneself awake; only remedy is to get enough quality sleep.

Table 1. Organizational Practices and Countermeasures for Fatigue Management.

- | |
|---|
| <ul style="list-style-type: none"> • Consider fatigue in the early stages of the project planning, even at bidding if possible • Arrange schedules of work that provide sufficient opportunities for rest: <ul style="list-style-type: none"> ○ Consider shorter night work schedules (less than 10 hrs/night, with earlier stop times such as 4:30 am) ○ Limit number of consecutive nights of work exceeding 10 hours to only 2 ○ If night work shift exceeds 12 hours, allow a minimum of 9 hours prior to reporting to the next shift ○ Limit the amount of overtime over a week, especially if night work is involved ○ Encourage mid-shift power naps (30 minutes) ○ Give workers a full day off prior to switching between daytime and nighttime shifts (and vice-versa) ○ Avoid requiring double shifts by managers, inspectors, supervisory personnel ○ Encourage a split sleep schedule with a 4 hr “anchor” sleep time that does not change regardless of whether work is performed day or night • Identify any “problem” work patterns by taking an anonymously survey using a format similar to that shown in Figure 2 and Figure 3 • Discourage workers to work for other organizations on off days or times • Incorporate fatigue awareness and detection into overall safety training activities for workers and supervisory personnel • Establish a response (action) that is not unduly punitive, for when fatigue is detected • Establishing a formal reporting and investigation/evaluation protocol for complaints and suspected fatigue-related accidents |
|---|

SLEEP PRIOR TO DUTY

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Please indicate the following times of your sleep period:

IN BED AT	ASLEEP AT	AWOKE AT	GOT UP AT
hrs mins	hrs mins	hrs mins	hrs mins
:	:	:	:

Where did you sleep?

Home ☐ Lodgings/Hotel ☐ Other ☐

After your final awakening, how much more sleep did you require? (circle one number)

no more ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ considerably more

Within the sleep period, please estimate the:

TOTAL NUMBER OF AWAKENINGS	TOTAL DURATION OF AWAKENINGS
	hrs mins
:	:

Please rate the quality of your sleep: (circle one number)

extremely good ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ extremely poor

Was your sleep disturbed by any of the following factors? (tick all that apply)

☐ Thoughts on mind ☐ Light ☐ Other ☐ Aches/pains/physical discomfort ☐ Temperature Please specify: Noise ☐ Not tired

Was the time available for sleep restricted by any of the following commitments? (tick all that apply)

☐ Family/social ☐ Hobbies/DIY ☐ Other ☐ Work ☐ Other employment Please specify:

NAPS PRIOR TO DUTY

If you take any naps/short sleeps prior to your next duty, please record the start time and duration of each nap:

	1st NAP	2nd NAP
	hrs mins	hrs mins
START TIME	:	:
DURATION	:	:

Please add any additional information about your sleep or the following shift here:

Figure 2. Example Format for Sleep Prior To Duty Survey (11).

DUTY

day

mon

year

/

/

Date duty started:

To what extent do you feel you have recovered from your last duty/run of duties?

completely

1

2

3

4

5

6

7

not at all

PLANNED

hrs

mins

ACTUAL

hrs

mins

Duty START time

Duty END time

How much overtime did you work?

NO

YES

Was this originally a rest day?

NO

YES

If 'YES', did you volunteer to work today?

hrs

mins

What time did you leave home prior to this duty?

Please indicate the type of duty

DRIVING/SHUNTING

SPARE

DRIVING UNDER SUPERVISION

OTHER*

* If 'OTHER', please specify

If you were driving/shunting, please complete the following:

Approx. how much time did you spend driving/shunting during this period?

hrs

What was the longest continuous period of time spent in the cab?

hrs

mins

Were there occasions when you experienced 'heavy eyelids' while driving/shunting?

NO

YES

If 'YES', for how long did this last?

mins

** MENTAL FATIGUE RATING

1= fully alert, wide awake;

2= very lively, responsive, but not at peak;

3= okay, somewhat fresh;

4= a little tired, less than fresh;

5= moderately tired, let down;

6= extremely tired, very difficult to concentrate;

7= completely exhausted, unable to function effectively.

SCHEDULED

UNSCHEDULED[#]

How many breaks did you have during the duty period?

hrs

mins

hrs

mins

What was the duration of the longest break?

:

:

What was the total duration of all breaks?

:

:

Consider the longest period of duty without a break (scheduled or unscheduled[#])

hrs

mins

What was its duration?

:

How much of this time was spent driving/shunting?

:

[#] Only include unscheduled breaks when you are not required to do any work, and which last for 10 minutes or more.

NO

YES

Did you nap during the duty period?

mins

If 'YES', what was the total duration of all your naps?

:

If 'NO', would you have napped if you had the opportunity?

NO

YES

What was your level of fatigue at the START of the duty period? (circle one number)

Mental fatigue rating**

1

2

3

4

5

6

7

What was your level of fatigue at the VERY END of the duty period? (circle one number)

Mental fatigue rating**

1

2

3

4

5

6

7

NO

YES

Was there a period during this duty when you felt particularly fatigued?

START TIME

hrs

mins

END TIME

hrs

mins

If 'YES', record the approx. start and end times

:

:

what was your level of fatigue at that time? (circle one number)

Mental fatigue rating**

1

2

3

4

5

6

7

Not at all tiring

A little tiring

Moderately tiring

Very tiring

Extremely tiring

Considering the duty period as a whole, how mentally tiring was it?

:

:

:

:

:

Figure 3. Sample Format for Duty Information Survey (11).

Table 2. Individual Worker Countermeasures for Fatigue Management.

<i>Sleep Debt</i>	<ul style="list-style-type: none"> • Maintain a regular sleep schedule and get as close to your average amount of sleep as possible • Adjust sleeping area to promote good sleep (e.g. curtains and cool temperatures) • For temporary changes in work schedules (i.e., having to work on a particular night), focus on getting full sleep cycle on the two nights preceding the night work shift. • If night work continues over multiple consecutive nights, may need incorporate defensive napping into daily routine in conjunction with daytime sleeping • If intermittent day and night work shifts are required, establish a 4 hour anchor sleep time each 24 hour period and supplement with naps. • Utilize efficient napping: <ul style="list-style-type: none"> ○ 10-12 min power naps can help refresh a worker in the short term ○ Longer naps (<2 hours) scheduled in mid-afternoon prior to a night shift are more beneficial to mitigating sleep debts or if daytime sleeping is less restful and effective. Allocate 15 min or so after waking to become fully alert ○ Naps between 6 and 10 pm are undesirable • Don't take on any extra work that could reduce the time available for sleep, especially, when you are on night shift. • Avoid coffee in the last few hours of work, prior to sleeping. • Alcohol does not promote sleep – instead it lowers the quality of sleep overloads and stimulates the bladder. • Be cautious with the use of sleeping tablets. They may help for a few days but should not be used in the long term. • Be particularly careful when driving home after the night shift. Never drive if you've worked a double shift. • Seek help from your manager or supervisor if you are having difficulty adjusting to a particular shift work.
<i>Fatigue Recognition</i>	<ul style="list-style-type: none"> • Recognize and report symptoms and fatigue related incidents (including near-misses). • Early warning signs of fatigue which should prompt people to look out for more conclusive evidence of fatigue: fidgeting, rubbing the eyes, feeling constantly tired • Signs of moderate fatigue which suggests that performance is being affected. These should be taken seriously - it is not necessary to fall asleep to make a critical error: excessive yawning, staring blankly, frequent blinking • Signs of severe fatigue which suggests very high risk of errors and can lead to brief uncontrollable "micro-sleeps": Nodding head, difficulty keeping eyes open and focused, long blinks
<i>Home/Social Life</i>	<ul style="list-style-type: none"> • Adjust to the household routine or duties where possible. Give your partner or children the opportunity of making suggestions about how you can fit into their activities. • Social life, particularly on weekends, should be organized so you still get adequate sleep.
<i>Diet and Exercise</i>	<ul style="list-style-type: none"> • Try having two meals at the regular times and a light meal in the middle of the night shift. Snack on fresh fruit and milk products and avoid spicy and fried foods. • Consider having the largest meal of the day after the day-sleep • Make an effort to increase your physical activity during leisure time.

Since there is no standards-body oversight concerning working hours and safety in highway construction, fatigue risk management will need to be carried out by individual organizations, within their capabilities. Implementation of FRMS requires an existing safety management system, into which specific policies and practices concerning fatigue mitigation would be introduced. Development and implementation of FRMS is thus very dependent on commitment from the senior management through allotment of adequate resources and consistent stewardship. This is more likely to be the case in larger companies or large joint ventures formed for the purpose of specific megaprojects. Small businesses may lack the time, skilled personnel, or resources to develop complex, systematic approaches to the fatigue aspect of safety management. Additionally, the lack of clear business value can be a setback in gaining management support. In such cases, a responsible employer with good staff support can accommodate the following reasonable fatigue risk management practices into daily work activities and normal contact with staff to manage fatigue (7):

- Involve employees and agree on responsibilities in relation to preventing fatigue
- Monitor actual number of hours worked and allow enough recovery time
- Develop a culture of fatigue awareness with training and education on risk factors and symptoms
- Support staff as far as possible (involve them to find out the best way to do this)
- Be alert for the contribution of fatigue in accident investigations
- Evaluate your fatigue management approach from time to time and gather feedback from employees

One such fatigue control policy is implemented at a small UK based road construction company (13). The policy controls fatigue by having hours of service limitations of: a) no more than twelve hours in any one shift; b) no more than 72 hours in a calendar week; c) a minimum rest period of 12 hours between consecutive shifts; and d) no more than 13 shifts within any 14 consecutive days. Travelling is limited to a maximum of one hour to and one hour from the work site where shifts are of 12 hour duration. Exceedance of these hours in emergency situations is only permitted once the risk of fatigue has been assessed and an acceptable outcome achieved. The policy also allows their employees to discontinue or not start any work if they fatigued to a point that might compromise their or others' safety, and authorizes managers and supervisors to make that decision if they believe the person is fatigued. The company's Managing Director, assisted by the Safety & Environmental Officer and other members of his management team were responsible for implementation of this policy.

ELECTRONIC DEVICE USE

It is believed that multitasking impairs performance. Studies have shown that listening to sentences on a cell phone decreases activity by 37% in the area of the brain associated with driving and also decreased activity in the area of the brain that processes visual information (14). On the job use of electronic devices can lead to inattention or change blindness. Change blindness is a worker's inability to encode the visual information received due to mental work overload. The added mental workload of using electronic devices can mask imminent dangers such as construction equipment, traffic and can lead to unsafe behavior such as falls or unintentional walking into high risk areas. An additional challenge associated with electronic device use is "change blindness – blindness", which is the misplaced confidence in one's ability to identify visual changes, despite their susceptibility to change blindness.

A recent study found that contractors' job-related use of smart phones has increased 35% and use of tablets rose nearly 54% from 2011 to 2012 (15). Given the prevalence of electronic devices on jobsites, guidance on when and where to use electronic devices is very much needed. The few federal rules and state policies currently in place for electronic device use focus on distracted driving and recommend a complete ban while driving. While these policies are applicable to certain drivers/operators on a construction site, they do not provide the guidance needed for workers on foot or around the equipment. Table 3 lists some such job duties where situational awareness and safety may be affected by use of electronic devices.

Table 3. Job Titles and Duties Where Electronic Device Use May Affect Safety and Situational Awareness.

Job titles	Work duties where electronic device use may affect Safety
All workers	<ul style="list-style-type: none">• While driving or operating machinery• Flagging• Spotting for vehicles backing up, crane operation, etc.
Field supervisors, inspectors, maintenance crews, flaggers, survey crews, etc.	<ul style="list-style-type: none">• Communicating on cell phones with other crew members or the office regarding work questions, etc.• Accessing plans, other information via tablets etc.• Documenting assets with electronic forms, photos, etc.• Collecting asset condition information (photos, retrorreflectometers, ground penetrating radar, etc.)
Operators of devices integrated into machinery/ equipment	<ul style="list-style-type: none">• Using back up cameras• Using intelligent compaction instrumentation and readouts• Other electronic device or monitoring equipment

Although there is no clear OSHA legislation on the use of cell phones at a construction site, it is generally covered as a "site rule" or "internal safety rule" and basic training. Some organizations through their construction safety policy require their general contractor/construction manager to have a cell phone policy that at a minimum is required to address:

- Designated “safe zones” for general use of cell phones by workers
- A “No Walking While Talking” policy for work task related cell phone usage
- When a cell phone use is part of an operation, a “Job Hazard Analysis” is required in which the use of the cell phone shall be specifically detailed

In general, currently implemented cell phone policies in various industries can be categorized into three groups: complete ban, restricted business use, and restricted business and personal use (highlighted in Table 4).

Table 4. Features of Currently Implemented Cell Phone/ Electronic Device Policy.

Complete Ban	Restricted Business Use	Restricted Business and Personal Use
<ul style="list-style-type: none"> • Cell phones not allowed on person in the jobsite • No ear buds or Bluetooth connectors • Emergency calls through office/supervisor • e.g. NAC construction, Jefferson City Fire Rescue, City of Norfolk Fire Rescue, Old Castle Materials 	<ul style="list-style-type: none"> • Employee needs written permission for business use • Can use only company-provided device • Business use prohibited while driving except for emergency situations (hands-free is permitted) • Before placing calls, employees are required to stop work activity, disengage the equipment and pull their vehicle to safe area • Personal phones/devices are allowed on personal as long as they securely placed (i.e. they don't fall off or cause distraction) • Personal calls allowed during lunch/breaks only in designated area • e.g. TxDOT Cellphone policy, Flint Co, LLC 	<ul style="list-style-type: none"> • Company-provided device needs to be documented in company's risk assessment and method statement • Calls allowed within identified designated area (briefed in site training) • Device use prohibited whilst walking • Device use prohibited while driving except for operational necessity (signaling/ communication) or emergency situations (hands-free is permitted) • e.g. Costain Group, Corpus Christi Fire Department, Union Pacific

The most common methods of enforcing the policy are honor system, written/signed contracts, training, observation and reporting, post-crash discipline, and random safety audits. In places such as Ontario (Canada) the "Highway Traffic Act" has authority on a construction site, which can be enforced by local police or bylaw officer. A 2009 National Safety Council survey revealed that 86% of the companies with distracted driving plans attempted to enforce them, only 32% were very confident that their enforcement methods were effective at achieving compliance

(16). Less than two-thirds of the respondents with policies were somewhat confident that enforcement methods were effective. The general consensus was that for the policy to be effective, buy-in needs to happen from both the employees and the management. Some respondents felt the need for stricter “zero-tolerance” policies and/or technologies that intercept cell phone use when driving/operating equipment. It is also important to have the employees understand the reason behind the policy, and to have the management be consistent in its actions.

Following is some guidance on developing an effective cell phone policy, which can be tailored to the circumstances of that particular workplace (16, 17, 18, 19, 20):

- **Research and recognize.** Present a good case to the senior management for the need of the policy (in terms of incidents and near-misses). Acknowledge that cellphones are a fact of life now, so rather than implementing a total ban, consider reasonable guidelines to establish proper use of cellphones at work. Use examples from other organizations, particularly those that belong to the same industry. Recognize that effective implementation requires time and commitment.
- **Put it in writing.** A written policy establishes due diligence on the part of the employers and is easier to enforce than one that’s understood but not actually written down. It is recommended that the policy include: purpose, devices covered, persons covered, activities covered, prohibited uses, permitted uses, and penalties for violations.
 - Purpose. Highlight the fact that the policy is not just for the benefit of the employer, but also to prevent worker distraction that could endanger them and their coworkers. Use personal examples/stories to establish this.
 - Application. The cellphone use policy must apply to all company personnel, including management and third-party contractors working on the employer’s site. Define the types of devices the policy applies to, e.g. cellphone, two-way radios, GPS, etc.
 - Prohibition. Outline purpose (personal and work), specific tasks or areas where the use of mobile devices is prohibited as well as permitted. Also indicate suggested countermeasures when electronic device use is needed in a high risk situation. For example, it’s not acceptable to use a cellphone or other handheld devices when operating a moving vehicle or heavy equipment or walking in the job site; whereas it is allowed at designated areas during breaks. If using a cellphone for work task in specific “hazardous” situations use a “spotter”.
 - Violation. State the consequences and disciplinary measures for violation of the policy. For example, receiving a write up, suspension or termination based on the extent of violation.
- **Spread the word.** Do what’s necessary to effectively communicate the policy across the organization to ensure that every worker knows and understand the policy. In diverse crews where experienced crew members work with inexperienced workers, internal communications and discussions facilitate safety knowledge transfer. The information

could be disseminated through e-mails, notes on pay envelopes, safety plans, safety orientations, safety talks, stickers on mobile equipment, signs and bulletin boards. To sustain compliance, it is also important to have periodical training and sharing of new information. Supervisors and workers also need to be trained to identify seemingly low risk situations which can quickly escalate to a high risk situation by losing situational awareness while using an electronic device.

- **Enforce the policy.** Develop an efficient enforcement plan. For example, designate the plan to a “roll-out” team that designs a site-specific roll-out and enforcement plan. The NSC cell phone policy kit with materials for building leadership support and communicate risks and policy details to employees along with a sample one-year roll out plan is a valuable resource (16).
- **Lead by example.** It is important for the management to cultivate a strong corporate safety culture. Having supportive managers who personally demonstrate safe behaviors enhances employee’s compliance.

SUMMARY

Situational awareness is a worker’s ability to capture cues and clues from what is happening around them, then being able to put them together to mean something, and predicting future events, especially potential risks/threats. Fatigue and electronic device use are two common contributors to loss of situational awareness and many worker injuries and fatalities.

An integrated fatigue risk management system (FRMS) that combines schedule management, risk assessment, training/education, and fatigue countermeasures is an effective approach to balance safety, productivity and cost. Since there is no standards-body oversight concerning working hours and safety in highway construction, fatigue risk management will need to be carried out by individual organizations, within their capabilities. In absence of a complex and systematic FRMS, a responsible smaller employer with good staff support can accommodate reasonable fatigue risk management practices into daily work activities and normal contact with staff.

Use of cell phones and other electronic devices at a construction site is generally covered as a “site rule” or “internal safety policy”. A strong electronic device use policy should clearly indicate prohibited uses, permitted uses and penalties for violations. To sustain compliance, it is also important to have periodical training and sharing of new information. Supervisors and workers also need to be trained to identify seemingly low risk situations which can quickly escalate to a high risk situation by losing situational awareness while using an electronic device.

It is recommended that approaches to maintaining situational awareness on the job should be very specific to the site. Nature of work, environmental conditions, and the individual job duties are to be considered when developing and implementing policies and practices to control fatigue or electronic device use.

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