

## **Saskatchewan Work Zone Enhancements**

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## **Saskatchewan Work Zone Safety Enhancement Review**

### **Abstract**

Saskatchewan Ministry of Highways and Infrastructure (MHI) completed a review of its Traffic Control Devices Manual for Work Zones (TCDMWZ) due to an unfortunate August 2012 work zone collision that resulted in the death of flagperson. Fatal work zone collisions in Saskatchewan remain statistically low and do not appear to be increasing; injury work zone collisions are trending upward. Collision analysis show inattention/distraction, road conditions, disregard for traffic control devices and speed are contributing factors in work zone collisions.

To address the worker and motorist safety issues the MHI partnered with Saskatchewan Government Insurance (SGI) and the Ministry of Justice to facilitate the application of a safe systems framework that includes good engineering; strong legislation; adequate/visible enforcement; and timely and targeted education.

Input was solicited from various stakeholders, including the general public, Saskatchewan Heavy Construction Association, police, cities, and the Saskatchewan Safety Council.

The analysis of the input received confirmed four key objectives of the work zone safety enhancement study: to alleviate driver confusion; to enhance driver compliance; to improve jurisdictional consistency; and to enhance contractor compliance of the traffic accommodation specifications.

The study team's methodology included gathering stakeholder input, conducting literature searches, and a jurisdictional survey of provinces. The data gathered was analyzed and binned under the safe system's categories: Engineering; Education; and Enforcement. Each item in the three categories was evaluated further based on its value to meeting the four main objectives. Further analysis included consideration of safety and mobility, legislative requirements and cost.

The key changes to the TCDMWZ focused on the engineering aspect and included setting regulatory speed zones supplemented with black and white speed signs, the addition of rumble strips, gateway assemblies, and speed feedback signs on high volume long duration projects.

Legislation was changed to allow for Automated Speed Enforcement (photo radar) in work zones and tripling of fines for speeding.

To improve education SGI made changes to the driver handbook, while MHI launched a new work zone campaign focusing on regulatory speeds in work zones. Training for contractors and Ministry maintenance staff was provided on the new signing regime and other changes in the TCDMWZ.

Continuing work is focused on improving work zone signage, consistency between MHI and cities in Saskatchewan, and enhancements to the mobile (maintenance) work zones. Evaluation of the feedback from the 2013 implementation and a safety audit of the TCDMWZ were carried out to incorporate changes that would further enhance efficiencies and safety in work zones in the province.

## Introduction

In August 2012 a motorist struck and killed a flagperson in a Saskatchewan construction zone on Highway 39. As a result of the incident, the Saskatchewan Government undertook a review of ways to improve safety in the work zone for highway workers and motorists. The Ministry of Highways and Infrastructure undertook a review of their current policies, standards, practices and guidance relating to mobility and safety in the work zone to address the engineering aspect of work zone safety. Input was sought from key stakeholders who included Saskatchewan Government Insurance (SGI), the Ministry of Justice, the Saskatchewan Heavy Construction Association, the two major Cities in Saskatchewan Regina and Saskatoon, Saskatchewan Safety Council (SSC), Canadian Automobile Association (CAA) and public feedback. The discussion encompassed the 3 E's engineering, education and enforcement.

From the feedback four key objectives were identified as critical in enhancing Saskatchewan work zones as follows:

1. Alleviate confusion for drivers in the work zone.
2. Increase collaboration within the province to increase work zone clarity.
3. Enhance driver compliance.
4. Enhance contractual compliance (specifications).

## Background

Saskatchewan Legislation states that:

No person shall drive a vehicle on a highway at a speed greater than 60 km/hr when passing:

- (a) a highway work or flag person
- (b) any highway equipment occupied by a highway worker, whose presence on the highway is marked in the manner determined in the regulations made by the board; or
- (c) any equipment on a highway that has its ministry issued warning light in operation whether it is in motion or not.

The Highway Identification Regulations State:

Marking of presence of highway workers for the purposes of subsection 37(1) of the Highway Traffic Act

- (a) The presence of highway workers or any highway equipment occupied by a highway worker on a highway is to be marked by the erection of a sign that:
  - (i) Displays a black symbol of a highway worker on an orange background;
  - (ii) Is placed not more than three kilometers in advance of the actual location of the highway workers or any equipment occupied by a highway worker;
  - (iii) Is a minimum size of 60 centimetres by 60 centimetres; and
  - (iv) Is reflectorized or illuminated at night;

Prior to 2012 drivers were required to slow down to 60 km/hr when passing workers on the highway or up to 10 m off the road surface as long as the road work ahead, flagperson, or survey sign was installed. In 2012 a new sign was added to the sign plan that stated 60 km/hr when passing workers.

The Province of Saskatchewan utilized a campaign program where the slogan used was the "Orange Zone" which was in reference to the colour of the temporary signing.

Enforcement in work zones was completed by the Royal Canadian Mounted Police (RCMP) and was requested by the project manager.

## Data Collection

Meetings were held with the Saskatchewan Heavy Construction Association, Saskatchewan Government Insurance (SGI), the Saskatchewan Ministry of Justice, police services, and the Saskatchewan Safety Council. Comments from the public were also encouraged to assist in determining what the main issues were and what could be done to improve the safety in work zones for the motoring public and highway workers. Table 1 shows the input received from the public and stakeholder groups.

Reviews were completed of other Canadian provincial jurisdictions and cities in Saskatchewan to determine what types of alternatives were being utilized elsewhere to enhance safety and mobility in work zones. One of the key focuses was on speed management in work zones. A summary of the survey results are shown in Table 2.

All the ideas generated were grouped into engineering, education or enforcement. All ideas were evaluated to ensure that they met one of the four objectives. The analysis also included consideration of safety, mobility, legislative requirements, cost and consistency with other jurisdictions.

## Collision Statistics

A query of the SGI Traffic Accident Information System data base shows that there were 29,672 collisions on Saskatchewan Highways in the most recently available full reporting year (2011). Of this there were 150 collisions in work zones representing about 0.51% of total collisions. Of the total collisions in the work zone 0 resulted in a fatality. Collision statistics from 2008 to 2012 can be found in table 3.

## 2013 Changes to Work Zone

### Signing/Devices

Engineering factors that were evaluated were signing in work zones, mechanical (?) devices, and intelligent transportation systems. All the signing and devices and their placement were evaluated to ensure that they met with the requirements of an effective traffic control device, which includes such as: that they fulfill a need; command attention; convey a clear, simple meaning; command respect of road users; and give adequate time for proper response.

The following signs were implemented or made mandatory in 2013

- **Workers Present Tab**  
Prior to 2013 there was no tab below the “Road Work Ahead” sign. The sign was added with the intent to emphasize to drivers that they have entered a work zone where workers are present. In the past the Road Work Ahead sign would be left up which gave the drivers the idea that workers were present when they were not.  
The tab is part of the Road Work Ahead sign and therefore both the sign and tab are covered when workers are not present.
- **Regulatory Speed Signs**  
The Ministry’s past practice of using the Road Work Ahead sign to denote a work zone, in conjunction with existing legislation, required the public to slow down to 60 km/hr when they

pass a highway worker. This created confusion to many drivers. Many people were unsure of when they were required to slow to 60 km/hr. Was it 100 m prior to the workers or immediately passing the worker? Also if there were more than one work zone set up within the 3 km you would have drivers speeding up after passing the first workers. The past method did not provide positive guidance for the driver. This also created a lot of confusion for drivers outside of the province who did not know the Provincial laws for travelling through work zones.

With the installation of a 60 km/hr regulatory speed sign at the beginning of the work zone a regulatory speed sign with the original speed of the highway must be placed at the end of the work zone to inform the driver that they can increase their speed.

- **Fines Triple Tab**  
The Ministry of Justice and SGI implemented triple the fines for speeding through work zones in 2013. With this implementation the Ministry of Highways and Infrastructure looked at a number of different ways to inform the driver of the consequences of speeding through the work zone. Inquiries from the public were that they wanted to know where they could get a ticket. Therefore the fines triple at the location where the speed is reduced so the signs were combined to tell the driver the required speed and the consequences of not adhering to the speed.
- **End of Work Area Sign**  
The End of Work Area sign was optional prior to 2013. After discussion with the Saskatchewan Heavy Construction Association a few of their members felt that the sign is required to tell the driver the work zone has ended. This sign is installed in all work zones and is placed as close to the end of the work zone as possible.
- **Passing Permitted Sign**  
The Passing Permitted sign was optional prior to 2013. Similar to the End of Work Area sign it was required to inform drivers of when they can legally pass.
- **Rumble Strips**  
Rumble strips were previously approved to be used in work zones by contractors. The technology for temporary rumble strips had not been advanced enough and created safety issues on the road. This included the rumble strips moving or in some cases even creating damage to the vehicle. New advancements in temporary rumble strips were reviewed and it appeared that the technology for temporary rumble strips had come far enough to allow them to be used in work zones. The Ministry mandated rumble strips to be used on specific construction jobs that were on high volume roads and on projects that were of 5 days in length or longer. The rumble strips were to be installed across one lane of traffic prior to the regulatory speed signs.
- **Variable Message Signs (VMS)**  
Variable message signs have always been mandated for contractors to use on construction projects. The Ministry noticed that there was no standard for what message was displayed on the signs. Therefore the Ministry improved the standard for VMS by providing standards for the location of the VMS such as they need to be placed near the construction zone, and not placed near exits or merges where the driver work load is high. In addition guidance was provided for the number of cycles and the number of words for each cycle. In addition messages with no guidance value such as “Have a Nice Day” should be avoided and only messages that provide concrete verified information should be used to ensure credibility of the signs.  
Variable message signs are typically used at the start of the work zone to provide additional information to the driver.

- **Gateway Assemblies**  
Gateway assemblies are used to denote the outer limits of a construction project. These assemblies give the motorist a heightened visual awareness that they are entering a construction area. They consist of three 240 mm x 3600 mm double sided barricade boards that are placed in the right of way. They are effective in alerting the motorist of a different driving environment. The Ministry mandated the gateways to be installed in work zones on high volume roads and for projects that were greater than 5 days in duration.
- **Radar Feedback Signs**  
Radar speed feedback signs are signs that relay vehicle speeds back to the motorist. The most common type of device is one that utilizes radar or some other method to detect speeds and then relays that information back to motorists via a changeable message display. Although there is conflicting research as to whether radar feedback signs work, some research has shown that radar feedback signs work best in temporary situation such as work zones. Radar feedback signs were mandated to be installed in each work zone on high volume roads where the duration of the project was 5 days or greater. They were to be installed after the speed sign to emphasize to the driver the speed that they are travelling and encourage them to slow down if travelling greater than 60 km/hr.
- **Duplication of Key Signs**  
Duplication of key signs (on both sides of the highway) is used on projects that are greater than 5 days in duration and on two way highways with high traffic volumes. The key signs that are to be duplicated are the Road Work Ahead, Flagperson sign and any regulatory signs. The duplication of key signs is used to supplement work zone signing and provides a heightened visual awareness of what driving behavior to adhere to. It also ensures that the driver is able to see all the signing even if other vehicles are blocking the signs on the one side of the road.

## Education

- **Orange Zone**  
The “Orange Zone” concept refers to the current law in Saskatchewan that defines that drivers are prohibited from travelling greater than 60km/h when passing highway workers and working equipment. An inquiry into other jurisdictions was made to see whether or not they used the “Orange Zone” concept or something similar. The data collected from other agencies across North America show that Saskatchewan is the only jurisdiction using the “Orange Zone” concept. British Columbia, California and Wyoming use a similar concept called the “Cone Zone”. Many other jurisdictions have public awareness campaigns, educating motorists on the work zone. The public perception seems to be that there is confusion between the “Orange Zone” and the Work Area, which is within the “Orange Zone”. The elimination of the term “Orange Zone” was recommended. A new campaign was released for the 2013 construction season that focused on the black and white regulatory speed signs. The campaign’s aim was to educate the motoring public on when they are legally required to slow down in the work zone.
- **Provincial consistency**  
The province sent surveys to a number of cities in Alberta and Manitoba to find out their work zone practices and their similarities to their provincial counterparts. The results can be found in Table 4. The province also met with the cities in Saskatchewan to try and work toward consistency in the province and be able to send out one message to the public. At the meeting with the cities there was discussion to the effect that the two major cities in the province (Regina

and Saskatoon) would be updating their work zone manuals for the 2014 construction season. The emphasis for both cities would be moving towards regulatory speed signs in work zones.

### Enforcement

- Photo Enforcement

Changes to the Traffic Safety Amendment Act have allowed for the creation of highway speed monitored zones for the purposes of measuring and recording vehicles speeds on rural highways in the work zone.

Photo enforcement in work zones was a corroborative project with it being managed by the Ministry of Justice, and input from SGI, RCMP and the Ministry of Highways. The Ministry of Highways provides suitable sites to the Ministry of Justice who provides direction to the vendor. The vendor then uploads the data to the RCMP who issue the ticket. The prosecutors have also been involved to ensure that the tickets would be able to be enforced in a court of law in Saskatchewan.

Photo enforcement was in effect on Provincial highways in work zones from July 2013 to October 2013, with the month of July giving warning tickets to anyone who was caught speeding through the work zone. From August to October almost 2000 tickets were given to drivers. The legislation that allowed for photo enforcement in work zones has a requirement that zones with photo enforcement required signage to inform the driver that photo enforcement may be present on the site. The sign with an image of a camera and a tab below with the words photo enforcement is required on all work zones with a duration of 5 days or greater. The sign was taken out of the TAC Manual of Uniform Traffic Control Devices for Canada to stay consistent with other jurisdictions. The duration of 5 days was chosen because of the requirements to schedule the photo enforcement units.

- Traffic Compliance officers

Traffic Compliance officers were given the authority to ticket all vehicles speeding in the work zones. The start of the 2013 construction season saw a number of construction sites visited by traffic compliance officers. Due to a shortage of trained members the enforcement decreased in work zones throughout the summer.

### **2014 Changes to the work zone**

The 2013 construction season was used as an evaluation period. The Ministry of Highways and Infrastructure received feedback on the work zone improvements from contractors, Ministry staff, and the general public. The Ministry hired a consultant to do a safety audit of the traffic control device manual for work zones. In addition speed limit studies were conducted in a number of work zones to determine if speeds had been impacted by the photo enforcement and sign changes. Findings for speed limits are in table 5.

Concerns were brought up by Ministry staff that there were too many signs at the end of the work zone. It was felt that the regulatory speed sign told the driver that they could speed up and that they were out of the work zone.

### Signing Changes

The End of Work Area sign and Passing Permitted signs prior to 2013 were optional signs. When the review of the work zone enhancements was being undertaken, it was decided that it was important to close the loop on the signage. When a construction sign is posted the end of construction area sign needs to be posted. Also when the Passing Prohibited sign is posted the Passing Permitted sign must be posted. The addition of the signs has no legislative or policy requirements.

The safety audit found that it is important to denote the end of the work zone. From a human perspective the driver will not know the difference between the end of work area and end of work zone sign. It also found that it is important to limit the amount of driver information overload and therefore work zone signs should only provide information to the driver when they need to adjust their speed and/or path [3]. Therefore it is not important to tell a driver the end of work area because they are not required to adjust their speed or path. It was also found that the end of the construction zone did not match up with a passing permitted location and sometimes crews would have to put the sign up a km or more from the construction site, or some crew members would put up the sign where the pavement markings were a solid line.

The Transportation Association of Canada (TAC) has a policy with regards to the passing prohibited sign and it states “The Passing Prohibited sign indicates to drivers that they must not overtake another vehicle within a specified zone. The termination of this zone may be indicated by the placement of a Passing Permitted sign.” [1]

The Saskatchewan Traffic Control Devices Manual only speaks of the two signs being used together in the Passing permitted policy. The Passing Permitted sign may be used at the end of a passing zone where a DO NOT PASS sign has been installed at the beginning of the zone.[2]

The safety audit identifies that it is only important to provide messages to the driver when they are required to adjust their speed or path. The auditors suggest that the passing permitted sign is not critical and therefore could be made optional.[3] This is also the case because pavement markings are used to reinforce the no passing regulation to the driver and there is less risk to drivers and workers at the end of the work zone so messages to the driver can be simplified.

#### Work Adjacent to the Road

A concern was brought forward from the operations group on how to handle the litter picker program with the new signing requirements. Work off the road required the same extensive signing that was required for work done on the road surface.

Other off the road work includes utility companies installing services in the highway right-of-way and at times are not visible from the road surface. Drivers have been found to be non-compliant because it appeared there were no workers present.

The Ministry’s bridge inspection and culvert inspection crews were also concerned with the length of time it took them to put up signs when they were not on the road surface which decreased productivity.

The safety audit report states that in North America roadside activities are not ordinarily marked as construction zones except where men and equipment will remain on the travelled portion of the roadway. The general sentiment is that a work area is clear of the usual path for motorized traffic is not therefore a hazard and motorists should not be warned of the activity. The audit continues to talk about signing from

the perspective of the driver and the worker and concludes that signing for work adjacent to the road surface is intended to alert the motorists to the presence of workers rather than a regulatory function requiring motorists to slow down [3].

There may be situations where the work is being completed off the road surface but vehicles are parked on the shoulder. In these situations the vehicle must have their Ministry appointed flashing light on. This will alert the driver to the hazard on the shoulder.

#### Setting Speed limits

Concerns were brought forward from the public with having to travel 60 km/hr through the entire work zone. There were also concerns brought up by the ASE committee that the majority of people are slowing down but not slowing to 60 km/hr.

A posted speed limit is of no value unless drivers observe it. To be observed it must be realistic, close to the comfortable speed based on driver expectancy. This is true in any driving environment including work zones.

Proper speed limits are:

- a) set on the basis of engineering study;
- b) safe;
- c) enforceable;
- d) obeyed by the majority;
- e) consistent with travel speeds and therefore do not provide a false sense of security;
- f) respected by the public; and
- g) close to prevailing speeds. [2]

The auditors also recommended that the blanket 60 km/h speed limit that is in Saskatchewan legislation is a hindrance to getting driver compliance with regards to speeding in work zones. The auditors point out that the TCDMWZ, under traffic movement, states that the objective should be to route traffic through zones with geometric and traffic control devices as nearly as possible to those encountered for normal highway situations and that traffic movement through the work zone should be inhibited as little as possible. If the overall objective is to attain an acceptable level of safety while maintaining mobility through work zones then the speed limit should not be lowered unless necessary for safety concerns [3]. The TCDMWZ also states that speed control misuse at a work zone can damage the credibility of work zone speed reduction efforts and that practices such as unreasonably low speed limits are to be discouraged [2].

The audit gives guidance on how to set speed limits in work zones and most work zones should only be decreasing speeds by 20 to 30 km depending on the environment and work being done.

#### **Conclusion**

Work zones continue to be a small factor in the collision numbers on Saskatchewan highways but the number is trending upward and therefore work zones will continue to be evaluated. New devices will be implemented as they are developed to inform the driver of their changing environment. The province will continue to work both within the province and on the national stage to have guidelines for work zones developed to help bring consistency through work zones. Legislative changes to allow for various speed limits in work zones are managed through SGI and therefore continued discussions will be held to see if an agreement can be reached to satisfy public desires and public and worker safety.

## References

- [1] Transportation Association of Canada, *Manual of Uniform Traffic Control Devices for Canada*, 5<sup>th</sup> Ed, Ottawa Canada, updated 2013.
- [2] Saskatchewan Ministry of Highways and Infrastructure, *Traffic Control Device Manual for Work Zones*, Regina Saskatchewan updated 2013.
- [3] Transafe consulting and Intus consulting - Saskatchewan Ministry of Highways and Infrastructure Traffic Control Devices Manual for Work Zones – Safety Audit. Technical report prepared for Saskatchewan Ministry of Highways and Infrastructure. File SH-001. July 2014

## Acknowledgements

Saskatchewan Ministry of Justice and SGI.

Table 1  
Raw Data: Public/Stakeholder ideas on how to improve safety in the work zone

Engineering

Suggestion		THEMES									
		Signing	Speed bumps	Out of Service RCMP	Higher Visibility	Contract Enforcement	Detour	Mechanical Solutions	Barriers	Twin Hwy 39	Speed Management
Totals		14	8	1	3	5	2	7	4	1	1
1	Rumble strips		1								
2	Signing on both sides of the road	1									
3	Out of Service RCMP vehicles with lights on in work zone			1							
4	Speed Bumps		1								
5	Highway Zone Signage - Primary Weight Trucks have difficult time slowing the way the signs are placed now. Stakeholder suggested placing warning signs to slow placed at least 1 km before actual work area.	1									
6	review how things are marked in an orange zone	1									
7	Recommended speed bumps placed at regular intervals with signing.		1								
8	Recommended speed bumps - 4 inch thick rope across Hwy is affective with a few 2 inch ropes to serve to alert drivers. The ropes are easily stored and mobile.		1								
9	Recommended portable speed bumps, stiffer fines, Photo radar		1								
10	Suggested present signing more meaningful if they were regularly monitored and updated.	1									
11	Recommended speed bumps in the orange zone.		1								
12	Suggested worker use anything but orange in the active orange zone because it blends with				1						
13	Fining contractors who don't remove or cover signs.					1					
14	Deploying enforcement in a different way.					1					
15	Close Highway and reroute Traffic						1				
16	Mechanical Traffic Solutions - traffic lights							1			
17	Workers Vests blend with fleet vehicles - a different colour needed?				1						
18	Make the workers more visible by lighting them up and using an air horn				1						
19	Traffic Light system on jobs to control traffic							1			
20	Barriers used to separate workers from through traffic								1		
21	Pilot Vehicles							1			
22	Remote Flag person managing mechanical device							1			
23	Rumble strips		1								
24	Design the route to force the driver to slow down										1
25	WiFi system for communicating with drivers							1			
26	Clear Messaging on message boards	1									
27	Pylons to delineate the area around the flag person								1		
28	Training of Flag people and work zone supervisor and zone audits					1					
29	Put up the courtesy signs announcing the construction zone prior to project starting	1									
30	More signage with orange barricades with portable flashing lights, pilot vehicles used more (95% in Montana); onus is on the contractor to make the work zone safe for workers - what ever is needed.	1						1	1		
31	Warning signs announcing photo radar is being used on the construction zone; use photo radar within the work zone; issue tickets to speeders with photo radar	1									
32	Construction siging needs to be consistent between jobs, jurisdictions; needs to reflect current conditions on the work zone; some indication to the driver the work zone is active that the driver can expect to see activity and slow down	1				1					
33	There is increased fine for speeding through a construction zone but it isn't really marked different than under controlled conditions of a regular highway. - Signing	1									
34	Eliminate "passing permitted" sign - it seems to confuse people	1									
35	Number of ideas: position flag person in a trailer with view in both direction of work zone, remote control of lights with a method of communication to workzone workers of potential unsafe situation. Trailer would be removed out of danger zone	1						1	1		
36	Enforce the covering of the "slow to 60 km/hr when passing workers					1					
37	Twin Highway 39									1	
38	Rubber speed bumps would slow down traffic.		1								
38	Detour traffic during construction						1				
39	Review of orange zone signing it is ambiguous.	1									
40	Review what is an orange zone versus a warning of danger	1									

Education

Education		Themes				
Suggestion		Orange zone Education	More Signs	Education Campaign	Consistency between jurisdictions	On-going collaboration
	Totals	8	3	4	2	1
1	More Signs alerting drivers of the fines in work zones.		1			
2	Warning signs regarding "Fines double in work zones".		1			
3	Stronger Public education on the Orange Zone for sure.	1				
4	Recommends a new education campaign to re-educate the drivers.			1		
5	Recommended a media blitz with shock value (i.e. sandbox with children in workzone).			1		
6	Consistency in the workzone through out the province.				1	
7	Consistency between workzones across the province				1	
8	Increased focus on Drivers Education Training - very little mention about orange zone safety ... full course and could provide questions regarding orange zone on the test	1				
9	Personal advertisements on orange zone	1				
10	Blurb on the Highway Hotline about Orange zone safety	1				
11	Make the rules on the orange zone clearer - having 2 sets of rules will lead to more trouble (one rule for passing workers and equipment, second rule is when there is no workers in the ROW)	1				
12	Increase fines and jail time for killing a worker in workzone in conjunction with a awareness blitz throughout the province reminding drivers of the penalties.		1			
13	Training of Flag people and work zone supervisor and work zone audits	1				
14	Collaboration and information gathering from General Public - what is working and what isn't working					1
15	Shock signing - "The 3D image will look like an indistinguishable mark from far away, but by the time the driver "is within 30 metres, the image of the girl and ball will become clear.			1		
16	Orange Zone advertising campaign using television, radio, videos print and billboards. Use the fiancee to promote safer zones - he has been very open to date so there may be a willingness to participate.					
17	Surveys to test the publics knowledge of orange zone - similar to surveys in 2010 - taken from the executive summary attached in the email - gives a measure of how much the public actually remembers from the ad campaigns etc.					
18	Increased focus and attendtion on driver education classes					
19	Increased communications: Workzone respect, RCMP			1		
20	The signing in a work zone is ambiguous and confusing. The driver asked questions regarding long projects that have 3 sets of construction signs when do you slow down and when can you increase your speed.	1				
21	Orange Zone definition; what is a standard orange zone. What does it mean when they use orange pylons and there is no zone. Consider orange for the orane zone and red to indicate danger.	1				

Enforcement

Suggestion		Themes				
		Financial Penalty	Non-Financial Penalty	Police Presence	Signage	Legislative Change
	Totals	15	11	26	3	5
1	Increase the fine.	1				
2	Demerit points on driver's licence.		1			
3	More enforcement.			1		
4	Traffic Coppers giving tickets in workzones.			1		
5	Take Away License.		1			
6	If you kill a construction worker the fine is ??? And ??? Years in jail.		1			
7	Change the policy an allow Traffic Officers to do enforcement involving Private/Light Vehicle plated vehicles.			1		
8	Increased fines and penalties for motorists failing to slow to 60.	1	1			
9	Justice and MHI to look at stiffer fines and penalties who blow through construction zones.	1				
10	Asked Ministry to look at laws and penalties in other jurisdictions.	1	1			
11	We feel Highway traffic officers should be utilized in the work zones.			1		
12	Deploying enforcement in a different way.	1	1	1		
13	Increased penalties and enforcement.	1		1		
14	Police should be placed on notorious construction zones to control traffic, roadside camera units that are recording the speed, time and licence plates - \$1,000 ticket.	1		1		
15	Would like to see more police enforcement.			1		
16	Consider doubling all fines in the construction zones. Done in Calgary on Crowchild all vehicles adhere to speed posted.	1				
17	Rcommended install absolute speed limits not modified with conditional phrases (i.e. when passing workers).				1	
18	Recommended portable speed bumps, stiffer fines, Photo radar.	1	1	1		
19	Recommended presence of patrol car with lights flashing, alternately a trailer that has radar, posts your speed and flashes if you are over the limit.			1		
20	Work with RCMP to Pay overtime to officers to work in the construction work zones			1		
21	Recommended stiffer fines of \$1,000 and \$5 every km you are over the posted speed.	1				
22	Photo Radar			1		
23	Speed Trailor			1		
24	Seizure of vehicles for infractions		1			
25	Target Commuter Traffic travelling through workzone			1		
26	Random Enforcement			1		
27	Need a clause in the HTA regarding passing vehicles in the construction zone					1
28	Higher fines in conjunction with a court appearance	1	1			
29	Transport Officers presence on jobs			1		
30	Touch Base with local RCMP detachment communicating job details			1		
31	Use Municipal Bylaw enforcement officers to give tickets in work zones			1		
32	Make the rules on the orange zone clearer - having 2 sets of rules will lead to more trouble (one rule for passing workers and equipment, second rule is when there is no workers in the ROW)					1
33	More enforcement as part of a campaign regarding driving basics - solid line versus dotted line			1		
34	Use the retired or "seasoned" Highway Traffic Officers to work in the work zones.			1		
35	Prosecute drivers to the full extent of the law - comment directed specifically at the driver who hit the flag person	1	1			
36	Increase fines and jail time for killing a worker in workzone in conjunction with a awareness blitz throughout the province reminding drivers of the penalties.	1	1		1	1
37	Lack of RCMP presence and lack of desire to enforce speed limits make our highway unbearable			1		
38	Everyone should re-test for their drivers license every 5 years					1
39	Speed zone could be variable depending on situation - Montana's are variable but as low as 40 km/hr; Use of radar enforcement;			1		1
40	Warning signs announcing photo radar is being used on the construction zone; use photo radar within the work zone; issue tickets to speeders with photo radar	1		1		
41	Increase the fines in the work zone and add additional signs to advertise the higher fines; increased enforcement - seasonal blitz by RCMP and audits of traffic accommodation	1		1	1	
42	Contractors expressed in funding overtime for RCMP members to provide police protection - referred to as Pay Duty which uses regular force officer on their days off.			1		
43	Enforcement using traffic cameras similar to the red light cameras			1		

Table 2 – City Survey Results

Question	Grand Prairie	Lethbridge	Medicine Hat	Red Deer	Brandon
<b>1. Does your city have regulations or policies or a manual for work zone signing?</b>	Construction standards and follow provincial standards	No manual, developing one.	Yes.	No, reference manual only	Yes.
<b>a. If no, do you use provincial standards, TAC standards</b>		Alberta Construction Safety Association course is our basis. Follows provincial and TAC standards		Yes, for the most part follow MUTCD	
<b>b. If yes, could you provide a copy (please attach to email)</b>	-				
<b>2. What is the work zone speed limit on high speed, high volume collectors, arterials and freeways?</b>	70 and 60 km/h reduce to 50 km/hr or 30 km/hr depending on work involved. 50 km/h reduce to 30 km/h	50 km/h	30 km/h	Depends on work activity	100 reduces to 60, 80/50, 70/45, 60/40
<b>a. Is it regulatory or advisory</b>	Regulatory	Regulatory	Regulatory	Regulatory, but not usually enforceable	Regulatory
<b>b. Please indicate the colour of your signs</b>	Black on orange	Black on white	Work Zone signs (construction) are orange and black. The speed limit signs are white and black.	Black on white	Black on orange; regulatory
<b>3. What are the speed violation penalties?</b>	Double normal fines		Violation penalties determined by police as defined through Alberta Traffic Safety Act	N/A	

<b>4. Is photo radar used in work zones?</b>	Yes	Not typically, however police presence has been used	Photo radar at the discretion of the police department.	No	
<b>5. Are any other ITS used? (electronic boards, speed display, etc.)</b>	Speed display board has been used in the past, but not this year.	Speed display trailer, electronic message board, public service announcement, arrow board	Message boards are used.	No	Depending on the traffic accommodation, message boards/arrows are used.
<b>6. Are any performance measures or audit processes used?</b>	No	If there are ever issues, a meeting is held with involved parties to discuss what went wrong and how to prevent the same situation in the future	Not at this time.	No	
<b>7. Have the work zone regulations been reviewed recently? Are any changes being considered?</b>	Review them on an annual basis	Require ACSA certification, which is valid for 3 years.	The regulations are continuously reviewed, and changes will be considered.	No	
<b>8. Are the city regulations consistent with the provincial regulations?</b>	Generally	Yes	Yes.	For the most part.	Yes.
<b>9. Are signs covered when workers aren't present or are the signs in effect 24 hours?</b>	24 hours/day	flag person signs, etc are - but temporary condition signs (bump, for example) are not.	This depends on the traffic accommodation and the contractor.	Usually covered or turned around	24/7

Table 3 – Collision in Work Zone Statistics

	Collisions Occurring in Work Zones				TOTAL Collisions				Work Zone as a % of Total			
Year	PDO	Injury	Fatal	Total	PDO	Injury	Fatal	Total	PDO	Injury	Fatal	Total
<b>2008</b>	68	19	1	88	23,122	5,143	133	28,398	0.29%	0.37%	0.75%	0.31%
<b>2009</b>	72	26	1	99	25,440	5,046	129	30,615	0.28%	0.52%	0.78%	0.32%
<b>2010</b>	107	28	2	137	23,975	4,758	145	28,878	0.45%	0.59%	1.38%	0.47%
<b>2011</b>	89	61	0	150	24,369	5,166	137	29,672	0.37%	1.18%	0.00%	0.51%
<b>2012*</b>	123	46	1	170	24,185	5,502	153	29,840	0.51%	0.84%	0.65%	0.67%

Notes:

PDO – Property Damage Only

Work zone collisions are defined as occurring in a zone where construction or maintenance of the roadway is accompanied by special signing, reduced speed limit and/or flagpersons present.

Only collisions that exceed \$5,000 are recorded.

2012 is preliminary

Table 4 – Speed Data

Location	85% Speed	Type of Work	Comments
Hwy 1-14	61.4	Bridge Crossing	
Hwy 2-09	65	Bridge Work	Traffic Signals Present
Hwy 2-15	69	Grading	No flag person traffic signals were used
Hwy 10-06	69.7	Culvert	Both lanes open
Hwy 11-01	60	Bridge Crossing	Traffic reduced to one lane in the northwest lanes
Hwy 11-10	61		
Hwy 15-09	44	Road work	Down to one lane
Hwy 16-23	70.2	Road Construction	
Hwy 305-01	65		
Hwy 1 and Lewvan	69		