In the fall of 2012 the City of Lethbridge, AB, Canada, invited representatives from Fortran Traffic and Solar Traffic Controls to discuss options for pedestrian safety projects within the city. The city is bisected by the Old Man River and includes a wide river valley with one of the largest urban parks, Botteril Bottom Park, in North America at 755 hectares (1,865 acres). One of the city’s main arterials, Whoop-Up Drive, runs through the river valley and through the park and features both high volumes and high speeds as this is only one of two ways to get across the river. One particular location along Whoop-Up Drive presented an opportunity to combine both traffic calming and pedestrian safety into one project to make access to the park safer for local residents trying to use the trails.

The Application Site

The location selected is at the intersection of Whoop-Up Drive and another major arterial along the edge of the Botteril Park, Scenic Drive South. Vehicles traveling eastbound on Whoop-Up Drive use a transition road to merge into southbound traffic on Scenic Drive. The eastbound traffic from Whoop-Up is traveling uphill to get out of the river bottom and, as mentioned earlier, at a high rate of speed from crossing the open expanse of the river valley and the park. Traffic heading south on Scenic Drive is heading down hill where the transition road from Whoop-Up Drive meets Scenic Drive. The merge lane is not very long, so drivers on the transition road tend to spend a lot of effort looking over their left shoulder getting ready to merge onto southbound Scenic Drive. Couple this with a pedestrian crossing on Scenic Drive near the end of the transition road and there was an unsafe situation for both motorists and pedestrians. Figure 1 shows a relative layout of the site.

It was decided by the Lethbridge traffic team, consisting of Greg Steel, signal shop foreman, Jinsong Qi, and Ahmed Ali from traffic engineering, to design and install a safer crossing for pedestrians at the merge point. To do so the team decided to use Rectangular Rapid Flash Beacons (RRFB) due to the high success rate reported in studies in the US and parts of Canada. Reports from installations and pilot studies throughout the US and Canada are indicating that a high percentage (upwards of 98%) of motorists are complying with these new beacons. The RRFB indications offer an alternative to traditional round beacons and use two high-intensity alternating rapid flashing rectangular lamps as the indications to motorists.

The layout of the project includes a set of advance RRFB beacons on each side of the transition road. At the crossing there are RRFBs on each shoulder and an overhead unit as well. To further enhance pedestrian safety, an LED Driver Feedback (DFB) sign was installed in advance of the first set of RRFB lamps. AC power was already available at the site so the Lethbridge team decided to use this power source rather than going solar. Figure 2 shows a layout of the final installation.

Driver Feedback Station

As motorists proceed on the transition road from Whoop-Up to Scenic Drive, they first see the radar sign with a regulatory speed limit sign as shown in Figure 3. The unit is a Trafficalm Driver Feedback Urban (DFBU) configured to show values from 20-99KPH. It includes an AC/DC power source to provide...
12VDC to the sign. In addition, the beacon output function was activated for all speed levels and is used to trigger a relay interface whenever the radar sign detects a vehicle. This relay interface sends a 120VAC signal back to the master control enclosure at the crosswalk. The display was also configured to show solid yellow digits when under the speed limit, as well as flashing yellow and flashing red numerals for vehicles exceeding the speed limit.

**Advance RRFB Station**

Motorists then encounter the advance RRFB indications preceding the crossing. This point consists of two Type 1 RRFB indications with 3”x7” lamps on the leading edge of the assembly, facing oncoming traffic. When the main crossing control is active, this location acts as a slave to the main crosswalk. Run time for this is set on the main RRFB control unit. This location includes its own AC/DC power supply, RRFB driver module, and an opto-isolator interface for receiving commands from the master control unit. In addition it includes a self-test function to allow testing of the station function. Figure 4 shows the view that drivers have of the equipment at this location.

**Crosswalk RRFB Station**

Finally, the pedestrian crossing is reached. This consists of a modified version of the STC AC RRFB control unit and was configured to drive three lamp assemblies. As shown in Figure 5, one lamp assembly, a Type 1 indication, hangs from the overhead sign directly over the crosswalk. This is flanked by a pole with the pedestrian warning sign and a Type 2 RRFB on each pole. The Type 2 units vary from the Type 1 in that each one of them includes an end cap confirmation lamp for the pedestrian to see that the system is active. This location includes a master control unit with AC/DC power supply, logic/timing control module, RRFB driver module, opto-isolator interfaces, built in self-test function and vandal resistant button assemblies. One special requirement the city wanted on this control unit was an auxiliary output for a supplemental pedestrian warning sign. It seems that in today’s highly interconnected world that many pedestrians are too busy checking their smart phones and disregard their responsibility to check the street before crossing. STC designed the system so that whenever the RRFB lamps are in operation and a car is detected by the radar sign, the auxiliary output is activated at the crosswalk. The city plans to include an additional LED enhance sign of their own design to face into the crosswalk and warn pedestrians to be aware of approaching cars since the cars may not be paying that much attention to them. As previously mentioned, the radar sign had a relay output interface that is active whenever the unit is displaying the speed of an approaching car. This output is a 120VAC signal that comes back to the master control unit and is converted into a DC logic value using an opto-isolator interface. Due to the distances between points in the project and the presence of AC power wiring, no DC levels were used to pass logic signals between points. All logic signals were passed as DC values and converted using the opto-isolators to convert at the end points.

**Final Results**

The system has been in the ground for approximately 1 year now so the city has had time to make observations on the performance. City personnel report that they are seeing results in agreement with published reports on the effectiveness of RRFB indications at this location. As a result, the city plans to investigate using the RRFB product.
Fire Alarm — cont. from page 41

23.11.5 Releasing service fire alarm systems used for fire suppression–releasing service shall be provided with a disconnect switch to allow the system to be tested without actuating the fire suppression systems.

23.11.5.1 Operation of a disconnect switch or a disable function shall cause a supervisory signal at the releasing service fire alarm control unit.

23.11.5.2 The disconnect shall be a physical switch and not be accomplished by using software.

23.11.5.3 Software disconnects, even if activated by dedicated buttons or key switches, shall not be permitted as a method to secure a suppression system from inadvertent discharge.

23.11.6 Sequence of operation shall be consistent with the applicable suppression system standards.

23.11.7* Each space protected by an automatic fire suppression system actuated by the fire alarm system shall contain one or more automatic fire detectors installed in accordance with Chapter 17.

A.23.11.7 Automatic fire suppression systems referred to in 23.11.7 include, but are not limited to, preaction and deluge sprinkler systems, carbon dioxide systems, Halon systems, and dry chemical systems.

23.11.8 Suppression systems or groups of systems shall be controlled by a single releasing service fire alarm control unit that monitors the associated initiating device(s), actuates the associated releasing device(s), and controls the associated agent release notification appliances.

23.11.9 If the configuration of multiple control units is listed for releasing device service, and if a trouble condition or manual disconnect on either control unit causes a trouble or supervisory signal, the initiating device on one control unit shall be permitted to actuate releasing devices on another control unit in lieu of 23.11.8.

23.11.10 If the releasing service fire alarm control unit is located in a protected premises having a separate fire alarm system, it shall be monitored for alarm, supervisory, and trouble signals, but shall not be dependent on or affected by the operation or failure of the protected premises fire alarm system.

23.11.11 Releasing fire alarm systems performing suppression system releasing functions shall be installed in such a manner that they are effectively protected from damage caused by activation of the suppression system(s) they control.

While this seldom applies to range hood and cooking surface extinguishing systems, you should become familiar with the implementation of these requirements in case they arise in some unusual and particular design. In fact, with so many systems concentrated in one general area, you may find some cost savings in using just such a design.

With regard to alarm signal and occupant notifications, NFPA 72-2013 states the following requirements:

17.13* Detection of Operation of Other Automatic Extinguishing Systems. The operation of fire extinguishing systems or suppression systems shall initiate an alarm signal by alarm initiating devices installed in accordance with their individual listings.

A.17.13 Alarm initiation can be accomplished by devices that detect the following:

1. Flow of water in foam systems
2. Pump activation
3. Differential pressure
4. Pressure (e.g., clean agent systems, carbon dioxide systems, and wet/dry chemical systems)
5. Mechanical operation of a release mechanism

As you can see, this subject has aspects that might prove far more complicated than it seems at first examination. You did well to seek some assistance. When you prepare your initial design, I suggest you consult with a licensed professional fire protection engineer. Once you receive the engineer’s comments and design suggestions and you implement those suggestions, you can then confidently submit your design for approval to the AHJs for this particular project.

Traffic — cont. from page 43

uct in other locations around town that can benefit from the additional safety provided.


Figure 5. Crosswalk location at the end of the transition road from Whoop-Up to Scenic Drive.