



CCDC Parking Garage Pedestrian Safety Review

Final Report

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Prepared for:



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1 PROJECT OVERVIEW

As a compliment to its 2015 Parking Strategic Plan project, CCDC engaged Kimley-Horn and Associates to conduct an assessment of parking garage pedestrian safety issues specifically related to parking garage entry/exits for its downtown parking system.

1.1 Background

CCDC has always placed a priority on public safety issues related to its off-street parking assets. In 2015, the agency issued a new RFP for On-Call Parking Consulting Services. Through this process, Kimley-Horn and Associates was engaged as CCDC's on-call parking consultant. With the pending "sunsetting" of the Central Tax Increment Financing (TIF) district, the agency is embarking on a number of parking planning initiatives including a new parking strategic plan, a parking rate assessment, a parking system branding and signage plan and other initiatives. In conjunction with this higher level planning work, CCDC is also reassessing several specific operational areas of its program. One of these operational areas is a review of parking garage pedestrian safety issues.

2 CURRENT CONDITIONS ASSESSMENT

2.1 Current Parking Garage Entry/Exit Pedestrian Safety Practices

Introduction

Enhancing Pedestrian Safety in Parking Environments

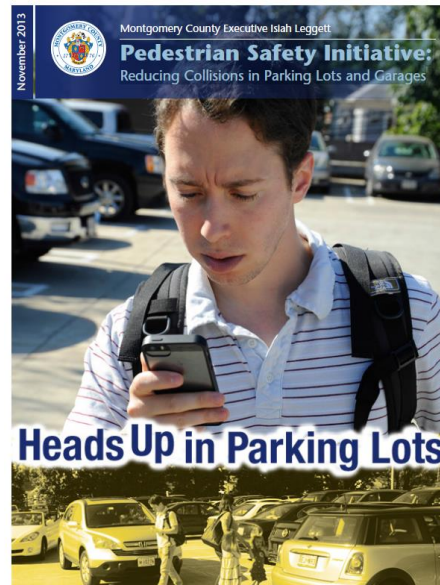
Promoting pedestrian safety in parking environments (parking lots, garages and vehicular drop-off areas) is one of the primary goals of parking professionals, planners, and property managers – and with good reason. Studies show that as many as one in four pedestrian-related accidents occur in parking lots. Of these, about 20% result in severe injury or death. With such a large number of accidents occurring in parking areas, doing everything possible to promote safety in these locations has become a top priority of responsible agencies across the nation.

Fortunately, many communities have taken effective steps to reduce the number of local parking lot accidents. One excellent example is Montgomery County, MD, which has conducted an active campaign of this type since 2010. Some of the measures implemented in Montgomery County include the following:

- Placing safety awareness messages in high-traffic areas like grocery stores, apartment complexes, and on city busses.
- Showing public service trailers in movie theaters prior to motion pictures.
- Holding press conferences and other media events to highlight the importance of parking lot pedestrian safety.
- Conducting focus groups with segments of the population, such as seniors and school aged children, who are at especially high risk for parking lot-related accidents.

This campaign has been highly successful in reducing the number of accidents in the area. It serves as proof that parking lot pedestrian safety can be enhanced by sharing tips with the public. A copy of the Montgomery County publication entitled: “Pedestrian Safety Initiative: Reducing Collisions in Parking Lots and Garages” is provided in the appendices of this report.

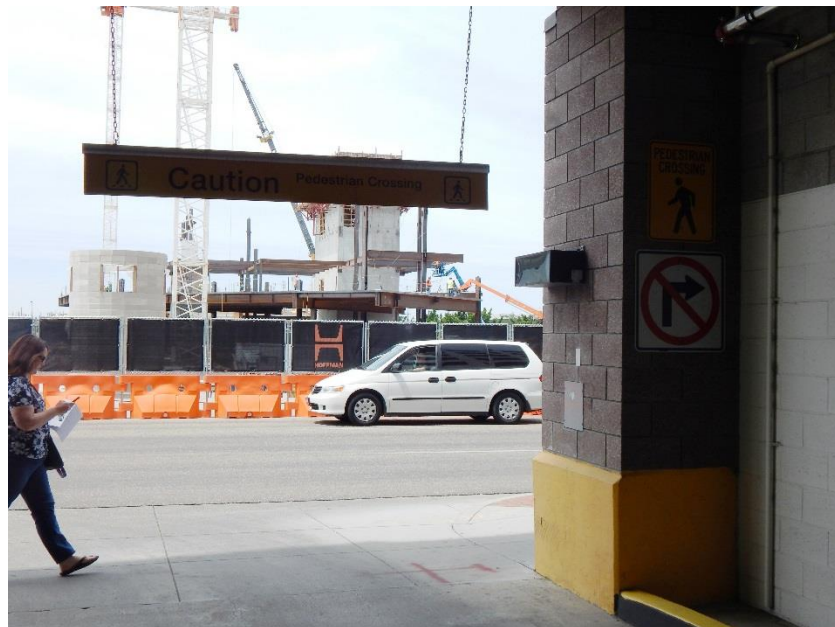
Parking lot pedestrian safety becomes ever more crucial as the US and the world continue to develop economically. Reducing the number of accidents that occur in these areas is a task that concerns both private citizens and government officials. But by using public channels to promote awareness and caution, ways can be found for pedestrians and drivers to use these areas without fear and with minimal danger.



Another important trend to note is the dramatic escalation in the use of smart phones, text messaging and mobile devices in general. The term “distracted driving” is now well known in our culture and the impact of this new behavior is well documented as a major factor in the rise of automobile accidents nationwide. What is less well known is that the same phenomenon applies to pedestrians, especially pedestrians in parking lots and on public sidewalks.

Focus on Pedestrian Safety at Parking Garage Exits

One statistic from the Montgomery County report that stood out is that 13% of parking related accidents involved vehicles entering or exiting parking facilities. Ironically, this is one area in which this report was found lacking in terms of recommendations. In fact, Montgomery County could learn several lessons from practices embraced by CCDC.



CCDC currently employs several effective tools to mitigate potential pedestrian safety concerns primarily focused on vehicular exits from parking facilities. At many of these garage egress points, exiting vehicles must cross pedestrian sidewalks. CCDC has adopted the following practices related to these conditions:

1. For garage exit lanes that cross active sidewalks, the following practices are employed:
 - a. **Caution Car Coming Electronic Signage** - Installation of "Caution Car Coming" electronic signage is provided and oriented to alert pedestrians on the sidewalk
 - b. **Audible Alarms** - Supplementing the "Caution Car Coming" electronic signage is an audible alarm programmed to engage when the signage is activated
 - c. **Signage and Alarm Activation Systems** - The "Caution Car Coming" electronic sign and audible alarm are activated when exiting garage vehicles pass over the last inductive loop in the exit lane or in some cases a laser beam system is used as the activating mechanism. Tri State Electrical is the current service vendor for the Downtown Public Parking System. SICK Safety Solutions is the manufacturer of the exit lane laser systems.
 - d. **Convex Mirrors** - As a supplement to the devices noted above, CCDC also employs convex mirrors in some locations. The convex mirrors allow both vehicle drivers and pedestrians to see around sharp corners.
 - e. **Transitional Lighting** – The Illuminating Engineering Society of North America (IESNA) is the professional association that defines lighting standards for parking garages. In very general terms, recommended lighting levels in most garage areas is approximately 5 footcandles (fc). However, at garage entry exit areas the recommended lighting level is 50 fc. This enhanced level of lighting is known as "transitional lighting". Transitional lighting assists drivers entering darker garages from a bright exterior environment. The additional lighting provided within the first 50 to 100 feet of a parking garage allows the driver's eyes to adjust to the darker environment. This is especially important in garage entry exit areas where pedestrian activity occurs.

3 CURRENT PARKING GARAGE ENTRY/EXIT PEDESTRIAN SAFETY EQUIPMENT INVENTORY

The following table documents the inventory of parking garage pedestrian safety equipment currently in place in CCDC garages:

CCDC Parking Garage Pedestrian Safety Equipment Inventory – June 2015			
<u>Garage</u>	<u># of Exit Lanes</u>	<u>Devices</u>	<u>Location/Quantities</u>
Eastman Garage	2 9th Street Exit and Idaho Street Exit	<ul style="list-style-type: none"> • Convex Mirrors • “Caution Car Coming” neon signs • Horn/Audible Warning Devices • Laser Sign/Alarm Activation System • Overhead Sign reading: “Caution: Pedestrian Crossing” • Wall mounted sign reading: “Stop Watch for Ped Xing” 	<p><u>9th Street Exit:</u></p> <ul style="list-style-type: none"> • 2 Convex mirrors • 1 “Caution Car Coming” neon sign. • Horn/Audible Warning Device • 1 wall mounted sign: “Stop Watch for Ped Xing” • Laser Sign/Alarm Activation System <p><u>Idaho Street Exit:</u></p> <ul style="list-style-type: none"> • 1 Convex mirror • 1 “Caution Car Coming” neon sign. • Horn/Audible Warning Device • 1 overhead mounted sign warning about pedestrian crossing • Laser Sign/Alarm Activation System
Capitol Terrace	2 Capitol Blvd. Exit and Idaho Street Exit	<ul style="list-style-type: none"> • Convex Mirrors • “Caution Car Coming” neon signs • Horn/Audible Warning Devices • Laser Sign/Alarm Activation System 	<p><u>Capitol Blvd. Exit:</u></p> <ul style="list-style-type: none"> • 2 Convex mirrors • 1 “Caution Car Coming” neon sign. • Horn/Audible Warning Device • 1 wall mounted sign: “Stop Watch for Ped Xing” • Laser Sign/Alarm

			<p>Activation System</p> <p><u>Idaho St. Exit:</u></p> <ul style="list-style-type: none"> • 2 Convex mirrors
City Centre	<p>2</p> <p>9th Street Exit and Front Street Exit</p>	<ul style="list-style-type: none"> • Convex Mirrors • “Caution Car Coming” neon signs • Laser Sign/Alarm Activation System • Overhead Sign reading: “Caution: Pedestrian Crossing” • Wall mounted sign reading: “Stop Watch for Ped Xing” • Transitional lighting 	<p><u>9th Street Exit:</u></p> <ul style="list-style-type: none"> • 1 Convex mirror • 2 “Caution Car Coming” neon signs. • 1 wall mounted sign: “Stop Watch for Ped Xing” • 2 overhead mounted signs warning about pedestrian crossing • Transitional Lighting <p><u>Front Street Exit:</u></p> <ul style="list-style-type: none"> • 2 Convex mirrors • 1 overhead mounted signs warning about pedestrian crossing
Myrtle Street	<p>2</p> <p>Exits into Alley</p>	<ul style="list-style-type: none"> • Convex Mirrors • Overhead Sign reading: “Caution: Pedestrian Crossing” 	<p><u>Alleyway Exit:</u></p> <ul style="list-style-type: none"> • 2 Convex mirrors • 2 overhead mounted signs warning about pedestrian crossing
Boulevard Garage	<p>1</p> <p>Capitol Blvd. Exit</p>	<ul style="list-style-type: none"> • “Caution Car Coming” neon signs • Horn/Audible Warning Devices • Laser Sign/Alarm Activation System 	<p><u>Capitol Blvd. Exit:</u></p> <ul style="list-style-type: none"> • 1 “Caution Car Coming” neon signs • 1 Horn/Audible Warning Devices • 1 Laser Sign/Alarm Activation System
Grove Street	<p>2</p> <p>Grove Street Exit</p>	<ul style="list-style-type: none"> • Small “Not a Pedestrian Exit” sign on parking gate housing 	<p><u>Grove Street Exit:</u></p> <ul style="list-style-type: none"> • 2 Small “Not a Pedestrian Exit” signs on parking gate housings

4 PARKING GARAGE ENTRY/EXIT PEDESTRIAN SAFETY INSPECTION

As part of our review of current conditions, a visual inspection of all CCDC garage entry/exit lanes was conducted.

All the exit lane pedestrian safety devices documented above were verified as working on the days that the physical inspections were performed (June 3rd and 4th, 2015).

The following items were noted:

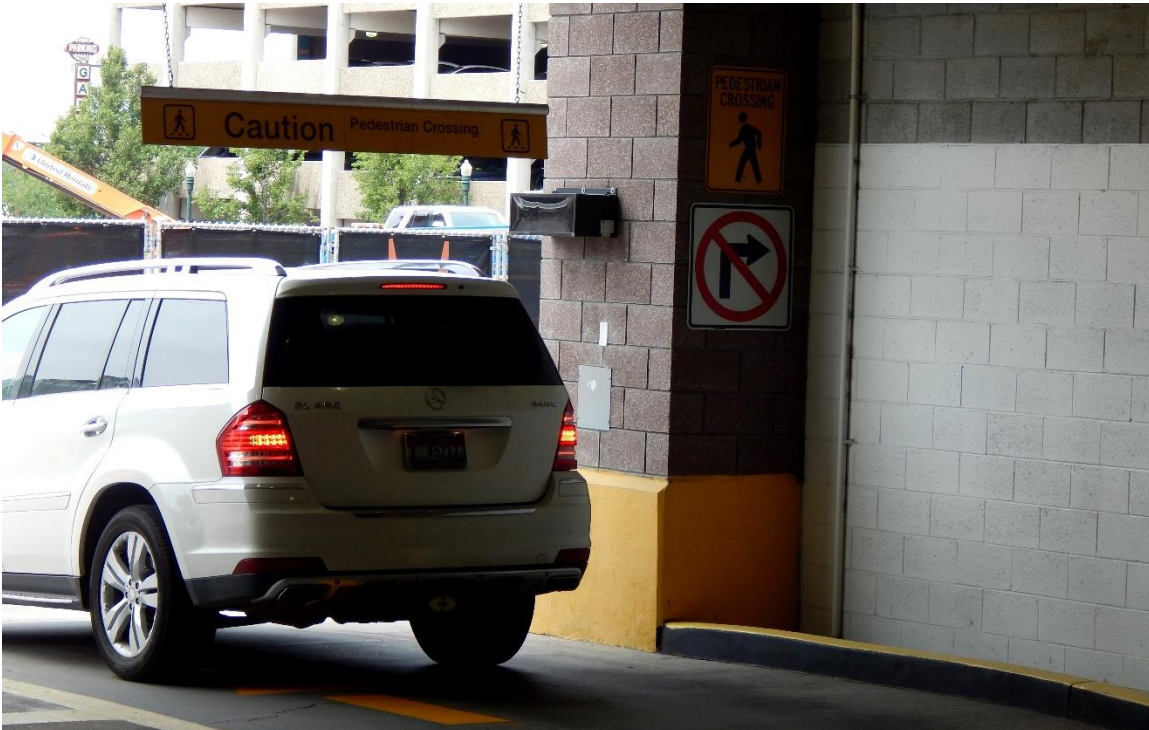
In all cases, in lanes that had the electronic “Caution Car Coming” signs and audible devices, these devices were functioning.



It was noted that while most of the other CCDC garages, with the exception of the Grove Street garage, had most of the same basic equipment installed (convex mirrors, “caution car coming” neon signs, laser sign/alarm activation system, horn/audible warning devices, laser sign/alarm activation system, etc.) the City Centre garage did not have audible warning devices/audio alarm activation system installed. For consistency purposes, it is recommended that the audible warning devices/audio alarm activation system be installed in the City Centre garage.

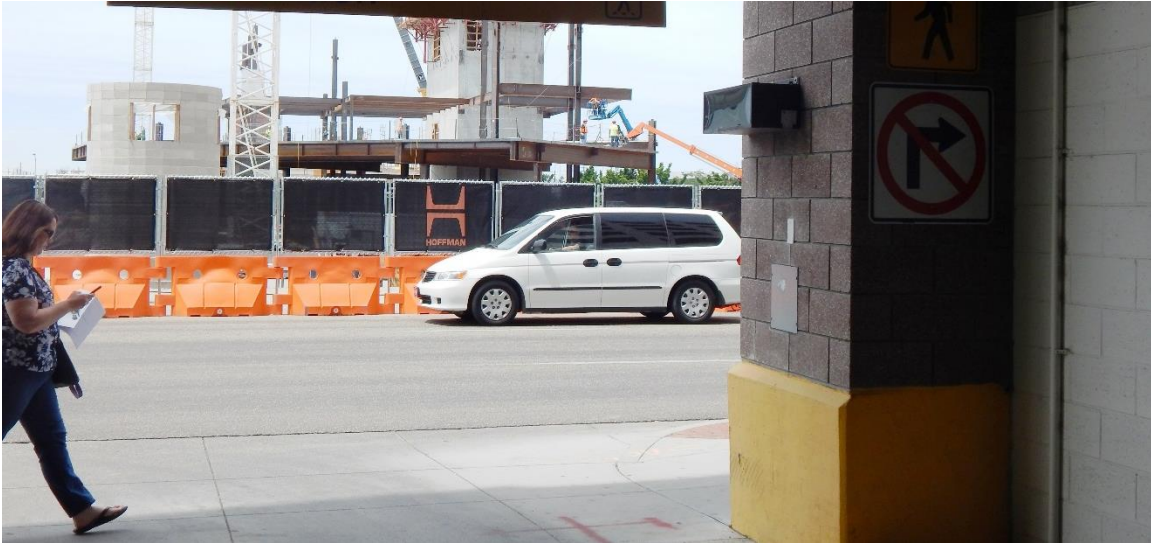


One other potential issue was noted in the City Centre garage. In one instance, an exiting car pulled forward then stopped momentarily before proceeding out the exit. In this case, the electronic sign, which had been operating, stopped after the designated period of time. However, in this case, since the car had stopped briefly and there is distance of approximately 60' from the exit gate to the sidewalk, the warning signage was not active once the car reached the sidewalk. See photo below. It is recommended that the system be programmed to activate



the signage (and the recommend audio alarm) for a slightly longer period of time.

The photo below illustrates the degree of distraction that modern technology adds to an already potentially hazardous condition (note the “distracted pedestrian” reading her cell phone while walking in front of a garage exit lane).



All the convex mirrors were clean, unbroken and properly positioned.





All the sidewalks and surrounding areas were clean and free of distractions. Curbs were painted with yellow paint to highlight changes in height and brick patterns change in advance of the exit lanes as another queue to pedestrians of a change in conditions.

One other concern noted was that the “Caution Car Coming” signage at the Boulevard garage is not positioned to be useful to pedestrians walking South on Capitol Boulevard (see photo below).



5 NON-CCDC BOISE PARKING GARAGES

While conducting our review of CCDC garage entry/exit lanes, we also wanted to document the current “community standard” related to pedestrian safety and parking garages. We toured two privately operated parking garages in downtown Boise to observe garage entry/exit conditions. The following is a summary of the non-CCDC garages that we observed.

Specific non-CCDC garages that we visited included:

- the Key Financial Center garage
- the Washington Trust Bank garage

5.1 General Findings

For the most part, the non-CCDC garages had less pedestrian safety features than those facilities operated by CCDC. None had the “Caution Car Coming” signage, audible alarms or other pedestrian warning signage. A limited use of convex mirrors was noted in some garages. Examples of current conditions in these other garages are illustrated in the following photos.

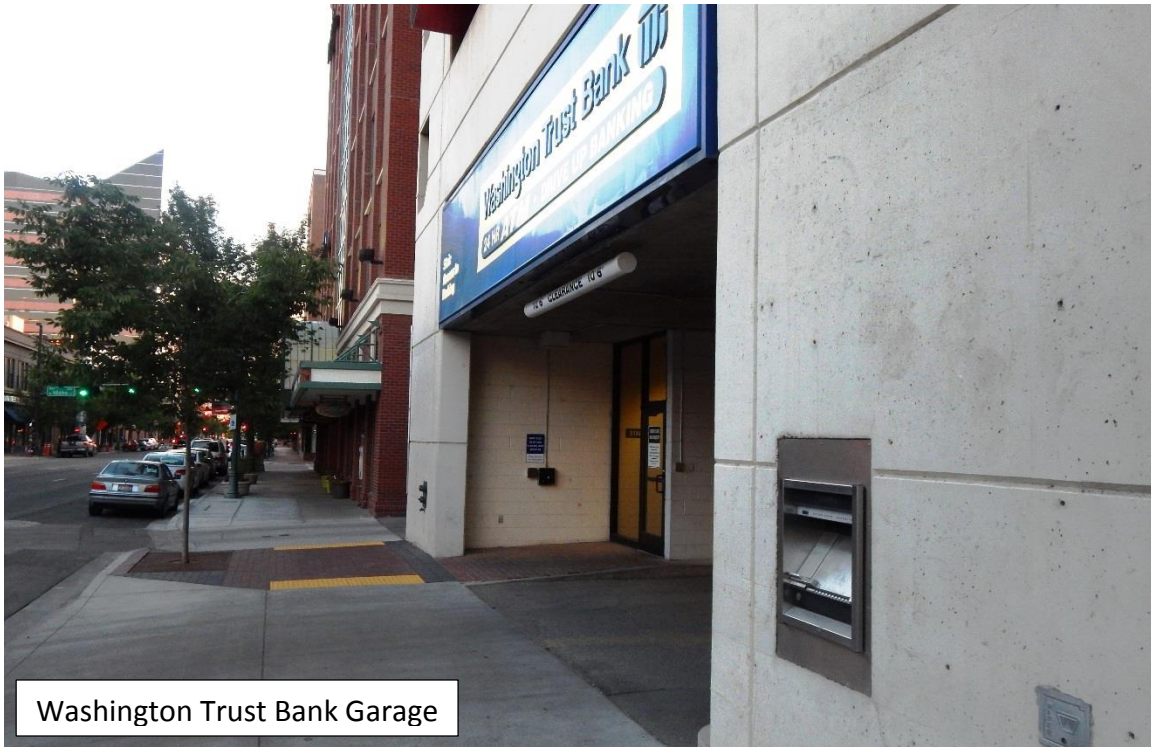




Key Financial Center Garage



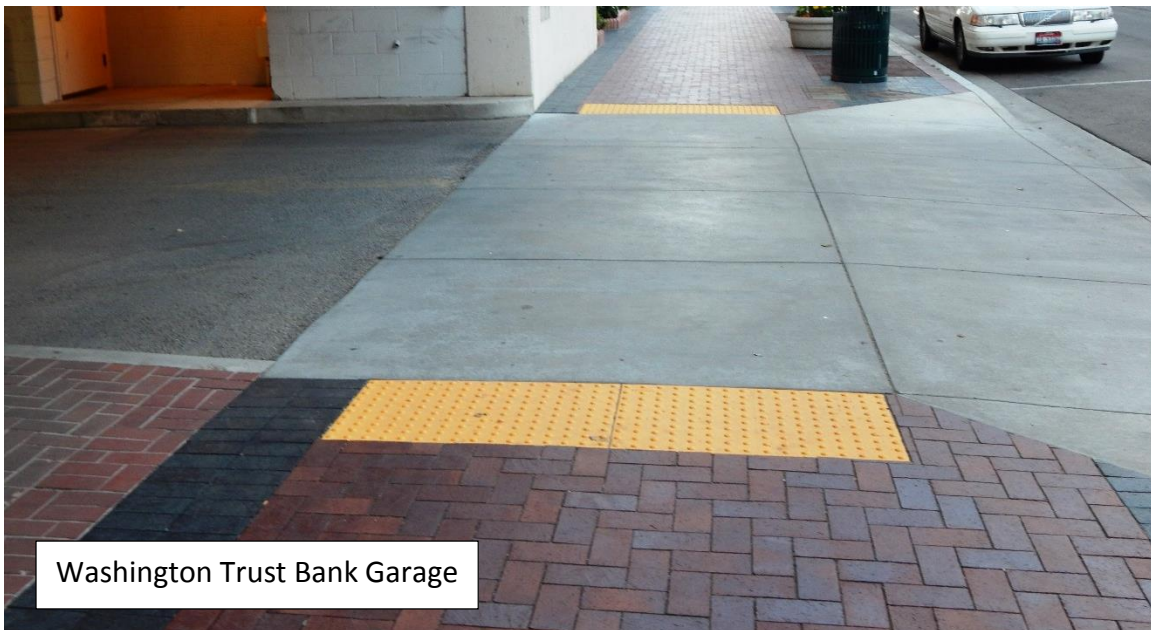
Key Financial Center Garage



Washington Trust Bank Garage

The one element that the Washington Trust Bank garage had that no other garage had in place was the use of what are known as “truncated domes” as a pedestrian warning device on the sidewalks in advance of the garage exit lanes.

A close-up of this feature is provided in the photo below.



Washington Trust Bank Garage

6 CONCLUSIONS AND RECOMMENDATIONS

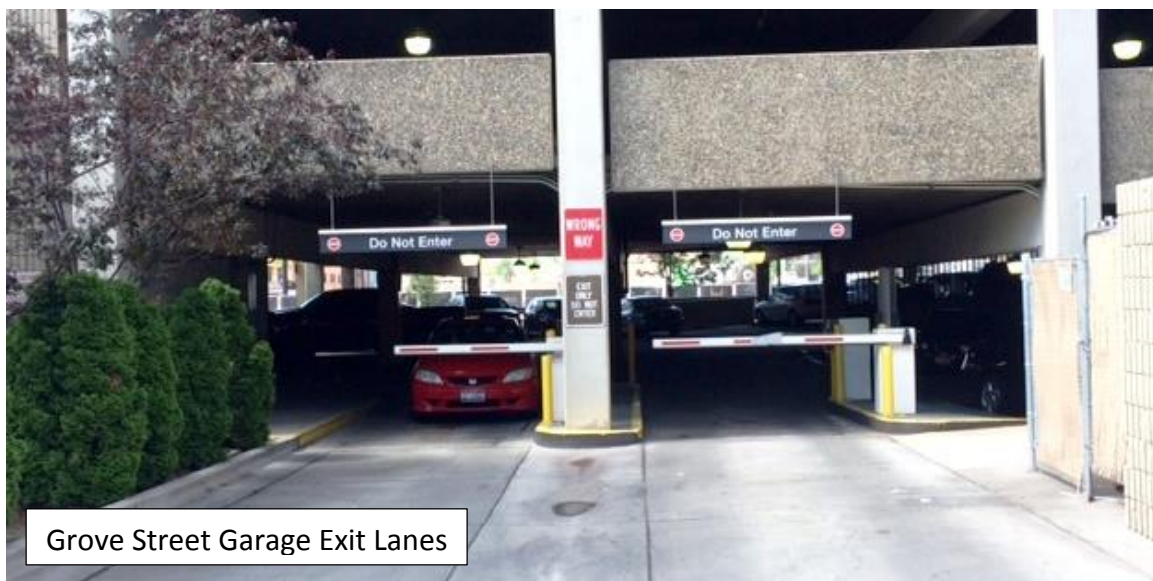
6.1 Conclusions

In conclusion, the CCDC system has invested more in pedestrian safety than any other system we are aware of in the US. The CCDC system certainly sets the standard for the Boise community and could be a model for other cities around the country.

6.2 Recommendations

1. If there is any concern to be noted regarding the CCDC system it would be a slight lack of overall consistency. For example, the exit lanes from the Grove Street garage do not have the same treatment as the other CCDC garages in terms of use of electronic signage, audible alarms or sign/alarm activation systems.

While the exit lanes from this garage do not cross a major pedestrian route, there is a minor pedestrian route near an elevator tower that creates enough pedestrian traffic to raise a concern.



Grove Street Garage Exit Lanes

As noted on page 11 of this report, an additional “Caution Car Coming” is recommended at the exit to the Boulevard Garage oriented to pedestrians walking south on Capitol Blvd.

It is recommended that CCDC formalize the use of the noted pedestrian safety devices as a defined standard and incorporate this standard in its Parking Garage Design Guidelines document.

2. Another minor concern, as noted on pages 8 -10, is the issue related to the duration of the activation of the pedestrian warning devices and the installation of the audible alarm mechanism in the City Center garage. It is recommended that the exit signage/recommended audible alarm activation mechanism be evaluated to see if it is possible to extend the alarm period via system programming. It is recommended that

Tri State Electrical be contacted to evaluate the functional feasibility and cost of this recommendation.

3. It is recommended that the parking operator for the CCDC system develop a defined policy related to checking the proper operation of the pedestrian safety devices. It is recommended that all pedestrian safety devices be monitored and tested on a weekly basis as part of a routine garage maintenance walkthrough and checklist procedure. All issues and their resolution should be documented on an on-going basis. A draft policy is provided as Appendix C.
4. The practice of adding “truncated domes” in the sidewalks on either side of garage exit lanes (or some other change in pattern, color or texture) should be considered as a potential new element to the CCDC pedestrian safety standard.
5. Consider developing a public safety campaign promoting improved awareness of the importance of being more aware of your surroundings in parking environments, similar to the work done by Montgomery County Maryland (reference on pages 3 and 4 of this report).

6.3 Estimated Costs

The following costs are estimated for budgeting purposes regarding the implementation of the recommendations above:

- Upgrade the exit from the Boulevard garage and the two Grove Street garage exit lanes by adding:

- Electronic “Caution Car Coming “ signs
- Audible alarms
- Sign/alarm activation system

▪ Estimated Cost: \$10,000.00 - 12,000.00

- Add audible alarm feature to the exit lanes of the City Centre garage to make the package of pedestrian safety devices consistent among all CCDC garages.

Estimated Cost: \$1,500.00 - \$2,000.00

- Add truncated domes to sidewalks on either side of garage exit lanes

- For the application of the truncated domes in the sidewalk, a budget number of \$500 per application area (2 per exit lane) is recommended. If all sidewalks outside of the 11 CCDC garage exit lanes were modified, the estimated cost would be approximately \$1,000 per exit.

▪ Estimated Cost: \$11,000.00 - \$15,000.00

- Note: A “glue down” application of truncated domes may be available that would lower these costs dramatically.

➤ Parking/Pedestrian Safety Awareness Campaign

- Consider developing a parking/pedestrian safety awareness campaign using various media and print options.

- Estimated Cost: \$5,000.00 – \$10,000.00

7 APPENDICES

Appendix A - CCDC Parking Garages – Entry/Exit Photos

Appendix B - “Heads UP in Parking Lots” - Pedestrian Safety Initiative: Reducing Collisions in Parking Lots and Garages” – A publication of Montgomery County Maryland

Appendix C – Draft Pedestrian Safety Equipment Monitoring and Maintenance Policy