

Accessibility issues for the visually-impaired crossing APS signalized intersections in Windsor

Here are the current locations of the 27 Accessible Pedestrian signals in Windsor:

- | | | |
|---------------------------------------|--|---------------------------------------|
| 1. University & Sunset | 10. Ouellette & Wyandotte | 19. Dominion & Northwood |
| 2. University & California | 11. Jefferson & Wyandotte | 20. Devonshire & Riverside |
| 3. Wyandotte & Strabane | 12. Lauzon & Riverside | 21. Banwell & Palmetto |
| 4. California & Wyandotte | 13. Ouellette & Elliot | 22. Giles & Ouellette |
| 5. Wyandotte & Raymo | 14. Huron Church & Dorchester | 23. McHugh & Spitfires Way |
| 6. Riverside & Strabane | 15. Huron Church & Malden | 24. Howard & Tecumseh |
| 7. Lauzon & Wyandotte | 16. Huron Church & Totten | 25. Darfield & McHue |
| 8. Pillette & Wyandotte | 17. Huron Church & Girardot | 26. Cabana & Mt Royal |
| 9. Cabana & Holburn | 18. Dougall & Ouellette PL. | 27. Cabana & Dougall |

a) Basics about how Accessible Pedestrian signals work

For a sighted individual crossing, the street is as simple as finding a crosswalk, wait for the right moment, and get to the opposite sidewalk by walking straight across. For a blind or low vision person it is more complicated and they need to trust their other senses such as hearing and touch. Accessible Pedestrian Signals can be of great assistance if they are set up in order to meet the needs of the users.

Accessible Pedestrian Signals (APS) advise pedestrians who are blind, visually impaired, or deaf-blind when they have the right-of-way to cross at a signalized intersection and in which direction they may cross the intersection.

b) What is needed to cross the street safely

1. Locate the beginning of the crossing

Sighted individuals rely on visual cues to find the crossing and get to it so they can use it. This can be much more challenging for blind and visually impaired pedestrians to find where the crossing begins especially at intersections they're not familiar with. An APS is supposed to assist with this as it has a locator tone that constantly emits sound. This is essentially audio signage that helps these pedestrians find the beginning of the crossing. The *locator tone* is generally set up to be a certain amount higher than the ambient sound. Therefore, their volume depends on the intersections and their traffic.

2. Press the pushbutton

People with vision disabilities have now found the beginning of the crossing. But to know when they have the right-of-way, they need to press the accessible pedestrian signals pushbutton on the pole. If the locator tone is present and set up properly finding the pushbutton should not be a problem. If there is no audible tone then the person will have to feel around till there find it on the pole. If the button is pressed quickly then the audible features will not be triggered. The button must be pressed for about 4 seconds to engage the audible features.



A raised (tactile) arrow is required on the pushbutton and provides information to pedestrians who are blind or low vision about which crosswalk is controlled by the pushbutton. It points in the direction of travel on the crosswalk and it is important for this to be aligned properly to assist blind and visually impaired pedestrians.

The arrow is also the part of the APS that may vibrate during the WALK interval (available feature on more recent versions of the units). This is

particularly helpful for deafblind pedestrians to make them aware it is time to cross the intersection.

3. Rely on the accessible pedestrian signals

Once the accessible pedestrian signals are activated they provide audio information when the WALK signal is on (destination beacon tone). To clarify, the locator tone helps the individual find the push button and the destination beacon tone helps the person find their way safely across the street. For them to properly work, they need to provide:

- ⊗ High-quality sound,
- ⊗ Clear information and street name of the intersection is very helpful
- ⊗ Appropriate volume above the ambient sound

When installers set up accessible pedestrian signals, they need to take into account the ambient sound when traffic is busy to make sure it perfectly matches real conditions. Consequently, their volume depends on the intersections and their traffic.

The point is for blind and visually impaired people to properly hear the audio information provided without covering ambient sound. The ambient sound actually helps them understand how the intersection is (i.e: busy with traffic, fellow pedestrians or cyclists etc.).

4. Get to the other side of the crossing

The WALK sign is on-- The accessible pedestrian signal should emit sound to let blind and visually impaired pedestrians know they can cross the street. At this point, the goal is to walk straight without going off course.

Two elements explain this:

- The need to avoid bumping into other pedestrians,
- The need to easily get across the street and arrive safely at the other side of the crossing.

One way to help them cross the street more easily is to set up a guiding sound corridor directly integrated in the accessible pedestrian signals. With such a system, both APS from both sides of the crossing simultaneously broadcast audio information while blind and visually impaired pedestrians are crossing the street.

The guiding sound corridor wraps up them. They just have to follow the sound to reach the other side. It truly helps them walk straight.

c) Accessibility issues for the Visually-Impaired crossing APS signalized intersections in Windsor (Review by Shauna Boghean and Peter Best)

Although all of the 27 intersections have been reviewed by Peter and Shauna, only those bolded above have been forwarded so that they can be included in this summary.

Definitions....

Audible Voice – tells the traveler when it is safe to cross a specific street

Locator Tones and Destination Beacons are essentially the same tone however, they serve two very different purposes

The Locator Tone helps the traveler find the APS post in order to activate the Audible Voice

The same **Destination Beacon** tone should be loud enough so the traveler can hear it and target his path in order to cross the street in a straight line

1) Ouellette Avenue and Wyandotte Street East – all 4 crossings

- all 4 corners have APS systems – but the level of traffic volume tends to overshadow the voice level
- “walk sign is on to cross” – (needing a street name)
- “wait to cross”
- do not hear the destination beacon until beside the post/button
- the buttons are harder to press in order to activate the voice

A different time visiting this APS:

The button pressure was tremendously hard and nothing happened. Nothing. Oddly enough the locator tones were quite loud – but that’s all they did – they beeped!! – no voices – no destination beacon. Maybe due to the cold weather – which brings up a question – how do the APS buttons perform in extremely cold weather

2) Jefferson and Wyandotte Street East

- the buttons are more easily engaged with a simple push
- If you keep your finger on the arrow button you will feel it vibrate
- The only concern I have is that the voice will not announce the name of the street
- It will only say "wait to cross" and "safe to cross"

3) Banwell and Palmetto area &

4) McHugh at the WFCU

- the buttons are more easily engaged with a simple push
- If you keep your finger on the arrow button you will feel it vibrate
- The only concern I have is that the voice will not announce the name of the street
- It will only say "wait to cross" and "safe to cross"
- If you keep your finger on the button it will vibrate
- The name of the street is not announced
- "Safe to cross" and "wait to cross"

5) Huron Line and Dorchester:

The traffic volume level is extremely high which would absolutely affect the traveller's ability to find the locator tone. As with all crossings reviewed the locator tone was heard only when I was approximately 3 to 4 inches away.

The button is very easy to press.

The voice simply says "wait" - and will continue to say "wait".

When it is time to cross, the voice repeatedly says: "walk sign is on to cross".

Concern: Some folks may not even know if they are at the correct direction point of crossing.

Request: Thus, can these be programmed to say - "safe to cross Dorchester" - or "safe to cross Totten" ... etc. using the street name?

6) Huron Line and Totten -

The findings are the same Louder beacon tones are essential in order to find the APS initially and then to target safely to the other side. in. There is a count down as one crosses but the voice easily gets crowded out amongst the heavy traffic sounds.

- The traffic volume level is extremely high which would absolutely affect the traveller's ability to find the locator tone. As with all crossings reviewed the locator tone was heard only when I was approximately 3 to 4 inches away.
- Comments regarding the place in of the yellow truncated dome mats:

While the effort has been made to make the corners safer using these yellow fluorescent tactile mats, (also called truncated domes) the placement of them serves best only to keep someone from walking out into the road, or perhaps letting the traveller know that they have in fact crossed safely to the opposite side of the street.

Every street corner in this City is designed differently thus each intersection will require the use of potential grass lines, posts, building walls, mail boxes - anything for the traveller to use as a landmark to line their body up with in order to attempt to make a straight, safe, successful crossing...

7) Wyandotte and Strabane Crossings –

Northeast Corner

When you are immediately adjacent to the beacon you can hear the tone – but it is very hard to hear, or almost impossible to hear it when you are trying to find the post – in order to tap the button – or locate the post to align yourself straight while crossing the street. Also, this APS is beside the Alpina vehicle collision service – which is also a very loud, noisy repair business.

Southeast to Southwest – crossing Strabane along Wyandotte Street East

Destination Beacon could not be heard until Peter got up onto sidewalk. Once again – while crossing one cannot hear the Beacon – one must be fairly close in order to hear it.

Northwest Strabane Crossing along Wyandotte Street East

The APS does not consistently say – ‘wait to cross’ or ‘safe to cross’ when engaging the push button.

8) Raymo at Wyandotte Street East showed results which were almost exactly the same at the Strabane and Wyandotte Street E area:

- it takes quite a bit of pressure to push the APS buttons
- The locator tone is low until you are immediately beside the button
- The destination tone is difficult to decipher
- The attachment location of the APS buttons are haphazard on some of the posts especially at the SE corner and do not point in the direct of the actual crossing

These crossings DO say the name of the street - "safe to cross Wyandotte" - which is extremely helpful to the blind traveller -

9) Riverside at Strabane

Riverside Drive at Strabane Avenue – Southeast corner

The grass-line is the best cue to find the APS, as the beacon does not seem to heighten its sound until one is fairly close to the pole. Is that a rule ? .. One must be very close to the beacon for it to ‘sound’ ??

Riverside Drive at Strabane Avenue – Crossing South to North –

This is a curious crossing. When crossing from south to north, the Tone Beacon can hardly be heard. Also. the poles are not in line in anyway.

When pressing the button on the south side you can hear the 'safe to cross' or 'wait to cross' – but when you reach the north side – again the destination beacon is almost impossible to perceive.

Crossing North to South -

This is interesting – when you press the button to cross back south, the north button both speaks and rattles very loudly – as if perhaps for those who are deaf or hard of hearing? It is very LOUD and it vibrates – but it seems to do this only if one crosses north to south. It would actually be helpful if the APS rattled just as loudly when one engages the button on the south side to hear it and align with it when crossing to the north side. It is quite loud and would very much help those crossing over to the Detroit River side.

Further areas of discussion:

In areas where the APS posts are not aligned – ex. Riverside Drive at Strabane – is it possible to produce a textured walkway so clients can feel the surface under foot in order to help stay in alignment while crossing?

Strabane Crossing along Riverside Drive East to West or West to East

In either direction the audible tone could be louder in order to both locate the APS post and use it as a Destination Beacon.

10) Lauzon Road and Wyandotte Street Intersection –

At all 4 Corners

- the traffic volume is incredibly high during the daytime hours
- the sound of the beacons and the audible voice could not be distinguished above the volume of the traffic surges
- the APS arrow buttons require a substantially increased amount of hand or thumb pressure to engage the voice

North and South East Corners –

- again, the locator tones are so low in volume the traveller cannot find the post
- the traveler must line up precisely using the cues at the corner in order to make a straight-line crossing – ex. Lining one's back up against the post and walking forward to the actual corner, - the placement of these buttons are more haphazard and not always useful for this
- the locator tone and the voice control box volume is so low it cannot be heard once the traveler steps away from the APS post

North and South West Corners –

- the locator tone or destination beacon's volume is almost indistinguishable unless one is immediately beside the post, and only inches from the APS button
- once again, the traveler cannot line up properly at the actual corner and hear the voice to indicate it is "safe to cross Wyandotte Street" all at the same time –

Further Concerns – a traveler should be at the corner and ready to step out to make a straight, safe crossing as soon as they hear the audible voice

- but when they have to stand back from the corner in order to stay close to the post so they can hear the tone, they lose precious line up time and most often veer, resulting in an unsafe crossing
- this also results in their not getting across the street before the light turns yellow and red again

11) Sunset and University West

East Corner going North and South

There are APS signals on the 2 East corners, north and south – but no APS's on either of the 2 west corners, north or south. (Is that because of construction right now at the Law Building?)

Crossing North and South along the east corners of University West at Sunset

- The signal can be heard – but once you step off and walk from the southeast to the northeast corner, you cannot hear the destination beacon until you get right up off the road onto the sidewalk.
- As you cross the street the sound cues remain behind you – instead of trigger in front of you.
- The APS only says “wait to cross” and doesn’t designate the street name - if someone cannot determine traffic flow noise – they won’t know which corner is safe or not

12) APS at California and University Avenue West

North South Crossing of University along California

- The APS will say wait to cross – “OK to cross University Avenue” – “OK to cross California” –
- When traffic flow volume is louder, but behind the person – again will need a destination beacon.
 - not sure if it uses the street name for “wait to cross” –
 - it appears the volume increases as one gets closer to the APS pole – is it designed this way?
 - unless you press the button it won’t activate the voice – but the beacon does sound

13) California at Wyandotte Street

Please note: the APS at the SE corner of of Wyandotte is loose on the post – it cannot be activated to announce when it is ‘safe to cross California’ – the green man nor the red hand appear at all.

- All 4 corners have a similar format – only says ‘wait to cross’ – but will say the name of the street when it is ‘safe to cross’.
- The beeping sound and counting are behind the traveler and only once you step up on the curb will it be loud enough.

14) Tecumseh Road East at Howard Avenue...

NE Corner: crossing from Shoppers Drug Mart corner to the NW corner (Tim Horton's corner)

- The locator beacon sound comes more audible only when someone actually approaches it. It doesn't act as a destination tone.
- The tone is so faint – a person who is B or VI would have to follow the grass-line to locate the APS post – the tone is not loud enough.
- This pattern is consistent at all 4 corners: We travelled all 4 corners: from NE (Shopper's Drug Mart) to NW (Tim Horton's) SW – (Lumberjack Restaurant) SE – (Hakim) and then back to NE (Shopper's Drug Mart)
- "Walk sign is on to cross" – the concern is that the info is not specific enough. Walk sign in which direction?

Comments:

- At all 4 corners the traffic noise supersedes the volume of the APS locator beacons.
- In general the condition of the roads – is a concern. Full of pits and holes. It is such a heavy, busy intersection – one would want to get across the street quickly and safely... and not want to be in the middle of the road because of a trip due to a pothole.

Matters that need Discussion and consideration –

- a. Tactile lines in the asphalt to help people cross the street straight?
- b. While it is great that the APS machines speak – can it be more specific: as "Cross Howard" or "cross Tecumseh" – not just 'safe to cross' - because – due to loud/heavy traffic noise, people can't readily tell which street is clear. As an instructor I encourage people to listen to the flow of traffic – but at these four corners the noise level in general makes it almost

impossible hear the distinction between N/S and E/W and make a proper secession.

- c. Update on vibration of the signals – this is not consistent.
- d. If the APS systems were easier to distinguish – this would be the safest plan.

15) **Crossing Holburn along Cabana from west to east–**

- the APS button was **not working** at all to cross Holburn east along Cabana
- I pressed it a long time!

Walking north to south crossing Cabana at Holburn on the west side

- the west/east APS says “wait to cross”
- the volume of the locator tone is adequate and the target or destination beacon is audible !!
- we can standardize volumes at some point
- we should add street names

Walking east to west across Holburn on the South side of Cabana

- APS button had a volume level that was quite detectable from several feet away allowing both the locator beacon and the destination or target beacon to be found !!
 - however there is a very loud vibration sound coming from the signal while the APS voice says “walk sign is on to cross” (maybe because volume level is quite high ??)

South west corner of Holburn and Cabana

- at first **could not** get either of the APS signals to engage or to speak
- I applied a lot of pressure
- they have fairly loud beeping sounds but the APS is not working or speaking to use it for crossing Cabana N/S nor S/N
- only to cross east/west along Holburn

Walking East to West while crossing Holburn at Cabana Avenue

- APS button works and has an adequate volume for both the locator tone and the destination beacon
- “wait to cross”
- requires a fair amount of pressure to engage the button

Concern

Again it happened that I heard one signal saying “wait to cross” while the other APS signal on the same corner was doing a countdown for a crossing – so it could be very confusing for a visually impaired or blind traveler – again the need to add street names

16) Mount Royal/Dominion at Cabana Road

Walking North to South along the East side of Dominion towards the intersection –

- The intersection paint lines look new and bright – easy to see – this will help those with some vision.
- The locator tones were heard within 3 feet of the pole.
- The button was quite easy to press.
- If it is not safe to cross, the APS says: “Wait”
- When it is safe to cross it says, “walk sign is on” –
- As one crosses, at approx.. 3 feet to the opposite side I did hear the target beacon.

Walking west along Cabana at Mount Royal – As above

- The target and locator tones could be heard about 3 feet from the post
- The button was easy to press
- When not safe to cross, the APS says “Wait”
- When it is safe to cross it says, “walk sign is on”

Crossing South to North from Mt. Royal to the Dominion side

- Similar to the above

South West side of Dominion and Cabana

- The beacon volume level sounds lower.
- However, while it is not safe to cross, you need to push the button only once yet it continues to say “wait, wait, wait” - I did not observe this continuous caution at the other intersections.

Other features:

- When you keep your finger on the button(s) and it turns green to go – it will vibrate.
- As you cross, the APS will say “walk sign is on” several times.
- There is NO countdown while crossing – could this be because it is a smaller, shorter crossing?

Observation and Recommendations:

- This is one of the better APS intersections in Windsor I have experienced so far.
- I would just ask that we add the names of the streets. The target beacons were audible at this corner.

17) Intersection of Dougall and Cabana Roads

- This would be a good intersection to review with the Traffic and Engineering crew as every corner does something a little different.
- The volume levels could be louder considering the amount of noise/traffic.
- It seems that volume levels are different at each of the 4 corners.
- There is a countdown as you cross. Starts at 25 seconds and counts down.
- The buttons are easy to press.
- The button will vibrate when it is safe to cross

- The target beacon started up as I got about 1 to 2 feet from the pole.

Observation and Recommendations

- This is a well populated crossing for both pedestrians and car traffic, and one can hear both “walk sign is on” and “wait” at the same time, at the same corner – several people could be crossing in different directions at the same time.
- THUS the need to differentiate by adding the names of the street, that is actually SAFE to cross.
- Volume levels need to be standardized.
- The intersection is new – the painted lines easier to perceive.

18) Riverside East at Devonshire Road

Findings

- button pressure was great
- easily activated
- locator tone was medium to low range – have to be very close to hear it though
- lines of the road newly painted – visible
- button vibrates when it is ‘safe to cross’
- good colour contrast as the buttons are yellow and the posts have been painted black

Concerns and Recommendations –

- says just ‘wait’ or ‘walk sign is on’
- would recommend that street names be added
- destination or target beacon very faint
- high traffic volume thus high traffic noise

Note – there is no APS at the North/West Corner but this has sidewalk and it is a highly industrialized area.

19) Spitfire Way at Lauzon Road

Findings –

- as above – button pressure activation is easy/adequate
- locator tone was heard faintly – could be louder
- destination beacon not heard
- does vibrate when walk sign is on
- some say 'wait' continually even though you may have only pressed the button once

Concerns –

- says 'wait' or 'walk sign is on'
- wait and walk can be heard at the same corner, thus the street names are critical

20) Dominion and Northwood Avenues

- This report will be very short as the systems are fairly new and they are almost exactly as my reports along Banwell, McHugh, Spitfire Drive and etc.
- On all four corners – the APS will start to emit a tone only when I am about 4 inches from it. So it is not easy to locate.
- But - once it started up it became quite loud as you start to cross the street.
- However - There is NO target beacon tone on the other side – so again I did not hear the opposite poll beacon until I was immediately beside the post.
- In all cases, it said “wait to cross” or “okay to cross” – so can we add the street names ??
- We have to add a louder tone to both the location beacon and the target beacon – so they will be useful.
- In all cases it vibrates while the light is green and it is okay to cross.

d) Additional Information and Input provided by Shauna, Peter and some members of the Blind and low vision community

A survey conducted by the American Council for the Blind regarding accessibility issues at signalized intersections outlines three main challenges:

- **Not sure when to cross**
- **Not being able to find the 'other' side (targeting)**
- **Problems with finding the push button**

The survey also provides insights into how the visually-impaired are impacted by these mobility challenges:

- 8% (12 of 158) of respondents had been hit by a car.
- 29% (45 of 158) of respondents had had their cane run over.
- 62% (98 of 158) of respondents have gotten partway across an intersection and realized that the light had changed against them.
- **36%** (57 of 158) of respondents try to avoid crossing unfamiliar signalized intersections. **17%** (26 of 158) of respondents limit their travel to familiar areas due to the complexity of intersections.

It's important to note that **36%** try to avoid crossing **unfamiliar** intersections and **17% limit their travel** to familiar areas. This indicates the accessibility of signalized intersections directly impacts the **independence of the visually-impaired**.

The survey is available here:

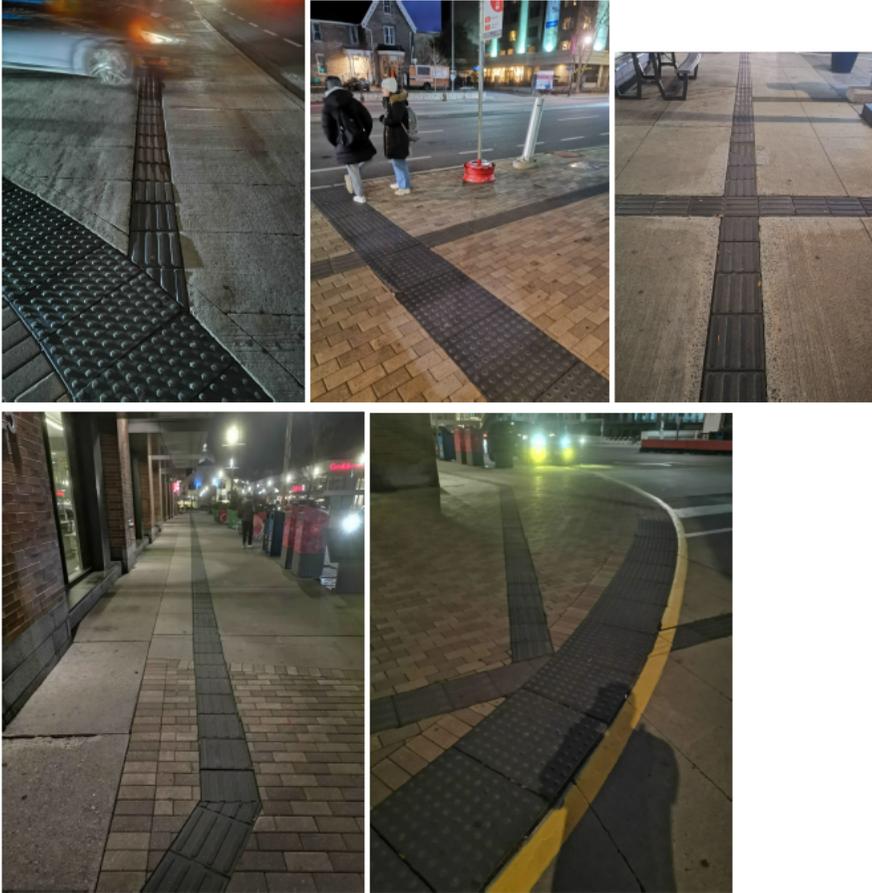
<https://acb.org/sites/default/files/bf/2000/bf012000.html#bf04>

In Windsor, a significant population of visually-impaired people reside at the **Lions Manor** (230 Strabane). The two nearest signalized

intersections are located at **Strabane/Wyandotte** and **Strabane/Riverside**. Both intersections pose unnecessary challenges to the visually-impaired, especially for the fully blind.

- The **Strabane/Wyandotte** intersection is problematic because the crossings are skewed and there are no cues for the visually impaired to use to target their crossing to the correct destination corner. Audio cues are not always effective at this intersection due to noise from the four lanes of traffic and windy weather conditions. A number of visually-impaired residents at the Lions Manor are unable to walk to the closest grocery store only 600 meters away (No Frills @ 3975 Wyandotte St. East) because of the challenges and risks the **Strabane/Wyandotte** intersection poses to them. They instead resort to taking taxis to/from the grocery store which reduces the amount of money they would have otherwise spent on food. The **Strabane/Riverside** intersection has on-going issues with the push button not reliably activating the audio cues. This creates stress and anxiety for the visually-impaired wishing to cross the street to enjoy the park beside the Detroit river.
- Suggestion from low vision and blind residents: Tactile directional pavers could be installed from the Lions Manor entrance along the sidewalks to both intersections (Wyandotte and Riverside) and across the roadways. This method was employed by the City of Ottawa at their Lansdowne development in the city's core.
- Tactile Pavers - can provide directional cues to the Visually-Impaired. These 'guidance' pavers run continuously throughout the sidewalks, intersections and roads within Lansdowne. The pavers also aid in navigation to other features such as city bus stops.

Please find on the next page an assortment of photos of the guidance and warning pavers used at Lansdowne:



e) In an effort to develop a functional safe standard for APS systems in the City of Windsor several questions and concerns arise including:

1. Is there still a law that each new street scaping/repair or newly built intersection in the City will automatically have an APS installed at the major crossings?
2. Is there a volume standard for both the locator and destination beacons?
3. All buttons should be easily accessed or pressed – some of the earlier installed buttons require too much hand pressure to activate:

For example: University Avenue West at California, Sunset. Wyandotte and Strabane, Riverside and Strabane.

4. Can these beacons be programmed to say the name of the street to cross – ex. “safe to cross Wyandotte” -
5. What is an alternative if the posts the APS’s are attached to do not line up properly with the actually crossing points?
6. What if the crossing is extremely wide – ex. 6 lane crossing – can a tactile footpath be created to assist the traveler to cross straight and make it to the other side safely and accurately?
7. Can we discuss the “Pork Chop” Crossings? Ex. Lauzon and Riverside Drive, and Lauzon and Wyandotte Street East – traveler must cross the right turning lane to get to the APS -
8. What system of auditing or check backs will be utilized by the City to ensure that installed APS systems work? B) Who receives the report that a specific intersection is inadequate or in need of repair?
- 9) Can this check back system include actual users – ex. Blind/visually impaired and hearing impaired travelers to test the systems? D) There is a suggestion that these community users who provide feedback will be paid a fee for service via WAC funds?
10. Note: Community Education is key – help through the media to education the sighted and non sighted Windsorites.

f) Setting Priorities – A

Updating and repairs to:

- Strabane Ave and Wyandotte Street east
- Strabane Ave and Riverside east

Concerns to address:

- Buttons too hard to push
- Needing a destination beacon
- Louder tones to locate the APS pole and to be able to target and find the destination across the street –

Questions:

- What are the best times for sound/volume?

- 7 a.m. to 7 p.m. ??
- the reasoning for this would be the traffic volume lessens after 7 p.m.
- the neighbors won't complain of the tones being too loud all evening

g) Priority Setting B

New installation at the following intersections:

- Lauzon Road and Tecumseh Road East
- Forest Glade and Tecumseh Road East
- Walker Road and Tecumseh Road East