CITY OF MILTON
LOCAL ROAD SAFETY PLAN
Task 3: Identification of Strategies

KCI TECHNOLOGIES

Prepared for City of Milton

April 2021

Local Road Safety Plan (LRSP) Vision Statement - The City of Milton will have a transportation system that is safe, offers a diversity of travel, and that allows our citizens to traverse safely and calmly throughout our city.

LRSP Mission Statement - The City proactively strives through our Local Road Safety Plan to chart a strategy to make improvements to Milton's transportation network through engineering, education, and enforcement that respect Milton's rural heritage, enhance its quality of life, and make our roadways as safe as possible.

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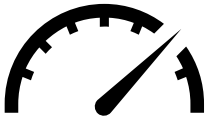
Introduction

The City of Milton is conducting the Local Road Safety Plan and has partnered with KCI Technologies, Inc. to assist in the development of the plan. This is the second document prepared and focuses on the identification of potential strategies and safety countermeasure projects most appropriate to address the six emphasis areas previously identified. Refer to the first document, titled "Report for Task 1 & 2: Safety Data Analysis and Identification of Emphasis Areas," for additional information.

The LRSP established the following six emphasis areas:



Vehicle Speeds

Distracted Drivers

Roadway and Shoulder Conditions
(To address both vehicles maintaining road and physical infrastructure, including fixed objects - i.e., trees)

Pedestrians & Bicyclists & Equestrians
(non-motorized modes)

Intersection Safety

Wildlife/Deer

This report summarizes the third task (Choose Cost-Effective Solutions as Potential Strategies) in the development of the LRSP, which includes:

- Identification of potential strategies and safety countermeasure projects for these three components:
  - Educational Campaigns
  - Engineering Countermeasure
  - Enforcement Strategies

Identification of Potential Strategies and Safety Countermeasure Projects

The KCI team identified both strategies and safety countermeasure projects and then discussed these and additional ideas with the City's Public Works, Police, and Communications departments. The three primary components discussed included Engineering, Education, and Enforcement. Based on these discussions, the table below summarizes the six emphasis areas (for which these three components are most applicable for the City of Milton) and the number of potential educational campaigns and engineering countermeasures.

Emphasis Areas	Educational Campaigns	Engineering Countermeasures	Enforcement
Vehicle Speeds	1	4	Yes
Distracted Drivers	1	--	Yes
Roadway and Shoulder Conditions *(To address both vehicles maintaining road and physical infrastructure, including fixed objects - i.e., trees)*	1	13	--
Pedestrians & Bicyclists & Equestrians *(non-motorized modes)*	4	8	Yes
Intersection Safety	1	11	Yes
Wildlife/Deer	1	2	--

Most of the city's paved streets classified as collectors and arterials are candidates for the strategies identified above. Additionally, two suggested focus areas are safety for all users on multimodal gravel roads, and Personal Transportation Vehicles (PTVs)/Golf Carts. Multiple emphasis areas (i.e. roadway and shoulder conditions, non-motorized modes, and intersection safety) have strategies to address these two focus areas.

Identification of the strategies (with explanations) for the emphasis areas and focus areas is included in the following report sections:

1. Educational Campaigns (campaign topics may be combined or individually)
2. Engineering Countermeasures (38 countermeasures)
3. Enforcement Strategies (5 strategies)
4. Focus Areas

1. Educational Campaigns

For this component of the safety plan, ten potential strategies were identified for educational campaigns and public outreach methods. These strategies are meant to complement the City's Communications Department outreach strategy in terms of tone, content, and efficacy. Once the educational campaigns are identified and prioritized, a separate task will be to plan the campaigns, identify potential community partners, and implement the outreach efforts in pursuit of the goals. The safety campaigns aim to bring awareness to the community on certain safety issues and empower them to change current driver, pedestrian, and cyclist behaviors. There are multiple ways that we will empower the community, including identifying campaign champions, implementing advisory groups, and the incorporating activities at local schools.

Schedule

After meeting with the City to determine the desired order of urgency for the campaigns, an annual timeline or schedule will be developed to give community partners a better understanding of when and what to expect the proposed campaigns. For each campaign, the intent is to share information through various platforms, host outreach events, and conduct enforcement details when relevant and possible. Below is one way that the campaigns could be scheduled, with different topics each quarter.

Tracking/Analytics

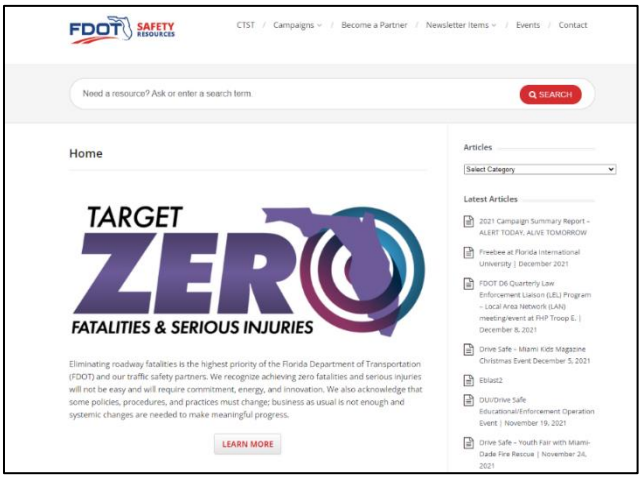
It is important to keep a record of outreach being done by the City and its community partners, in part to explore possible correlations to changed behavior and positive safety outcomes. The plan is to utilize social media analytics and community partner surveys to keep track of the progress of the campaigns. These analytics will be presented in a campaign final report to the City. A sample of this type of report can be found here: http://www.fdotsafetyresources.com/putitdown/summary-reports/2021-campaign-summary-report/

Safety Resources

The plan is to provide a webpage on the current City website to various resources that community partners can utilize throughout the campaigns, and the years to come, to distribute to their audiences.

An example of a site used for similar campaigns is presented here: http://www.fdotsafetyresources.com.

One option would be to link these using this URL: www.cityofmiltonga.us/RoadSafety.



Potential Community Partners

- Fulton County Schools (Milton High School, Cambridge High School, Northwestern Middle School, Hopewell Middle School)
- City of Milton Police Department
- City of Milton Fire Department
- Citizens Government Academy
- Georgia Bikes
- The Southern Bicycling Club
- Olde Blind Dog Cycling Club
- Milton Equestrian Committee
- Milton Trails Advisory Committee
- Alive at 25 Driver Safety Program
- Facebook groups (Focus on Milton, Half Sweet Tea, etc.)
- HOAs
- Milton Farmers Market
- Whitetail Bicycles & Coffee Shop
- Newspapers/Publications/Media (Milton Herald, Our Milton Neighbor, North Georgia Living, Patch)
- Police Chief's Advisory Board

Potential Strategies

The following strategies can be utilized for multiple campaigns including:

- Use of full color graphic Variable Message Sign (VMS) or digital message boards for sharing information/reminders
- Ambassador/Champions, such as council members or community leaders, connecting people to campaigns
- Testimonials from residents
- Community safety implementation group/Local advisory groups
- Advertising (WAZE, newspapers, radio, etc.)
- High School student video contest
- Mock crash sites
- School outreach for all ages (walk to school days, theater groups, etc,)
- Social media messages
- Email blasts (city and police email group, HOA, civic groups, school PTO)
- Local media coverage
- Tip cards/handouts
- City webpage
- Community outreach events
- Educational/enforcement details
- Pop-up events at local businesses

Potential Campaigns

Details about the ten potential educational campaigns are identified in the following pages.

Vehicle Speeds

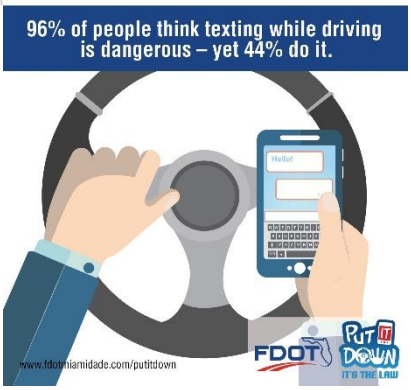
#1 Educational Campaign:	Raise awareness of potential speed related crashes (Aggressive Driving)
Emphasis area:	Vehicle Speeds
Explanation:	Raise awareness of crash potential related to speeding and remind drivers to be cautious; educate drivers about aggressive driving (specifically speeding).
Target audience:	Vehicle Drivers
Electronic Methods:	Social media messages, email blasts (city and police email group, HOA, civic groups, school PTO), local media, City webpage, digital signage
In-person Methods:	Community outreach events, educational/enforcement details
Materials:	City and consultant to prepare materials. Could include data on number and/or severity of crashes.
Additional resources:	i.e. GDOT (Drive Alert Arrive Alive), FDOT D6 Drive Safe or national (NHTSA, NSC, Alive at 25); Seatbelt usage (utilize random sampling for reporting purposes)

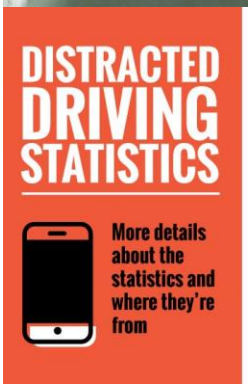
Examples:

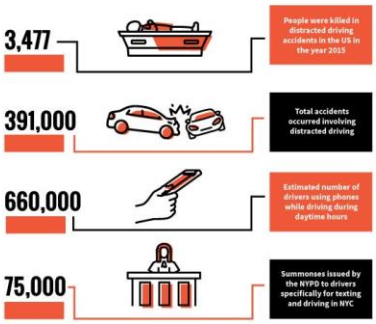
Distracted Drivers

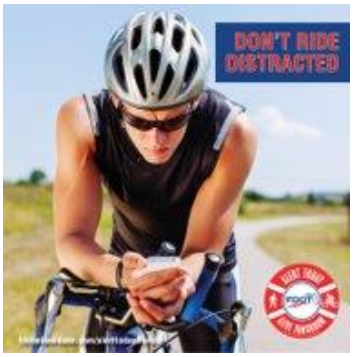
#2 Educational Campaign:	Raise awareness of potential distracted driving related crashes
Emphasis area:	Distracted Drivers
Explanation:	Raise awareness of increased crash potential associated with distracted driving, severity of crashes, and remind drivers to be cautious; remind of state law
Target audience:	Vehicle Drivers
Electronic Methods:	Social media messages, email blasts (city and police email group, HOA, civic groups, school PTO), videos created by Milton high school students, local media, City webpage, digital signage
In-person Methods:	Community outreach events, educational/enforcement details (mock crash site), simulators
Materials:	City and consultant to prepare materials. Could include data on number of crashes, testimonials, stats (football field reference)
Additional resources:	i.e. GDOT (Drive Alert Arrive Alive), FDOT D6 Put it Down or national (NHSTA)

Examples:





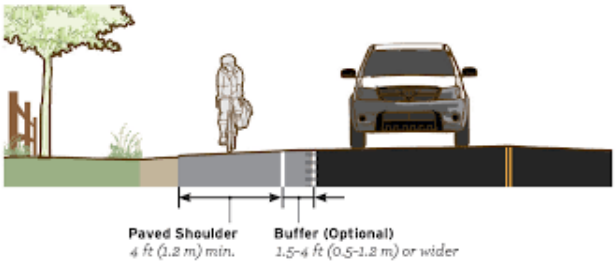




Roadway and Shoulder Conditions

#3 Educational Campaign:	Raise awareness of potential run off the road crashes
Emphasis area:	Roadway and Shoulder Conditions
Explanation:	Raise awareness of crash potential and remind drivers to be cautious, dangers of pulling over, move over
Target audience:	Vehicle Drivers
Electronic Methods:	Social media messages, email blasts (city and police email group, HOA, civic groups, school PTO), local media, City webpage, digital signage
In-person Methods:	Community outreach events, educational/enforcement details
Materials:	City and consultant to prepare materials. Could include data on number and types of crashes.
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:



Pedestrians & Bicyclists & Equestrians

#4 Educational Campaign:	Bicycle rules of the road; appropriate travel etiquette through roundabouts, traffic signals, and stop control intersections
Emphasis area:	Pedestrians & Bicyclists & Equestrians
Explanation:	Provide easy to understand educational material to bicyclists to explain laws and proper use of roundabouts and intersections
Target audience:	Bicyclists
Electronic Methods:	Social media messages, email blasts (city and police email group, HOA, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	Community outreach events, educational/enforcement details, partnerships with local bike clubs, pop-up events at local businesses (such as Whitetail Bicycles & Coffee Shop)
Materials:	City and consultant to prepare materials including tip cards
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:

Pedestrians & Bicyclists & Equestrians

#5 Educational Campaign:	Bicycle rules of the road relevant to vehicle drivers
Emphasis area:	Pedestrians & Bicyclists & Equestrians
Explanation:	Provide easy-to-understand educational material to drivers (i.e. reminders of state 3-foot rule, intersection rules) and safety reminders to bicyclists
Target audience:	Vehicle drivers and bicyclists
Electronic Methods:	social media messages, email blasts (city and police email group, HOA, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	community outreach events, educational/enforcement details, partnerships with local bicycle clubs/groups, pop-up events at local businesses (such as Whitetail Bicycles & Coffee Shop)
Materials:	City and consultant to prepare materials including tip cards; potentially could distribute bike safety materials such as reflectors/lights/helmets/etc.
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:

Pedestrians & Bicyclists & Equestrians

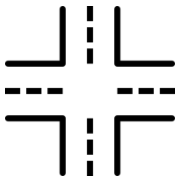
#6 Educational Campaign:	Pedestrian rules of the road
Emphasis area:	Pedestrians & Bicyclists & Equestrians
Explanation:	Provide easy-to-understand educational material and safety reminders to pedestrians and safety reminders to drivers
Target audience:	Vehicle drivers and pedestrians
Electronic Methods:	social media messages, email blasts (city and police email group, HOA, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	community outreach events, educational/enforcement details, pop-up events at local businesses (such as Whitetail Bicycles & Coffee Shop), Milton Trails Advisory Committee meetings
Materials:	City and consultant to prepare materials including tip cards; potentially could distribute safety materials
Additional resources:	i.e. GDOT or national (NHTSA)

Pedestrians & Bicyclists & Equestrians

#7 Educational Campaign:	Etiquette for all modes when approaching equestrians on streets or shared use paths
Emphasis area:	Pedestrians & Bicyclists & Equestrians
Explanation:	Provide materials for road-users to educate them about how to share the road
Target audience:	Vehicle drivers, bicyclists, pedestrians, riders
Electronic Methods:	social media messages, email blasts (city and police email group, HOA, civic groups and school PTO) local media, City webpage, digital signage
In-person Methods:	community outreach events, educational/enforcement details (mock-crash site), Milton Equestrian Committee meetings/outreach, Milton Trails Advisory Committee meetings
Materials:	City and consultant to prepare materials including tip cards
Additional resources:	i.e. national (NHTSA)

Examples:

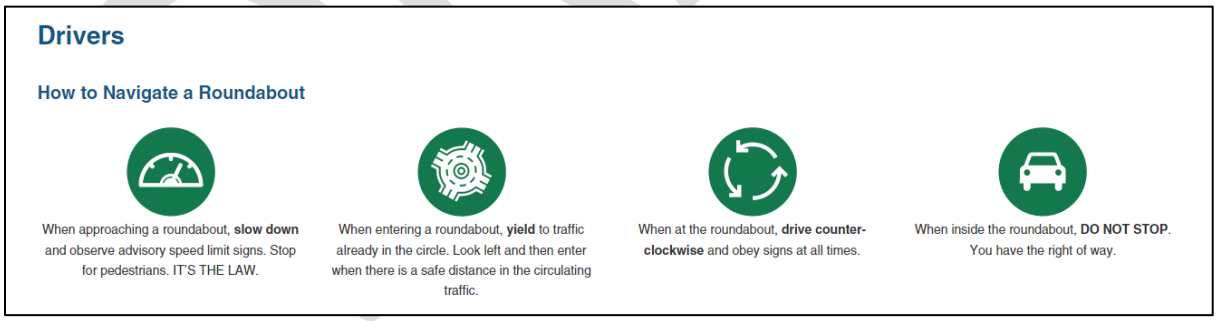
Educational/Enforcement detail with mock-crash site

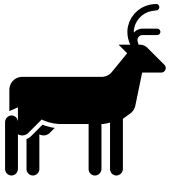


Intersection Safety

#8 Educational Campaign:	Roundabout rules of the road and safety success in the City of Milton
Emphasis area:	Intersection Safety
Explanation:	Educate road-users and share safety benefits (reduction in crashes) due to roundabout installation
Target audience:	Vehicle Drivers, Bicyclists, Pedestrians
Electronic Methods:	Social media messages, email blasts (city and police email group, HOA, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	Community outreach events, educational/enforcement details, pop-up events near roundabouts
Materials:	City and consultant to prepare materials. Could include data on number of crashes and short videos
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:

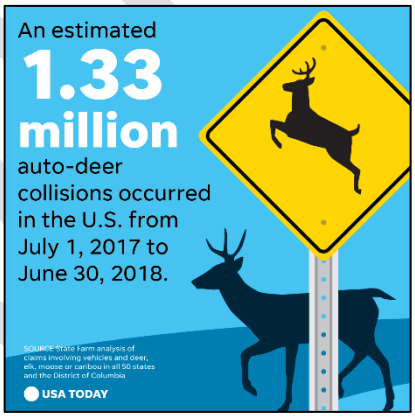


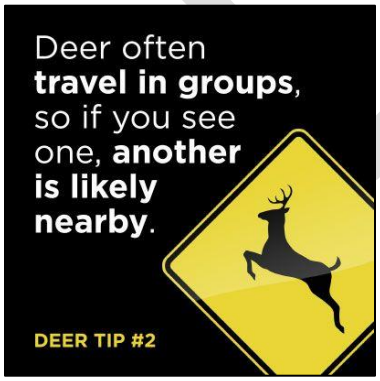


Wildlife/Deer

#9 Educational Campaign:	Scheduled reminders to residents/drivers
Emphasis area:	Wildlife/Deer
Explanation:	Due to the nature of this type of crash/event and timing, raise awareness of crash potential and remind drivers to be cautious (night driving, Rut in November)
Target audience:	Vehicle Drivers
Electronic Methods:	social media messages, email blasts (city and police email group, HOA, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	community outreach events, educational/enforcement details
Materials:	City and consultant to prepare materials. Could include data on number of crashes.
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:





Additionally, to address the focus areas for PTVs/Golf Carts, the following campaign is identified.

#10 Educational Campaign:	PTV rules of the road
Focus area:	PTV drivers
Explanation:	Educate the PTV owners/drivers about City and state laws for use of on public streets and shared-use paths
Target audience:	PTV owners/drivers, drivers and pedestrians in vicinity of PTVs (focused on certain areas of Milton
Electronic Methods:	social media messages, email blasts (city and police email group, HOAs, civic groups and school PTO), local media, City webpage, digital signage
In-person Methods:	community outreach events, educational/enforcement details, City Council meetings, Milton Trails Advisory Committee meetings
Materials:	City and consultant to prepare materials.
Additional resources:	i.e. GDOT or national (NHTSA)

Examples:

2. Engineering Countermeasures

Potential safety countermeasure projects that can be installed or designed were identified for all six emphasis areas. These projects could be appropriate for paved streets classified as collectors and arterials within the city. The specific locations and design details would be determined as part of a separate study from this plan. Some recommendations involve studies or policy changes. Details about the projects are identified below.

Emphasis area:	Vehicle Speeds

1. Perform study to review possible changes (reduction) to posted speed limits on specific streets
    - Applicable to roads identified by the city or community
    - Check for consistency at city/county borders (i.e. Hickory Flat Road at Cherokee County line)
    - Top concern is 45 MPH posted streets
    - Formal Traffic Engineering and Inspection Report recommended to support request to Georgia DOT for speed limit change
    - Consider non-standard conditions (i.e. land uses, farms, types of vehicle/users)
    - Ultimately Georgia DOT approves or disapproves speed limits for the city's radar permit
2. Establishment of Milton specific speed limit zones: horse zone, farm zone, residential zone
    - Speed limit zones appropriate for and adjusted to the local conditions, while preserving the reasonable expectations of all drivers using those roads
    - Conditions not readily apparent to drivers, such as crash history, roadside conditions, and the higher-than-normal presence of bicycle and pedestrian traffic, equestrian traffic
    - Preferably considered in the radar permit but could use advisory speed limit plates to establish the limits of these zones
3. Installation of speed feedback signs on streets at locations of concern
    - This is a continuation of the city's current program
    - Additional locations could be identified and studied to determine if appropriate
4. Install raised median islands (to create horizontal deflection and visual narrowing) at street locations experiencing high speeds or locations where slower speeds are desired
    - The median islands could be similar in design to those at roundabout approaches, and could be located at pedestrian/shared use path crossings, and in advance of horizontal curves

Emphasis area:	Roadway and Shoulder Conditions

1. Remove trees, tree limbs, and vegetation within the roadway shoulder 'clear zone'
    - City could evaluate one street at a time and prioritize locations
2. Add enhanced pavement markings
    - Option to install wider lane lines. GDOT will be changing the standard lane line width from 5-inch to 6-inch. Option to install wider edge line (i.e. 8-inch) in curves or target areas.
    - Option to install higher quality pavement markings which are more reflective in wet conditions/night conditions. For example, the 3M Connected Roads All Weather Elements product provides increased brightness and wet reflectivity.
    - Option to do a pilot project on a street and ask public for feedback
    - Benefit is improved nighttime visibility of roadway (may reduce run-off-the-road crashes)

- Note: All the major streets have double-yellow centerline and white edge line pavement markings

3. Add raised pavement markers (RPM) on yellow centerline
    - Currently only SR 372, Cogburn, New Providence, and Batesville Road have centerline RPMs. Portions of Freemanville, Bethany, and Thompson have centerline RPMs.
    - Recommendation: only on centerline (not on white edge line) due to bicycles
    - Being mindful of bicyclists, do not install physical features such as grooved edge lines and rumble strips (However, speed cushions and some speed hump designs may be feasible.)
4. Add grooved yellow centerline
    - Recently grooved lane lines were installed on SR 372 – both centerline and edge line.
    - Recommendation is only on centerline (not on white edge line) due to bicycles.
    - Can be installed as part of repaving projects
5. Increased frequency of replacement of pavement markings/RPMs
    - City can monitor street conditions and reinstall separately from repaving
6. When repaving major streets (which do not have curb), use the “safety edge” design.
    - This removes the drop at the edge of the pavement and aids driver recovery when tires run off the edge of the pavement.
7. Add 1- to 2-foot paved shoulders along the streets at key locations
    - Option to install at limited distances on horizontal curves or locations with evidence of vehicle tires off the edge of pavement. Typically this is seen at street curves.
    - Option to install for a part of a street segment. These do not have to be the entire length of the street.
    - Due to bicycle stakeholder input, the intent is not to provide a bicycle lane. The intent is to address vehicle tire drop off and provide a limited bicycle shoulder.
8. Install or upgrade curve warning signs
    - The roadway conditions review identified some horizontal curve warning signs or chevron signs. The opinion is additional or enhanced signage may be appropriate.
    - Initial study could be performed to identify and prioritize locations
9. Install curve feedback warning signs
    - Option to install a sign or warning beacon which is activated when an approaching vehicle is traveling too fast for the road conditions
    - The intent is to inform the driver to slow down
10. Upgrade guardrail and extend guardrail lengths at bridges/culverts
    - Most existing locations of guardrail at bridge/culverts need upgrades. Current design standards require adding additional guardrail on the approaches.
    - A study could be performed to identify and prioritize locations
    - Suggest City of Milton identify a standard for aesthetically pleasing guardrail
11. Reconstruct horizontal or vertical curves to provide adequate sight distance
12. Install street lighting
    - Installing street lighting may be appropriate at certain areas of the city and at high volume pedestrian locations.
    - Install additional street lighting at roundabouts
    - Initial study could be performed to identify and prioritize locations
    - Identify (or confirm) an improved/simpler process to report street light outages so power company can quickly repair

13. Policy change to mailboxes on public streets
    - The current city ordinance allows the installation of new breakaway post mailboxes and does not allow the installation of non-breakaway mailboxes. To reduce crashes involving non-breakaway mailboxes, the policy could be revised to address existing locations and replacement when damaged.

Emphasis area:	Pedestrians & Bicyclists & Equestrians

1. Continue work with Milton Trails Advisory Committee to refine and prioritize installation of shared use path locations and identify citywide areas of safety concern
    - Increase community access and use of Trails by implementing the 2020 Milton Community Trail Prioritization Plan
    - The locations could be critical connections, such as to provide safe equestrian crossing of a high speed/high volume street, or along a short stretch of high-volume street
    - The locations could be within walking or bicycling distance from schools
    - The locations could be providing links between subdivisions and city parks, the Crabapple area, Deerfield/Hwy 9 area, or retail uses
2. Suggestion to revisit (review any policy changes, physical changes, and verify any modifications) the two priority networks identified in the previous Comprehensive Transportation Plan: Sidewalk Priority and Bicycle Priority Network
    - Based on the Community Engagement Survey, 76% stated they support adding bicycle lanes or bikeable shoulders, while only 12% stated they did not support this.
    - Based on the Community Engagement Survey, 92% stated they support adding sidewalks or multiuse trails, while only 3% stated they did not support this.
    - Based on the stakeholder meeting input, the fast-riding bicycling community prefers to share the travel lane. Building separate on-street bike facilities (bike lanes) is not desired; however, multiuse trails may be more appropriate. Receiving additional input from the bicycle community on the bicycle priority network, including locations and any facility needs at critical locations, would strengthen the city's implementation plan.
    - Recommend identifying the sidewalk priority plan by street segments and the side of the street so that the residents and city council have an approved plan to strengthen the city's implementation plan.
3. Install bicycle facilities to improve safety at critical locations, such as to provide a safe crossing of a high-speed street/high-volume street, or along a short stretch of a high-volume street
    - Bicycle facilities is the term to describe either a shared-use path, bike lane, separated bike lane, or two-way cycle track
4. Install street crossing facilities to improve safety at critical locations. This could include providing a safe crossing of a high speed/high volume street for pedestrians, bicyclists, and/or equestrians.
    - This could include installing warning signage for drivers in advance of the crossing
    - This could include user activated warning devices, such as RRFBs or Pedestrian Hybrid Beacons
    - This could include mid-block pedestrian crossings
    - This could include in-pavement illumination of crosswalks

5. Install median refuge islands at existing or proposed street crossings
    - The median reduces the length of the crossing, allows the pedestrian to cross in two stages, and helps reduce vehicle speeds
    - This could be installed at critical locations and improve conditions for pedestrians, bicyclists, and/or equestrians.
6. Install warning signage and pavement markings to remind/advise drivers to 1) share the road with bicyclists and 2) the Georgia state 3-foot rule (for example the City of Johns Creek uses two signs along streets)
7. Coordinate with the Milton Equestrian Committee to determine recommendations for enhancing equestrian safety
8. A cumulative list of twenty-five engineering safety countermeasures considered applicable for the City of Milton for nonmotorized users is provided in the **Appendix**. The document includes a description and the effectiveness of each countermeasure.

Requesting resident input and established committees would be very helpful to identify locations and priorities for these strategies.

Emphasis area:	Intersection Safety

1. Install advance intersection warning signs (with street names for directional guidance)
    - Perform citywide review on collector and arterial streets of current signage at major public streets
    - Develop plan which identifies all locations for signage; implement phased installation
    - Option to install flashing warning signs in advance of roundabouts or intersections
    - The benefit includes advising drivers when approaching intersections and directional guidance for unfamiliar drivers
2. Perform separate safety study at individual intersections to identify enhancement options
    - This could be a phased effort, beginning with higher crash locations.
    - Both a historical crash trend review and a field conditions review would be performed to identify potential enhancements. The study may identify maintenance items, low-cost options, or major capital project needs.
    - The study could address safety for all travel modes. The study could be performed at traffic signals, stop-control, and roundabout locations.
3. Install street lighting
    - Installing street lighting may be appropriate at certain areas of the city and at high volume pedestrian locations.
    - Initial study could be performed to identify and prioritize locations
4. Install flashing warning beacon at intersection with limited sight distance
    - The intent is to install on the higher speed street. The warning beacons are activated when a vehicle enters from side street. Typically, these are used on sharp horizontal or vertical curve locations.
5. Improve visibility at intersections by keeping vegetation clear
    - The intent is to provide clear line of sight for all users of the intersection
    - This could be performed by either the city or private property owner; or coordinated with the private property owner
    - Ensure regulatory intersection signage is visible (may become more critical as there are more autonomous vehicles)

6. Install roundabouts at intersections (where conditions are favorable) to address correctable historical crashes and provide an enhanced pedestrian crossing
7. Install reduced conflict u-turn (RCUT) intersections, left-turn restricted intersections, or right-in/right-out driveways to address correctable historical crashes or at proposed intersections
8. Review consistency and/or post slower advisory vehicle speed signs at roundabouts
9. To raise awareness at stop-control or yield control points, install red or yellow reflective strip to the sign pole
10. Enhanced pavement markings, wider edge line, appropriate stop bar and crosswalk locations
11. For new developments, consider incorporating a safety analysis into the traditional traffic impact analysis (TIA) report.
    - Traditionally, TIAs focused on the capacity and operational aspects of increased traffic volumes, assuming that improvements to address operational impacts would also provide safety benefits. However, independent safety analysis was not usually done, resulting in safety impacts being overlooked and opportunities for safety enhancements being missed.
    - Incorporating safety into a TIA can help the city achieve targeted benchmarks for a reduction in crashes and fatalities. Utilizing a Data-Driven Safety Analysis (DDSA) process will enable the identification of existing and potential safety issues expected at the development access locations for vehicular, pedestrian, and bicycle modes.

One suggestion is the residents could be asked to help identify locations of concern for these strategies.

Emphasis area:	Wildlife/Deer

1. Add a unique deer warning signage/reminder signage in strategic (highly visible) locations
    - Recommend not installing signs at every incident location
    - Signage could be seasonally displayed to improve driver awareness (rather than a static, year-round sign)
    - Option to use a full color graphic Variable Message Sign (VMS) could be effectively used at specific times of the year and locations to message regarding deer activity and crashes, as well as all other educational campaigns. A full color matrix display can display messages, texts, symbols and graphics. Mounted on a trailer would allow locating at strategic places.
    - Recommend revising the current City policy regarding installation of deer warning signage
2. When a bridge or culvert is replaced across a road, and it is at a predominant deer crossing location, consider enhancing the bridge (widening/height) to accommodate wildlife/deer crossings
    - Feasibility will include the additional cost, potential fencing to direct wildlife to the crossing, and the expected use

For this emphasis area, note that one educational campaign is recommended, which may be more effective than physical engineering solutions.

3. Enforcement Strategies

Enforcement of city and state laws was identified as a strategy for four emphasis areas. The City of Milton Police actively focus on traffic enforcement and safety daily. The focus is on public complaints, high crash corridors, and speed enforcement. Currently there are three dedicated officers assigned to traffic Monday through Friday. The City intends to hire additional dedicated officers assigned to traffic.

Details about four strategies and current implementation are identified in the following tables as well as one new strategy (#2).

#1 Enforcement:	Enforcement detail – issue citations for speeding vehicles
Emphasis area:	Vehicle speeds
Explanation:	Routine speed enforcement on collector and arterial streets
Schedule:	Daily, Year-round
Target audience:	Vehicle Drivers
Future Activity:	Continue; focus on hot spot locations/streets

#2 Enforcement:	Installation of automated radar enforcement of speed limit in school zones
Emphasis area:	Vehicle speeds in school zones
Explanation:	Georgia state law allows the installation of these in school zones. The City could evaluate if select school zones are good candidates.
Schedule:	On school days during school zone hours
Target audience:	Vehicle Drivers
Future Activity:	City consider implementation

#3 Enforcement:	Enforcement detail – planned traffic stops to remind and advise drivers; issue citations
Emphasis area:	Distracted Drivers
Explanation:	Raise awareness of increased crash potential associated with distracted driving, the state “hands-free” law, severity of crashes, and remind drivers to be cautious; enforce state law
Schedule:	Daily, Year-round
Target audience:	Vehicle Drivers
Notes:	City stated about 60-70 daily stops for holding cell phone; officers typically take a “stop and educate” approach.

#4 Enforcement:	Enforcement detail – planned traffic stops to remind and advise users; issue citations
Emphasis area:	Intersection Safety
Explanation:	Raise awareness of crash potential and remind users of the state laws
Schedule:	Daily, Year-round
Target audience:	Vehicle Drivers, Pedestrians, Bicyclists

#5 Enforcement:	Enforcement detail – planned stops to remind and advise users
Emphasis area:	Pedestrians & Bicyclists & Equestrians
Explanation:	The idea is to raise awareness of crash potential and remind users of etiquette and laws
Schedule:	Daily, Year-round; could also focus on at certain times of year
Target audience:	Pedestrians, Bicyclists, Equestrians
Notes:	Idea to coordinate with Middle Schools and educate since these students are allowed to walk/bicycle to school by themselves
	Outreach to cyclists regarding “rules of the road”

Additionally, the police department could attend community outreach events and raise awareness and share materials to address many of the above emphasis areas.

The City could also consider local ordinance additions that could be used in enforcement.

4. Focus Areas

Two focus areas are safety for all users on multimodal gravel roads, and safety for PTVs (Personal Transportation Vehicle / Golf Carts). Residents' desire to utilize PTVs on city streets and shared use path facilities is expected to increase. A couple emphases areas (i.e. roadway and shoulder conditions, non-motorized modes, and intersection safety) have strategies and projects to address these two focus areas. Additional strategies are provided here.

Focus area:	Multimodal Gravel Roads

1. Design and install simple signage for users on multimodal gravel roads to communicate etiquette: "who yields to who"
    a. An example of a sign is below

2. Install and open new trail facilities, which will provide preferred alternative for residents who currently walk and ride horses on gravel roads
3. Educate walkers on the "Rules of the road"
4. Better define parking areas or no parking areas due to road width or limited visibility
5. Potentially designate for residential traffic only

Focus area:	Safety for PTVs (Personal Transportation Vehicle / Golf Carts

1. The city is currently conducting a study of PTV access for the Crabapple area. This effort will provide policy and ideas which can be applied throughout the city.
2. Other cities in Georgia have varying levels of policy, requirements, and infrastructure for PTVs. The recommendation is to enhance and modify city policies as the need arises.

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Next Steps

The identified strategies and safety countermeasure projects in this report will form the basis for the plan creation. The information in this report will be discussed with key stakeholders and the community.

Once the community input has been incorporated into the report, the implementation plan will be created. The city will have a comprehensive menu of strategies to implement.

APPENDIX

Potential Engineering Safety Countermeasures for Nonmotorized Users

The Federal Highway Administration (FHWA) provides a cumulative list of engineering safety countermeasures for agencies to consider when strategizing roadway safety goals. Twenty-five of these countermeasures considered applicable for the City of Milton for nonmotorized users are provided. A description and the effectiveness of each countermeasure in reducing fatalities and serious injuries for nonmotorized users, including pedestrians, bicyclists, and equestrians, is summarized below.

Category	Countermeasures
Roadway Design	1. Multi-Use Path
	2. Lane Narrowing
	3. Lane Reduction (Road Diet)
	4. Raised Median
	5. Roadway Lighting
	6. Roundabouts
Intersection Design	7. Accessibility Improvements
	8. Crosswalk Visibility Enhancement
	9. Signage and Pavement Marking Enhancements
	10. Raised Crosswalk
	11. Improved Right-Turn Slip Lane Design
	12. Curb Radius Reduction
	13. Centerline Hardening
Midblock Design	14. Rectangular Rapid Flashing Beacons (RRFB)
	15. Pedestrian Hybrid Beacons (PHB)
	16. Median Refuge Island
	17. In-Street Crossing Signage
Traffic Calming and Management	18. Gateway Treatments
	19. Horizontal Deflection Treatments
	20. Vertical Deflection Treatments
	21. Diverter Treatments
	22. Mini-roundabouts
Traffic Operations	23. Pedestrian Signals and Push Buttons
	24. Leading Pedestrian Intervals
	25. Turn Movement Prohibitions

Roadway Design

1. **Multi-Use Paths** are predominantly used by nonmotorized modes which are physically separated from motorized vehicular traffic either by a vertical barrier or horizontal separation within an independent right-of-way. Alternatively, side paths, which are multi-use paths that run adjacent to the roadway, are preferred where constrained right-of-way exists. Well-designed multi-use paths and side paths improve mobility of nonmotorized modes by connecting destinations without gaps or abrupt interactions with vehicular traffic, particularly along multilane and higher speed roadways, or complex intersections.

2. **Lane Narrowing** may reduce vehicular speeds along a roadway corridor where shared lane travel is encouraged for nonmotorized modes and can improve safety and comfort for all users. Reduced travel lane widths of 10 feet are achievable in the appropriate context but travel lane widths of 11 feet may be necessary to accommodate larger design vehicles such as trucks or buses.
3. **Lane Reduction or Road Diets** should be considered on roadways where the number of vehicular travel lanes provide excess vehicular capacity. The additional roadway space can be reallocated for other roadway users in the form of on-street bicycle lanes, on-street parking lanes, widened sidewalks, or landscaped buffers, for example. Road diets are a proven, low-cost safety countermeasure that provide a safer alternative from a traditional four-lane, undivided roadway and can reduce the probability and severity of all crash types.
4. **Raised Medians** can facilitate safer roadway crossing opportunities for nonmotorized travel modes and provides a physically separated area from opposing vehicular traffic streams. This feature allows the nonmotorized user to cross one direction of traffic at a time. Landscaping or street lighting installed in the raised median can reduce vehicular travel speeds, minimize or eliminate turning conflicts, and can improve visibility of nonmotorized users. Marked crosswalks in conjunction with raised medians can significantly reduce pedestrian crashes.
5. **Roadway Lighting** can illuminate pedestrian crossing locations to improve visibility during nighttime conditions. Additionally, adequate lighting enhances commercial areas while improving pedestrian comfort and safety.
6. **Roundabouts** can reduce vehicular travel speeds and reduce the number of conflicts and severity of crash types between all roadway users. They are an effective countermeasure for facilitating a safer environment for nonmotorized users and can be used to transition vehicular traffic from high-speed to low-speed facilities, such as freeway interchanges or from an arterial street to a local street. Roundabouts are a proven safety countermeasure that provide a safer alternative from a traditional intersection.

<u>Intersection Design</u>

7. **Accessibility Improvements**, such as curb ramps, provide safe access to public roadway facilities for nonmotorized users with mobility restrictions or visual impairments. Well-designed curb ramps should be provided at all intersections and midblock locations where pedestrian crossings are present and shall comply with the Americans with Disabilities Act (ADA). Design requirements such as slope, grade, and tactile warning devices that assist nonmotorized users can improve safety and accessibility at crossing locations.
8. **Crosswalk Visibility Enhancements**, such as high visibility marked crosswalks, provide safer intersection crossing movements for all nonmotorized users. Generally, longitudinal crosswalk pavement markings (bar, continental, ladder) are preferred over parallel transverse crosswalk pavement markings due to improved visibility of the crossing surface. In conjunction with intersection lighting, high visibility crosswalks can significantly reduce pedestrian crashes.
9. **Signing and Pavement Marking Enhancements** can supplement high visibility marked crosswalks and intersection lighting to improve safety for nonmotorized users at intersection crossings. Florescent yellow-green warning signs used for pedestrian, bicycle, or school areas, may increase the expectation of these users by differentiating it from other roadway warning signs. Word pavement markings and stop or yield line pavement markings may also be appropriate for higher speed, multilane roadways and can reduce pedestrian crashes.

10. **Raised Crosswalks** create a more prominent crossing location for nonmotorized users and can reduce vehicular speeds due to the vertical deflection of the crossing surface. Raised crosswalks used in commercial settings, school zones, or recreational trail crossings enhance the environment for nonmotorized users and can reduce severe pedestrian crashes by improved motorist yielding behavior.
11. **Improved Right-Turn Slip Lane Design** can emphasize nonmotorized safety at intersections by minimizing the approach speed of right turning vehicles and increasing the visibility of crossing movements. Well-designed slip lanes, such as the concept of the Urban Smart Channel, reduce the exposure of the pedestrians in the roadway by improving the angle of entry prior to the turn. Eliminating the free flow traffic movement and reducing vehicular travel speeds can diminish severe pedestrian crashes for right-turn slip lane movements.
12. **Curb Radius Reductions** can reduce the speed of vehicular turning movements and improve the likelihood of a nonmotorized user being struck by right turning vehicles. Smaller corner radii can also improve intersection sight distance, shorten the pedestrian crossing distance, and reduce pedestrian exposure time in the intersection.
13. **Centerline Hardening** treatments are small rubber barriers or bollards adjacent to marked crosswalks that slow right or left turning vehicle movements at pedestrian crossings. This is a low-cost safety countermeasure that significantly reduce turning speeds, prevents drivers from making diagonal turn movements through a crosswalk, and improves safety for nonmotorized users in the intersection.

Midblock Design

14. **Rectangular Rapid Flashing Beacons (RRFB)** consist of light-emitting diode (LED) beacons that flash with high frequency when activated at an uncontrolled pedestrian crossing. These devices are typically accompanied with pedestrian crossing warning signs and pavement markings and are a safety countermeasure proven to increase motorist yielding behavior and enhances the visibility of nonmotorized users at midblock locations.
15. **Pedestrian Hybrid Beacons (PHB)** are a traffic control device that consist of signal heads comprised of two red lenses above a single yellow lens. The lenses remain dark until activated by a nonmotorized user, which then initiates a flashing sequence followed by a steady red indication. The PHB provides the right of way to the nonmotorized user to safely cross the roadway before reverting to the dark condition after a given interval. PHBs are a proven safety countermeasure that reduce the number of pedestrian crashes at non intersection locations, particularly for higher speed, multilane roadways.
16. **Median Refuge Islands**, like raised medians, provide a physically separated area from opposing vehicular traffic streams, assisting nonmotorized users attempting to cross multilane roadways. Installation of a median refuge island allows the nonmotorized user to cross one direction of traffic at a time and allows the user to better assess acceptable gaps in traffic based on their abilities and crossing speed. Median refuge islands, in conjunction with marked crosswalks, are a proven safety countermeasure and can reduce pedestrian crashes.
17. **In-Street Crossing Signs** (MUTCD R1-6 or R1-6a) are installed between travel lanes or in a median to remind motorists to either stop or yield to nonmotorized users within a crosswalk at an unsignalized location. This sign can be used in conjunction with other crossing improvements to enhance pedestrian activity and can reduce pedestrian crashes.

Traffic Calming and Management

18. **Gateway Treatments**, such as chokers, raised intersections, medians, archways, or other identifiable features can emphasize neighborhood or commercial settings and can convey a slow speed environment for drivers. This feature can create a safer environment for nonmotorized users and is an effective traffic calming treatment when combined with other safety countermeasures.
19. **Horizontal Deflection Treatments**, such as chicanes or lateral shifts, can reduce vehicular travel speeds predominantly on local streets or commercial areas. Pavement marking tapers, shifting on-street parking from one side to the other, or landscaped islands can be an effective traffic calming treatment when combined with other safety countermeasures.
20. **Vertical Deflection Treatments**, such as speed humps, speed cushions, or speed tables, can reduce vehicular travel speeds predominantly on local streets, commercial areas, or school zones. Vertical measures tend to provide the most predictable speed reduction impacts and can be used to enhance the environment for nonmotorized users.
21. **Diverter Treatments**, such as forced turn islands, intersection barriers, or partial/full road closures are a traffic management tool predominantly used within a local street network to discourage vehicular cut-through traffic and speeding while providing safe access for pedestrians, bicyclists, or equestrians. Such treatments may reduce traffic volumes in a residential area and can be used to enhance the environment for nonmotorized users.
22. **Mini-roundabouts** include traversable circular islands used to reduce vehicular travel speed predominantly for intersecting local streets. This countermeasure can be considered where an all-way stop, two-way stop, or traffic signal is not warranted and is a proven safety countermeasure to reduce all crash types and provide an enhanced pedestrian crossing.

Traffic Operations

23. **Pedestrian Signals and Push Buttons** at signalized intersections provide a dedicated interval for permitting a pedestrian movement across the roadway. The use of a pushbutton activates an adequate WALK interval at a traffic signal and provides right of way for the crossing movement followed by a DON'T WALK interval. This can be used in conjunction with other crossing improvements to enhance pedestrian activity and can reduce pedestrian crashes at signalized intersections.
24. **Leading Pedestrian Intervals** (LPI) give the pedestrian a 'head start' at a signalized crossing location and allows the pedestrian to establish their presence in the crosswalk before left or right turn vehicle movements. LPIs can increase the visibility of crossing pedestrians and can improve motorist yielding behavior to pedestrians. This can be used in conjunction with other crossing improvements to enhance pedestrian activity and is a proven safety countermeasure to reduce pedestrian crashes at signalized intersections.
25. **Turn Movement Prohibitions**, such as right-turn on red (RTOR) restrictions, can be used where exclusive pedestrian or bicycle phases are used at traffic signals or where a high number of nonmotorized users are present. Time of day, variable message signs, or blank-out signs with clear messaging may contribute to greater compliance by motorists. Prohibiting RTOR is a low-cost safety countermeasure and when paired with LPIs can enhance pedestrian safety at signalized intersections with minimal impact to vehicular delay.

Sources:

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