Agenda – Executive Policy Committee – March 16, 2022

Report – Standing Policy Committee on Infrastructure Renewal and Public Works – March 8, 2022

Item No. 5 Zipper Merge Signage – Update to the Manual of Temporary Traffic Control on City Streets

STANDING COMMITTEE RECOMMENDATION:

On March 8, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works concurred in the recommendation of the Winnipeg Public Service, as amended, and submitted the following to Council:

1. That the "Manual of Temporary Traffic Control on City Streets, 2021 Edition" be rescinded, and that the attached "Manual of Temporary Traffic Control on City Streets, 2022 Edition" (Appendix A) be approved.

2. That the Winnipeg Public Service be directed to report back to the Standing Committee at its March 2023 meeting on the following:

    A. the inclusion of the recommended 60 km/hour zipper merge signs; and

    B. the use of zipper merge signage in 80 km/hour designated construction zones.

3. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

Report – Standing Policy Committee on Infrastructure Renewal and Public Works – March 8, 2022

DECISION MAKING HISTORY:

STANDING COMMITTEE RECOMMENDATION:

On March 8, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works concurred in the recommendation of the Winnipeg Public Service, with the following amendment:

- Add the following new Recommendation 2 and renumber the remaining accordingly:

    "2. That the Winnipeg Public Service be directed to report back to the Standing Committee at its March 2023 meeting on the following:

        A. the inclusion of the recommended 60 km/hour zipper merge signs; and

        B. the use of zipper merge signage in 80 km/hour designated construction zones."

and submitted the matter to the Executive Policy Committee and Council.

On February 8, 2022, the Standing Policy Committee on Infrastructure Renewal and Public Works granted an extension of time to its March 8, 2022 meeting for the Winnipeg Public Service to report back on the matter.

COUNCIL DECISION:

On October 28, 2021, Council concurred in the recommendation of the Standing Policy Committee on Infrastructure Renewal and Public Works and adopted the following:

1. That the Winnipeg Public Service be directed to report back to the Standing Policy Committee on Infrastructure Renewal and Public Works in 120 days on the following, and provide quarterly verbal reports beginning December 1, 2021:

    A. Updating the Manual of Temporary Traffic Control on City Streets for 2022, to include zipper merge signage encouraging motorists to merge at the point where a lane closes due to construction.

Report – Standing Policy Committee on Infrastructure Renewal and Public Works – March 8, 2022

DECISION MAKING HISTORY (continued):

COUNCIL DECISION (continued):

B. Undertaking the following in time for the 2022 construction season, if the zipper merge signage requires approval by the Province of Manitoba:

i. Submit a request for approval to the Province to accommodate the usage of zipper merge signage;

ii. Submit a request to the Province for the authorization to conduct a pilot project for the usage of zipper merge signage, if it is evident the signage will not be approved in time for the 2022 construction season.

2. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

ADMINISTRATIVE REPORT

Title: Zipper Merge Signage – Update to the Manual of Temporary Traffic Control on City Streets

Critical Path: Standing Policy Committee on Infrastructure Renewal and Public Works – Executive Policy Committee – Council

AUTHORIZATION

Author	Department Head	CFO	CAO
D. Patman, P. Eng.	J. Berezowsky	N/A	M. Jack

EXECUTIVE SUMMARY

This report recommends implementing the 2022 Edition of the Manual of Temporary Traffic Control on City Streets ("the Manual") to replace the 2021 edition. This revision is a targeted update, and focuses on the introduction of zipper merge signage, and updates to reflect the City's new lane closure application. The Manual introduces new zipper merge signs, includes a diagram of zipper merge signage layout, and includes clear guidance on when they are required in work zones in the City.

Zipper merge signage has been added to the Manual as a required component of Designated Construction Zones on streets with speeds of 80 km/h or higher, with a duration of two or more days, and when two traffic lanes are temporarily reduced to one. Although there are many locations outside of these criteria where zipper merges would be beneficial, creating clear criteria allows the process to fit within the constraints of the existing lane closure process.

Adopted zipper merge signage will appear similar to that in other Canadian jurisdictions, and will be required in work zones on streets with normal speed limits of 80 km/h or higher, when the work duration is two days or longer, and when two lanes are reduced to one lane.

The Public Service intends to support zipper merge signage with a public education campaign under development to coincide with the Spring 2022 construction season. Information and updates on public education will be provided as part of quarterly verbal reporting. The estimated cost of the campaign is $5,000 which would be funded by the Traffic Engineering Improvements Program budget.

RECOMMENDATIONS

1. That the "Manual of Temporary Traffic Control on City Streets, 2021 Edition" be rescinded, and that the attached "Manual of Temporary Traffic Control on City Streets, 2022 Edition" (Appendix A) be approved;

2. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

REASON FOR THE REPORT

On October 28, 2021 Council concurred in the recommendation of the Standing Policy Committee on Infrastructure Renewal and Public Works and adopted the following:

1. That the Winnipeg Public Service be directed to report back to the Standing Policy Committee on Infrastructure Renewal and Public Works in 120 days on the following, and provide quarterly verbal reports beginning December 1, 2021:

    A. Updating the Manual for 2022, to include zipper merge signage encouraging motorists to merge at the point where a lane closes due to construction.

    B. Undertaking the following in time for the 2022 construction season, if the zipper merge signage requires approval by the Province of Manitoba:
        i. Submit a request for approval to the Province to accommodate the usage of zipper merge signage;
        ii. Submit a request to the Province for the authorization to conduct a pilot project for the usage of zipper merge signage, if it is evident the signage will not be approved in time for the 2022 construction season.

By definition in the Street By-law (No.1481/77), new editions of the Manual require approval by Council.

IMPLICATIONS OF THE RECOMMENDATIONS

There are no direct initial costs associated with the recommendation. The additional effort and cost of placing, maintaining and removing the appropriate temporary traffic control is borne by the Contractor or City forces doing the work. The 2022 Manual will be made available electronically on the City's website.

The resulting public education campaign will be funded by the Traffic Engineering Improvements Program budget to a maximum cost of $5,000 in 2022.

HISTORY/DISCUSSION

ZIPPER MERGE

In general, most drivers will begin to change lanes ahead of a work zone at the first indication that a lane is closing. Depending on local conditions, traffic flow may improve if drivers were to use both lanes while approaching the lane closure and alternate merging just upstream of the closure, using a zipper merge (late merge) strategy.

The zipper merge strategy is effective when there are high traffic volumes, long queues, and low speeds. This strategy directs drivers to remain in the closed lane until they reach a designated merge point. Upon reaching the merge point, they will merge with drivers in the open lane in an alternating pattern. The benefits of a zipper merge strategy include a reduction in travel time as the merging is in a consistent pattern, and shorter queue lengths upstream of the closure as the queue is equally shared by two lanes.

Zipper merge signage has been added to the Manual as a required component of Designated Construction Zones on streets with speeds of 80 km/h or higher, with a duration of two or more days, and when two traffic lanes are temporarily reduced to one. Although there are many locations outside of these criteria where zipper merges would be beneficial, creating clear criteria allows the process to fit within the constraints of the existing lane closure process.

The addition of zipper merge signage will increase the length of the work zone approach by 300 metres when static signs are used, or by 200 metres when variable message signs are used. Bilingual signage will further increase the work zone lengths. These distances are calculated using the required sign spacing for a road with an 80km/h posted speed limit. During the peak of construction there can be several hundred active lane closures in the City of Winnipeg and it is not practical to place the zipper merge signage at all these locations.

Zipper merge signage will consist of three new signs, shown in Figure 1, below.



Figure 1 - Zipper merge signs

The first two zipper merge signs will be installed after the start of the Designated Construction Zone. These signs will indicate to drivers that there is a zipper merge area ahead, and to use both lanes. Following the speed reduction, and approaching the taper, a third zipper merge sign will advise drivers to take turns merging. This sign layout is shown in Figure 2, below.

The use of variable message signs instead of static signs is preferred due to increased visibility, and a shorter work zone, but is often not practical due to the availability of variable message sign boards and the associated costs of increasing inventory. Variable message signs can include three pages of information, and a single variable message sign can be used in lieu of the first two zipper merge signs.

The City of Winnipeg owns two operational variable message signs that are in high demand. They have been used for social distancing messaging related to the Covid-19 pandemic since 2020 and are not available for this project.

Zipper merge signage is in use in a handful of other jurisdictions in Canada. The provinces of British Columbia, Alberta, and Newfoundland and Labrador, as well as the City of Saskatoon, include zipper merge signs in their work zone manuals. Feedback from other jurisdictions that have implemented zipper merge signage indicates zipper merge culture is heavily dependent on the presence of signs. At locations where signs are not installed, drivers are much less likely to adopt the zipper merge strategy. Late merging is a concept that works best when drivers cooperate, and some of the work zones that may benefit the most from the zipper merge strategy may not meet the criteria for required signage in Winnipeg. It is important that driver education focus on zipper merge acceptance and encouraging drivers to zipper merge when it

makes sense, opposed to only when signs are present. The signed work zones will encourage drivers to zipper merge, but to see the true benefit of zipper merges, drivers must be able to recognize other work zones where the same strategy would prevail.

With a successful educational campaign and a driving culture transition to one that is more accepting of zipper merge strategies, the zipper merge signs can eventually be removed from use.

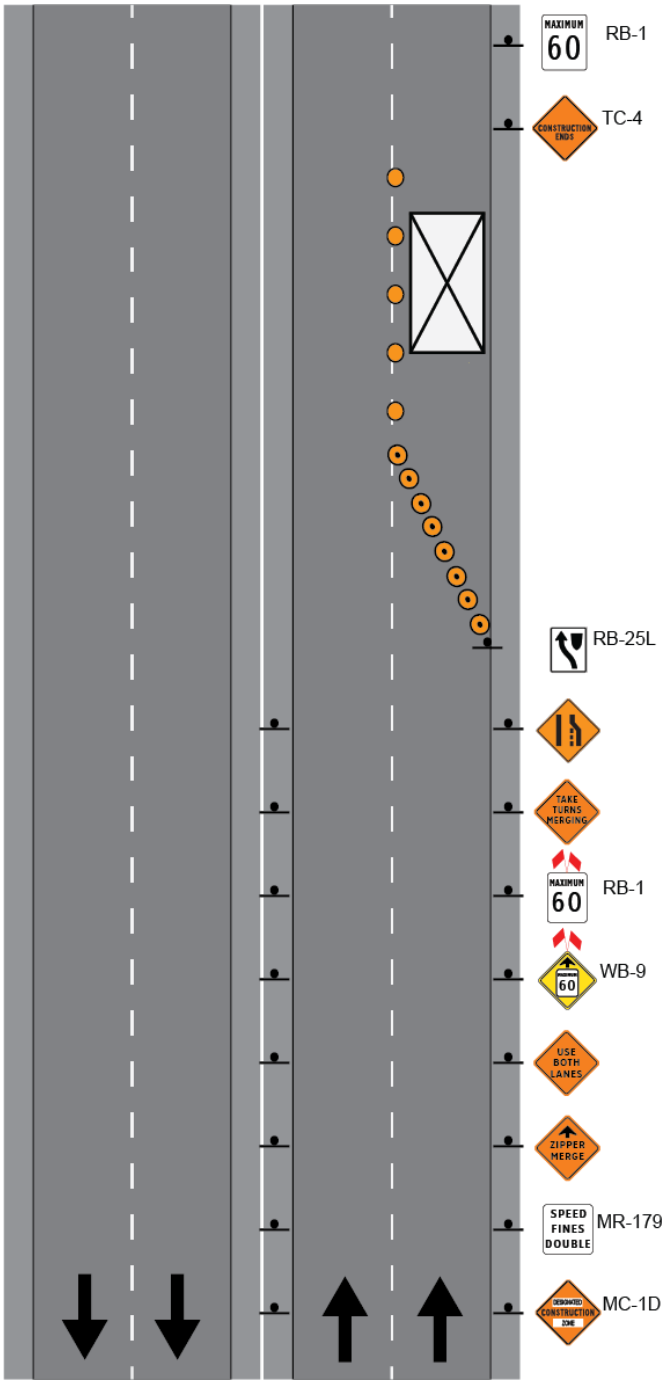

Figure 2- Zipper merge signs as part of a Designated Construction Zone

MANUAL OF TEMPORARY TRAFFIC CONTROL UPDATE

The addition of zipper merge signage to the Manual will require Council approval. The previous version of the Manual, 2021 Edition was approved by Council on April 29, 2021.

It is proposed that the existing "Manual, 2021 Edition" be replaced with a 2022 edition. This 2022 edition has two primary objectives: 1) to introduce zipper merge signage, and 2) to update language to refer to the Lane Closures Application launched by the City in 2021.

The 2022 edition (Appendix A) contains the following substantial changes as compared to the 2021 edition:

1. The diagram of a standard Designated Construction Zone setup was updated to include zipper merge signs (Section 3.04.03)
2. A section was added to introduce the zipper merge concept and define criteria on when they are to be used. (Section 3.04.04)
3. Zipper merge signs were added to the illustration of common traffic control signs. (Section 5.02.01)
4. The term Lane Closure Application was added to the list of definitions to refer to the recently launched browser and mobile based application where all lane closures are managed. (Section 1.03)

The City has initiated a request to the Province of Manitoba to accommodate zipper merge signage on a temporary or permanent basis. Updates will be provided in quarterly reports.

The potential exists for changes to the Provincial Regulations regarding Designated Construction Zones (Regulation 145/2014) after the 2022 is approved. Updates to the current manual edition regarding Designated Construction Zones will be made by the Public Service as necessitated by a potential future regulatory change.

Once the 2022 Edition of the Manual has been approved, a letter advising of the new edition and indicating how a 2022 Manual can be accessed on the City's website will be emailed to sign manufacturers, licensed contractors, BIZ groups, project managers, crane operators, developers, consultants, utilities and internal City staff. In the event that updates to the Manual are required, updates will be made to the electronic version online and stakeholders will be notified of the update via email as per the above.

PUBLIC EDUCATION SUPPORT

Social marketing (not to be confused with social media) will be a major driver of the zipper merge initiative. This type of marketing focuses on achieving a shift by leading people along a continuum of behavioural change: from awareness of an issue to acceptance of the issue to testing new behavior to, finally, adoption of a permanent habit.

The Public Service is currently developing a small-scale public education campaign that will aim to achieve widespread awareness of the concept of zipper merging, in an attempt to prompt drivers to begin changing their merging behaviours in construction zones. The Public Service will report on its plans as part of its quarterly verbal reporting requirement on zipper merges, with an anticipated launch date to coincide with the start of 2022 construction season.

Previous pilots of zipper merge signage in Winnipeg concluded that the effectiveness was tied directly to public education. The estimated cost of the campaign is $5,000 which would be funded by the Traffic Engineering Improvements Program budget. Future, larger-scale promotion and education may require a dedicated funding source.

FINANCIAL IMPACT

Financial Impact Statement

Date: January 28, 2022

Project Name:

First Year of Program **2022**

Zipper Merge Signage – Update to the Manual of Temporary Traffic Control on City Streets

	2022	2023	2024	2025	2026
Capital					
Capital Expenditures Required	$ 5,250	$ -	$ -	$ -	$ -
Less: Existing Budgeted Costs	5,250	-	-	-	-
Additional Capital Budget Required	$ -	$ -	$ -	$ -	$ -
Funding Sources:					
Debt - Internal	$ -	$ -	$ -	$ -	$ -
Debt - External	-	-	-	-	-
Grants	-	-	-	-	-
Reserves, Equity, Surplus	-	-	-	-	-
Other	-	-	-	-	-
Total Funding	$ -	$ -	$ -	$ -	$ -
Total Additional Capital Budget Required	$ -				
Total Additional Debt Required	$ -				
Current Expenditures/Revenues					
Direct Costs	$ -	$ -	$ -	$ -	$ -
Less: Incremental Revenue/Recovery	250	-	-	-	-
Net Cost/(Benefit)	$ (250)	$ -	$ -	$ -	$ -
Less: Existing Budget Amounts	(250)	-	-	-	-
Net Budget Adjustment Required	$ -	$ -	$ -	$ -	$ -

Additional Comments: Total estimated cost of $5,250.00 will be funded by the 2021 Traffic Engineering Improvement Program (Public Works Capital Project #1831000721 - Roadside Safety Improvement). Incremental Revenue/Recovery represents the Departmental Engineering and Interest Overheads.

"signed by J. Ruby, CPA, CA"

J. Ruby, CPA, CA
Manager of Finance & Administration

CONSULTATION

This Report has been prepared in consultation with: N/A

OURWINNIPEG POLICY ALIGNMENT

The recommendations of this report are aligned with the key strategic goal of a safe, efficient and equitable transportation system for people, goods and services in the Sustainable Transportation Direction Strategy that supports OurWinnipeg.

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

N/A

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

N/A

SUBMITTED BY

Department: Public Works
Division: Transportation
Prepared by: Morgan Glasgow, P.Eng., Traffic Network Engineer
Greg Blatz, P.Eng., Traffic Management Engineer
Date: January 28, 2022
File No:

Attachments:
Appendix A – 2022 Manual of Temporary Traffic Control on City Streets