

**To: District Managers, Transportation
Director, Construction and Maintenance Branch
Director, Engineering Branch
Engineering Branch Section Heads
Regional Managers of Engineering
Regional Managers, Operations
Regional Geotechnical and Materials Engineers
Director, Commercial Vehicle Safety and Enforcement
Chief Engineer, Engineering Branch, FLNRO**

**Subject: Tire Pressure Control Systems
Use During Seasonal Load Restriction Period**

Objective:

The Ministry of Transportation & Infrastructure (MoTI) will now allow exemptions to the Seasonal Load Restrictions Program when Tire Pressure Control System (TPCS) technology is used.

Background:

Seasonal Load Restrictions, restricting the legal loads carried by trucks, are placed on many roads used by industry during the spring. The load restrictions are intended to prevent excess damage to the roads during a time when the roads are weakened and the restrictions can be in place from 6 to 8 weeks or even longer. With these restrictions in place, it can become uneconomic for industries to use the roads.

The Seasonal Load Restrictions are put in place by use of frost probe data, historical beam reading data and weather data for the current year. Typically, the timing for the removal of load restrictions is based on regional beam data but also on historical data and visual observations. It has been shown that with the use of reduced tire pressures with TPCS, there is no increase in damage to the road during the later portion of the Seasonal Load Restriction period. Trucks can therefore start hauling at an earlier date during this period on selected roads.

TPCS allows truckers to automatically reduce and increase tire pressures to pre-set optimum levels over the course of a trip by use of an onboard computer. A data logger installed in the truck records tire pressures and vehicle speeds during the trip and this information will be downloaded. This information along with vehicle axle weights, will be monitored by government staff to ensure compliance with the regulations and to ensure safety.

The benefits to the truck based industries and to the Provincial economy include the following:

- more efficient use of trucks,
- traffic congestion at times will be reduced,
- inventory carrying costs and land use costs are reduced,
- multiple log handling in yards is reduced
- the yield and value of wood is increased due to the hauling of fresh logs during this period
- extended employment season for workers
- highway infrastructure degradation is reduced if Tire Pressure Control systems are used outside the Seasonal Load Restriction period.

It is intended that, with this technology, the government will ensure that the resource roads are not significantly damaged by inappropriate use during the spring thaw.

Details of the TPCS program:

Individual firms (i.e. forestry companies, trucking companies, mining companies, oil and gas industry, fuel hauling companies, etc.) would make formal application to MoTI District offices for inclusion of specific roads and trucks into the program. Individual MoTI Districts would then review the application for suitability and issue the exemption letter of authorization. Enforcement of the exemption would be by the MoTI Commercial Vehicle Safety and Enforcement (CVSE) Office. This would be done by accessing data loggers installed in each truck with information made available for viewing. Hauling on specified roads would commence when road strength has reached permitted values. See attached flow chart of process.

Application to MoTI would need to include the following details:

- List of proposed roads and posted speeds
- Firm making application and contact information (address, phone and fax numbers, email)
- Beam Consultant registered in MoTI Registration Identification Selection and Performance Evaluation System (RISP)
- Truck Company Name and contact information
- Truck and trailer configuration. A list of typical truck configurations is provided for information in Attachment 3. This list is not a list of acceptable configurations but only provides configurations for discussion, terminology and identification.
- Truck and trailer vehicle Identification number
- Truck and trailer plate numbers
- Number of proposed daily loads and days of hauling

Precondition survey data (loaded and unloaded lanes):

1. Beaming of key road segments at peak strength (early fall) (one 1000 m long control section per proposed road segment, one beam reading per 100 m, control section placed at the weakest point within the road); and

2. Video of proposed segment taken as driving along the road segment and under good lighting at a speed of less than 50km/h

This policy does not permit the use of single axle rear jeeps. It should also be noted that all single non steer axles are restricted to axle weights of 8,000 kg. Also, this policy does not affect tire pressures for steer tires. Applicable tolerances are not included in determination of vehicle axle weights.

MoTI District will review the roads for suitability considering the age, condition, structural make up of the road and other traffic loading. Some roads may be excluded as they are deemed to be at very high risk of deterioration. Roads to be excluded from the program will be those that have peak fall strength reading above 1.5 mm.

The Letter of Authorization to the applicant is to be reviewed by the MoTI District Manager of Commercial Transport.

When issuing the approval, the MoTI District will specify the following:

- List of roads for which the approval applies,
- List of acceptable trucks, configurations (TABLE)
- Required tire pressures will be 55 psi for travel speeds of 50 km/h and 65 psi for travel speeds of 80 km/h. The MoTI District offices will review travel speeds as provided in the Industry applications according to the posted speed limits and the road alignment challenges.
- Threshold rebound value (as proven by the Benkleman Beam testing) will be 1.5 mm before hauling can commence (i.e. trucks may still be prohibited from hauling during the very weakest road strength conditions).
- Required TPCS truck equipment shall include data loggers to permit enforcement audits. Data loggers must collect and collate the following data for that portion of the route that is load restricted:
 - trip route,
 - TPCS-controlled tire pressures, and
 - truck speeds.

Data must be collected at a frequency that allows enforcement for any point along the route.

- Axle weights for each trip must be added by the applicant to the trip data and posted on the web site.
- Benkleman Beam data collection requirements – the applicant is responsible for beaming of the road to determine when the rebound value reaches the required threshold value at which time hauling can begin. Beaming must be carried out at the same location as the early fall test section where the maximum strength was determined.
- Signage on approved TPCS road shall be erected before start of hauling.

Applications must be submitted by no later than October 15 for the following road strength loss season.

Penalties

Penalties for failing to follow the terms of the exemption as determined by audits of the data logs would be incremental:

1. First offence – written warning to trucker and applicant firm
2. Second offence – exemption voided for remainder of load restriction season to trucker and written warning to applicant firm
3. Third offence - a three year moratorium would be placed on that trucking company and/or the division of the applicant firm for application to the program anywhere in the province

MoTI reserves the right to immediately revoke permissions for individual truckers and/or the trucking company for gross violations without proceeding through the intervention process described above.

Additional Conditions:

1. MoTI retains the right to revoke the exemption at any time without notice during the TPCS Haul Program.

Contact:

Crystal Lacher, M.Sc., P. Eng.
Geotechnical & Standards Engineer
Engineering Services Branch



Dirk Nyland, P. Eng.
Chief Engineer

Attachments

1. Sample Letter of Authorization
2. Application Form
3. Truck configurations
4. General Benkelman Beaming Guidelines in Support of Tire Pressure Control Systems
5. Flow Chart of application and approval process
6. Standard TPCS Haul Route signage



**Sample
LETTER OF AUTHORIZATION**

File: 19000-20

April 27, 2017

Mr. Joe Smith
Applicant Firm
910 Ski Street
Somewhere, BC V8W 9J2

Dear Mr. Smith:

This letter is authorization for the following truck and trailer combinations to operate at legal axle weights on a seasonal restricted road that has been approved by the Ministry of Transportation (MoT).

1. The driver/operator of the truck must carry the original or a copy of the Letter of Authorization and a copy of the beaming letter at all times when this vehicle is operated on an approved Tire Pressure Control System road and have it available to present to an enforcement official.
2. This authorization applies only to the trucks listed below in combination with the trailers listed:

Trucking Company	Truck Information			Trailer Information			Configuration	Permissible Axle Group Loads (tonnes)
	Make	Plate no	VIN #	Make	Plate No	VIN#		
ABC Log Haulers	Kenworth	1234AB	47643...	Peerless	12345A	4776	Tridem tractor/ Tridem pole trailer	Tridem = 24
	Peterbilt	5678CD	57489...	Anser	67890B	7457	Tandem Tractor/ tandem pole trailer	Tandem = 17
	Kenworth	1345EF	56747...	Brodex	24682C	47583	Tandem Tractor/ Jeep/ triaxle	Tandem = 17 Single = 8
ZYX Haul	Mack	9876GH	57489...	Superior	24678D	434557	Tridem tractor/ Tridem pole trailer	Tridem = 24
	Volvo	1987AF	57489...	Peerless	87612E	65436	8 axle b-train	Tridem = 24 Tandem = 17

3. The following roads are approved for use with Tire Pressure Control Systems (TPCS) conditional to the following rebounds, tire pressures, and speeds.

Road Name	Road Segment	Max. Rebound Required (mm)	Tire Pressure (psi)	Speed (kmh)
Nazko Hwy	0 – 5 km	1.5	55	50
	5 – 15 km	1.5	65	80
	15 – 50 km	1.5	65	80
Tibbles Road	0 – 43 km	1.5	55	50

Beam data providing the maximum rebound information must be presented in writing by Beam Consultant.

4. Trip data will be posted to the following website:

The password will be provided to MoT/MPSSG

5. This letter is not transferable to another party or vehicle.

6. The vehicle combination must have a Global Positioning System, and a TPCS installed on all axles except the steering axle. The vehicle must have a datalogger that is capable of measuring, recording and reporting trip route, and TPCS-controlled tire pressures, and truck speeds. Axle weights for each trip must be added by the applicant to the trip data. This information must be made available to Ministry officials in this format and, when requested, must supply supporting documents. The information must be supplied at a frequency acceptable to Ministry officials.
7. The driver/operator must comply with legal axle weights in the Commercial Transport Regulations and the applicable tolerance in 7.06 of the Regulations does not apply to this Letter of Authorization.
8. If, in the opinion of the Minister, or any person authorized by the Minister, the operation of the vehicle is found to be causing damage to the road, the Minister may suspend or cancel this authorization. It shall be sufficient if such notice is given verbally or otherwise, to the person owning or to the person driving or operating the vehicle, and no formal notice of suspension shall be required.
9. No other exception is expressed or implied with respect to the Commercial Transport Act or Regulations.
10. This authorization letter is valid until August 31, 2005.
11. This authorization does not apply to roads outside Ministry of Transportation jurisdiction.

Yours truly,

District Manager, Transportation

Copy: Mike Oliver, P. Eng., Chief Geotechnical, Materials & Pavement Engineer - MoT
Doug Elliot, Manager Weights and Measures - MPSSG
Name – Regional Compliance Manager - MPSSG
Allan Bradley, R.P.F, P. Eng., Sr. Researcher - FERIC

FIRM CONTACT INFORMATION

FIRM NAME		
ADDRESS		
TELEPHONE	FAX	EMAIL

 BEAM CONSULTANT ACCEPTABLE TO MOT
TRUCK COMPANY CONTACT INFORMATION

TRUCK COMPANY		
ADDRESS		
TELEPHONE	FAX	EMAIL

TRUCK AND TRAILER INFORMATION

CONFIGURATION	VEHICLE I.D. NUMBER	PLATE NUMBERS	No. PROPOSED DAILY LOADS	PROPOSED DAYS OF HAULING

ROAD INFORMATION

PROPOSED ROADS	POSTED SPEED

ADDITIONAL INFORMATION
PLEASE ATTACH THE FOLLOWING PRECONDITION SURVEY DATA (LOADED AND UNLOADED LANES)

1. BEAMING OF KEY ROAD SEGMENTS AT PEAK STRENGTH (EARLY FALL) (ONE 1000m LONG CONTROL SECTION PER PROPOSED ROAD SEGMENT, ONE BEAM READING PER 100m, CONTROL SECTION PLACED AT THE WEAKEST POINT WITHIN THE ROAD)
2. VIDEO OF PROPOSED SEGMENT TAKEN AS DRIVING ALONG THE ROAD SEGMENT AND UNDER GOOD LIGHTING

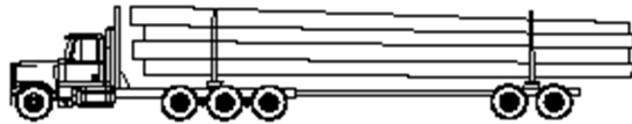
Examples of Long Log Truck Configurations:



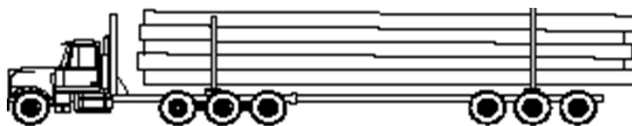
Tandem tractor / Tandem pole trailer



Tandem tractor / Tridem pole trailer



Tridem tractor / Tandem pole trailer



Tridem tractor / Tridem pole trailer

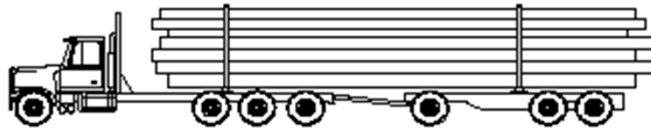


Tandem tractor / Quad axle trailer

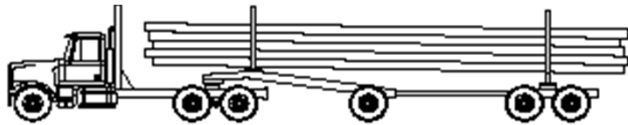
Examples of Long Log Truck Configurations:



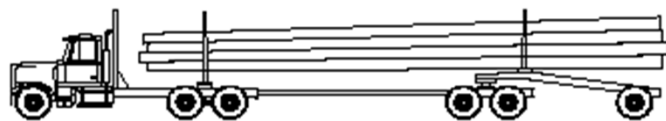
Tandem tractor / Triaxle trailer



Tridem tractor / Triaxle trailer^f



Tandem tractor / Jeep / Pole trailer



Doglogger

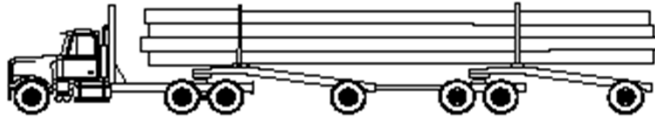


Tandem tractor / Tandem jeep / Pole trailer

Note: single axle maximum weight is 8000 kg for this program

This configuration is not permitted under this program

Examples of Long Log Truck Configurations:



Double dog

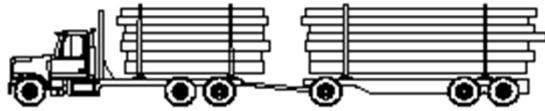


Tandem tractor / Jeep / Triaxle trailer

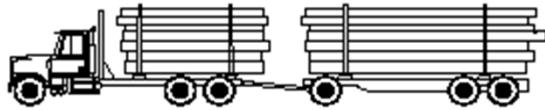
Not permitted under this program

Note: single axles maximum weight 8000 kg

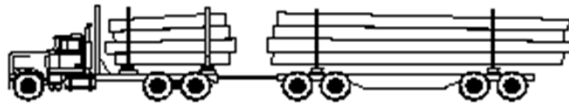
Examples of Short Log Truck Configurations:



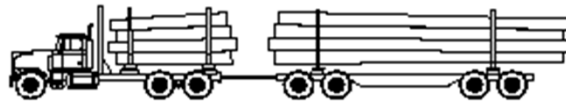
TAC truck / TAC three-axle full trailer



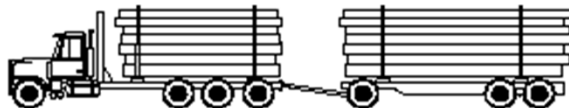
Non-TAC truck / three-axle full trailer



TAC truck / TAC four-axle full trailer



Non-TAC truck / four-axle full trailer



Tridem truck / three-axle full trailer

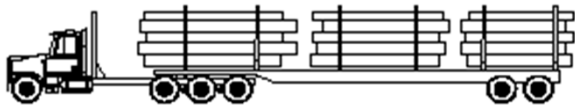


Tridem truck / four-axle full trailer¹

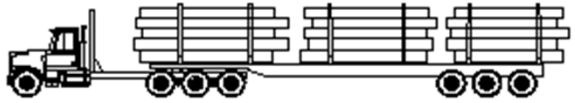
Examples of Short Log Truck Configurations:



TAC tractor / tridem semi-trailer



Tridem tractor / tandem semi-trailer



Tridem tractor / tridem semi-trailer



Tridem tractor / B-train



TAC 8-axle B-train

Attachment 4

General Benkelman Beaming Guidelines In Support of Tire Pressure Control Systems

During the period of spring thaw when road networks are typically weak, the Ministry of Transportation is accepting applications for the use of Tire Pressure Control Systems (TPCS) to allow increased loads on roads posted as low as 70%.

Each application for the use of TPCS will be assessed separately based on the results obtained through roadway deflection testing using the Benkelman Beam.

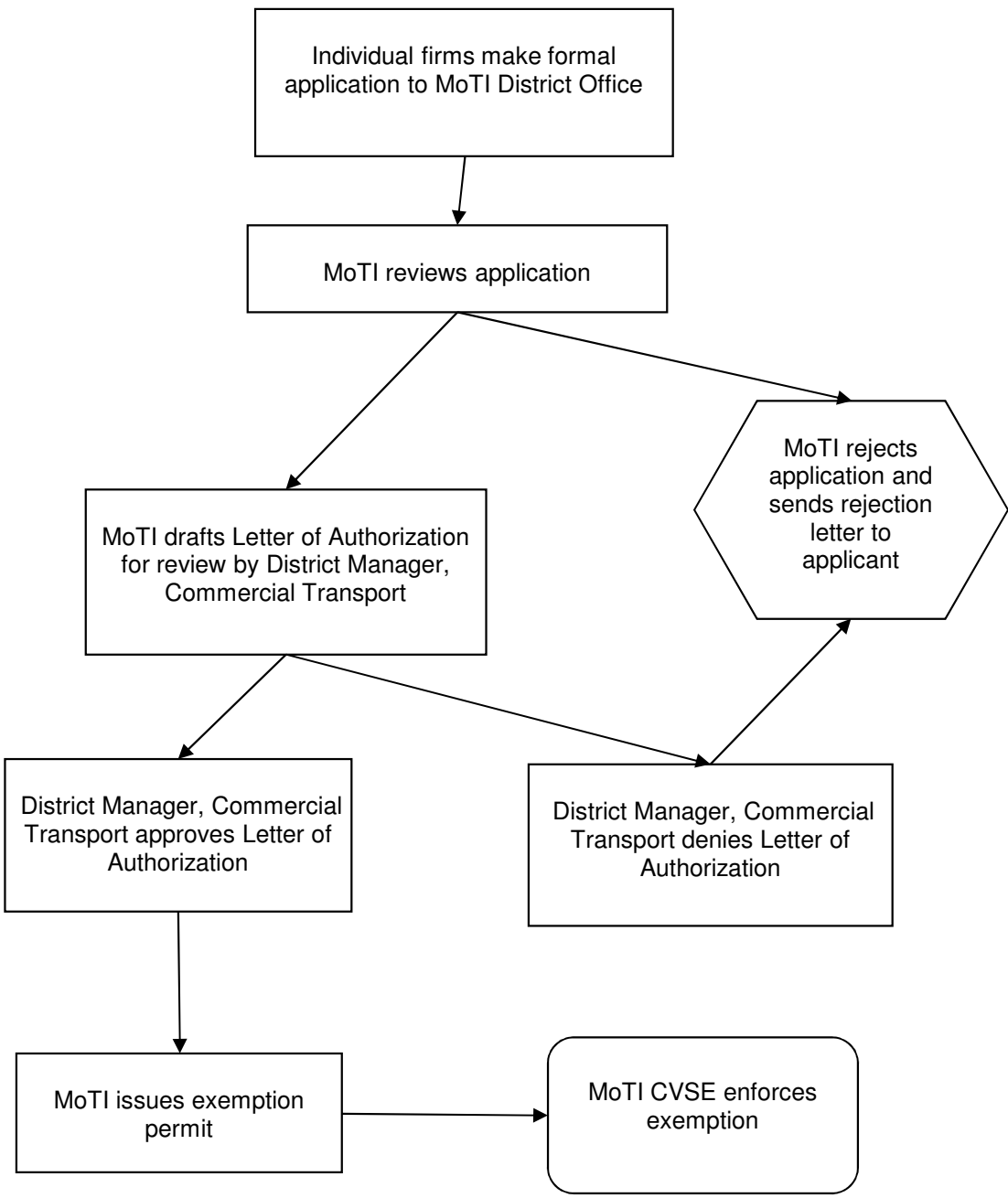
The proponent of the TPCS program will retain the services of a technical or professional roadway analysis company that has extensive, demonstrated experience in using the Benkelman Beam and analyzing the deflection results obtained.

General Testing Requirements:

1. During the fall prior to the proposed TPCS spring haul, the beaming consultant will establish and test a 1 km long control section on the weakest segment of public road to be hauled on. The TPCS control section will consist of 10 test points clearly marked on the road, located in the loaded lane, and spaced over the length of the section.
2. The beam consultant will then test the control section during the following spring until the specified restriction rebound is obtained (The restriction rebound is the value obtained by adding the mean plus 2 standard deviations of all the test point rebound values).
3. Once the road segment reaches the specified restriction rebound value, the proponent will be allowed to haul at 100 percent legal loads using the specified TPCS parameters. No further beaming will then be requested for the duration of the haul unless adverse weather patterns lead to additional weakening of the road.

It is mandatory that the company retained to carry out the beaming conform with the Ministry of Transportation's Test Procedures and Requirements for Benkelman Beaming. This information is available upon request from the Ministry representative to whom the TPCS application is forwarded. It includes:

- Test truck requirements
- Benkelman beam/instrument requirements
- Service vehicle/signs requirements
- The Benkelman beam rebound test procedure description
- Analysis of test data for spring load restrictions
- Traffic control requirements
- A control section record sheet for recording/submitting data
- An equipment specification sheet to be signed off by a qualified Technician, Technologist, or Professional Engineer
- A control section layout description





SIGN USE: MoT R/W

Conventional - Expressway <= 90 km/hr

Application in field will be by the direction of the District Transportation Manager (DTM) or the Senior or Regional Traffic Engineer. The installation will be based on an applicant following the Tire Pressure Control Policy. T-Circular Ref.



Original Digital Records by Sign Services Section

Jerry Froese

Senior Traffic Engineer

August 24, 2004

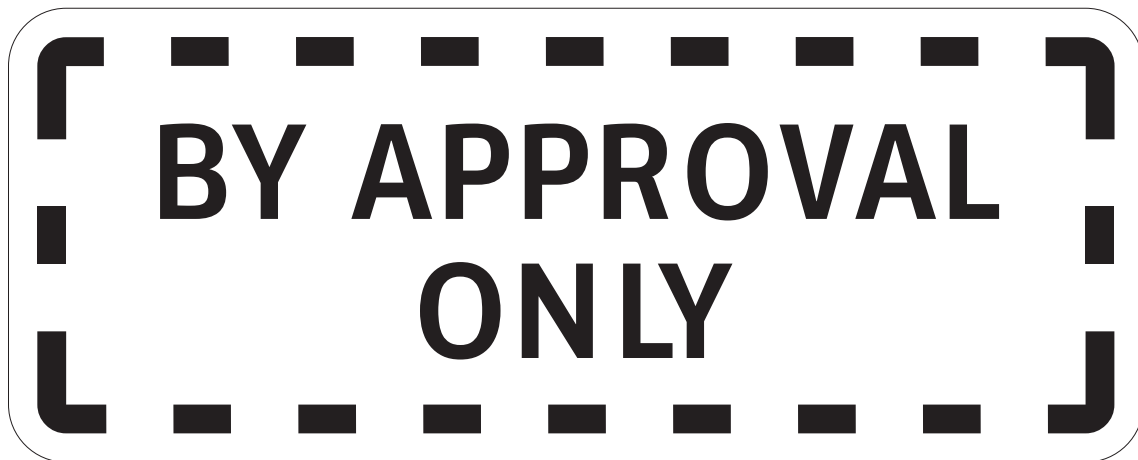
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Zr-104-2	750 x 750	ENG	AL SB-39	6	W	B



SIGN USE: MoT R/W

Conventional - Expressway <= 90 km/hr

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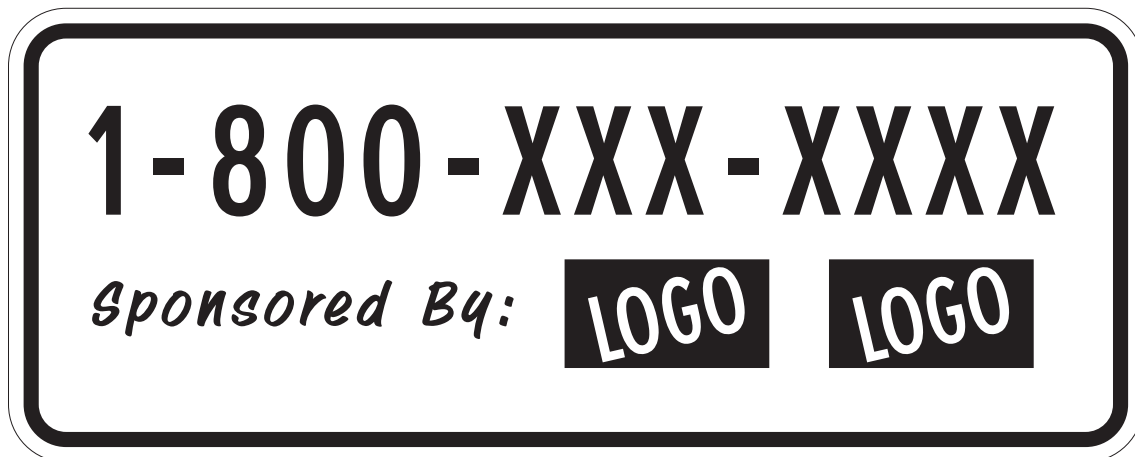
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Zr-104-2t	750 x 300	ENG	AL SB-37	5	W	B



SIGN USE: MoT R/W

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SIGN ITEM #	DIMENSIONS (W x H) (mm)	REFLECTIVITY	SUBSTRATE / SIGN BLANK #	SCALE RATIO	COLOUR	
					BACKGROUND	BORDER \ MESSAGE
Zr-104-2sp	750 x 300	ENG	AL SB-37	5	W	B



SIGN USE: MoT R/W Conventional - Expressway - Freeway >= 100 km/hr

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SIGN ITEM #	DIMENSIONS (W x H) (mm)	REFLECTIVITY	SUBSTRATE / SIGN BLANK #	SCALE RATIO	COLOUR	
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SIGN USE: MoT R/W Conventional - Expressway - Freeway >= 100 km/hr

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SIGN ITEM #	DIMENSIONS (W x H) (mm)	REFLECTIVITY	SUBSTRATE / SIGN BLANK #	SCALE RATIO	COLOUR	
					BACKGROUND	BORDER \ MESSAGE
Zr-104-2xt	900 x 200	ENG	AL SB-39	6	W	B



SIGN USE: MoT R/W Conventional - Expressway - Freeway > = 100 km/hr

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					BACKGROUND	BORDER \ MESSAGE
Zr-104-2xsp	900 x 200	ENG	AL SB-39	6	W	B