British Columbia
Disaster Response Transportation Planning Guide for Road Transportation

A planning guide for road-based movement of emergency personnel, resources and impacted persons following a disaster event in BC.

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INTRODUCTION

The BC Disaster Response Transportation (DRT) system is a set of integrated, cross-jurisdictional and multi-modal strategies and methods for the safe and coordinated movement of emergency personnel, resources, foreign representatives and impacted persons following a disaster event that results in significant negative impacts to transportation networks.

The DRT system is intended to enable all levels of government, agencies and stakeholders to align their disaster preparedness plans and activities such that they will be generally consistent across jurisdictions and transport modes. This planning guide is written to achieve mutual understanding through common language of processes to provide a foundational platform for further development of disaster transportation initiatives.

The purpose of this planning guide is to help owners, operators and providers of road infrastructure to prepare for road transportation in response to a disaster by providing guidance on:

- Selecting critical routes

- Changing critical routes

- Selecting staging areas

- Selecting disaster response routes

- Mapping critical routes and, staging areas

- Using DRR signage

The DRT Critical Routes system includes road, air, marine and rail capabilities.

This planning guide should be read together with the BC DRT Primer which contains the strategies of disaster response transportation and definitions of terms used in this planning guide.

Additional plans and tools that currently exist or are under development at the regional and local levels complete the suite of interrelated plans and strategies for the safe and coordinated movement of emergency personnel, resources and impacted persons following a disaster event that results in significant negative impacts to transportation networks.

SELECTION OF ROUTES (Roads)

CRITICAL ROUTES

Critical routes (CRs) should be selected with involvement from stakeholders and neighbouring or connecting jurisdictions.

Step 1: Identify regional staging areas and other key points of regional assistance (e.g. hospitals, marine ports, airports, container terminals, etc.) EMBC will lead the effort to identify regional staging areas in a community.

Step 2: Identify the critical regional routes. These routes connect the regional staging areas and the identified key points of regional assistance.) MoTI will lead the effort to identify critical regional routes in a community.

Step 3: Identify local staging areas and other key points of local assistance (e.g. fire stations, community points of distribution (CPODs), ESS facilities, etc.) Local authorities will lead the effort to identify local staging areas in a community.

Step 4: Identify critical local routes. These routes connect the local staging areas and the identified key points of local assistance. Local authorities will lead the effort to identify critical regional routes in a community.

Considerations for Selecting Critical Routes:

- Locations of staging areas (regional and local).

- Locations of key points of assistance (regional and local).

- Multi-modal capabilities in the region (review existing, constructed or well-known natural corridors, such as highways, major roads, arterial roads, railroads or waterways and designated and emergency-use air facilities).

- Capacity of route.

- Consider hazards in accordance with the jurisdiction's hazards, risk & vulnerability assessment.

- Vulnerability of route to hazards (built environment: such as buildings or structures vulnerable to collapse onto the route, underground utilities (e.g. water, natural gas) susceptible to rupture; or natural environment: such as liquefaction potential).

- Local routes should connect to the regional CR network.

- CRs must be coordinated and linked to those in neighbouring jurisdictions.

- Consider regional arterial, truck or goods movement routes or snow-clearing routes.

- Proximity to other modes of transportation (e.g. marine, rail, air).

- Points of access to neighbourhoods that may become isolated.

- Access to the route in terms of ownership.

DISASTER RESPONSE ROUTES

Considerations for selecting roads and bridges for Disaster Response Routes

Consider avoiding steep grades, circuitous routing, bridges, tunnels, overpasses and underpasses.

Capacity of road/bridge:

- load capacity

- height or width restrictions

- number of lanes

- overhead structures, power lines, and trolley power lines

- HOV lanes, bus lanes

- Intersection geometry, lanes widths, and turning radii

- ease of management of traffic coming on and off the DRR

Vulnerability of road/bridge:

- structure type (wood, steel)

- status of seismic retrofit

- condition

- susceptibility to weather (flooding, trees falling over, usually snowed in, heavy ice, etc.)

- proximity to utilities (e.g. gas, water) vulnerable to rupture
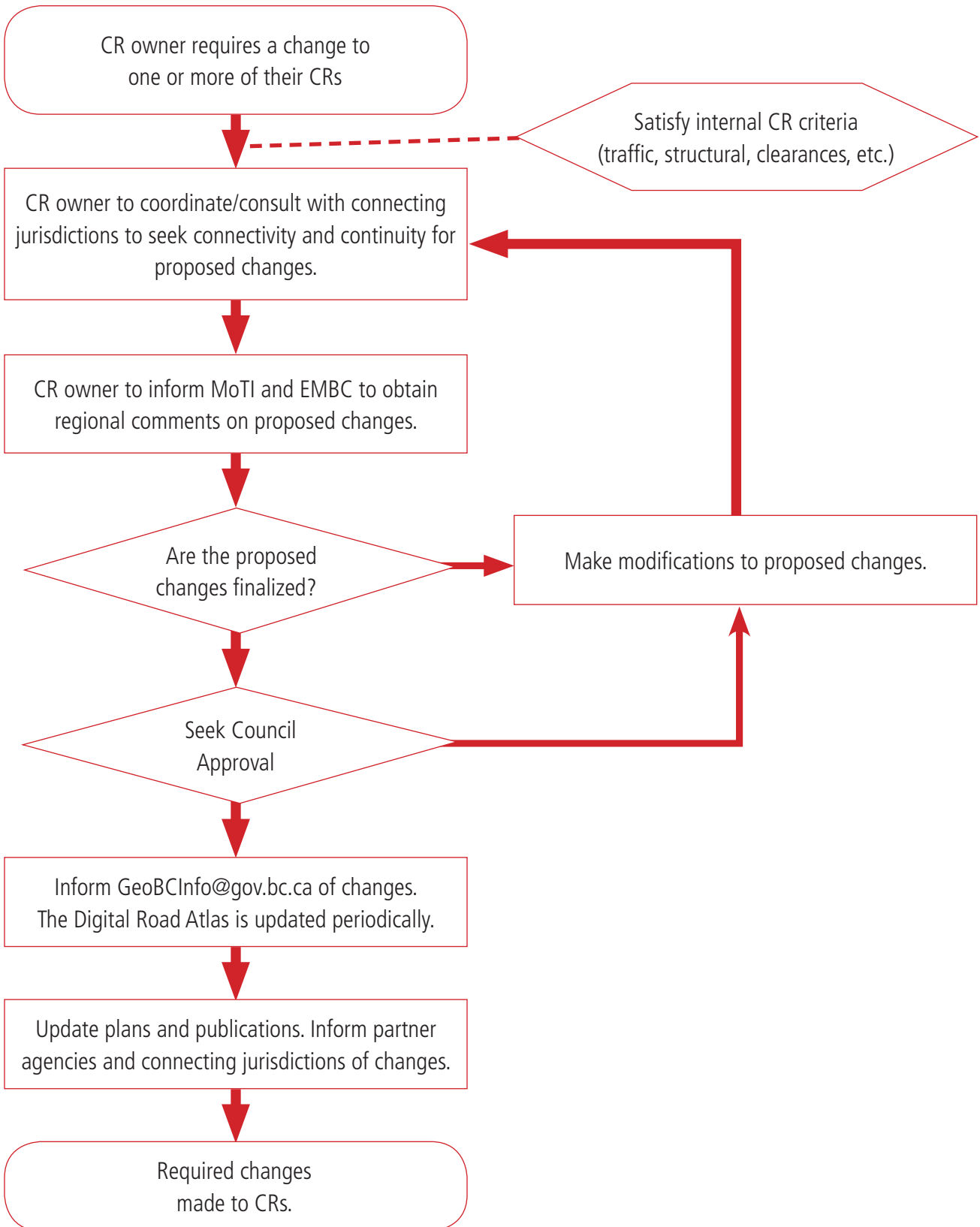
Road condition:

- paved, unpaved

- good vs. poor

- steepness of grade

- linear nature (straight vs. extreme corners)

- obstructions which may hinder low clearance vehicles

- soil stability

Intersections or crossings:

- number of intersections and/or crossings including with other modes such as rail

- number of direction changes

- number of required stops (e.g. stop signs)

CHANGING CRITICAL ROUTES

Process for changing pre-identified Critical Routes

CR owner requires a change to
one or more of their CRs

Satisfy internal CR criteria
(traffic, structural, clearances, etc.)

CR owner to coordinate/consult with connecting
jurisdictions to seek connectivity and continuity for
proposed changes.

CR owner to inform MoTI and EMBC to obtain
regional comments on proposed changes.

Are the proposed
changes finalized?

Make modifications to proposed changes.

Seek Council
Approval

Inform GeoBCInfo@gov.bc.ca of changes.
The Digital Road Atlas is updated periodically.

Update plans and publications. Inform partner
agencies and connecting jurisdictions of changes.

Required changes
made to CRs.

SELECTION OF STAGING AREAS

CONSIDERATIONS FOR SELECTING STAGING AREAS

☐ Transportation nodes where resources, personnel or vehicles can enter or change route or travel mode

☐ Mode of transportation (vehicle, vessel, aircraft, etc.)

☐ Transport type (walk-on walk-off, roll-on roll-off, freight, etc.)

☐ Accessibility for responders (ingress and egress),

☐ Capabilities and capacities of transport type (number of passengers, freight capacity, safe working load, etc.).

☐ Storage type

- covered and heated (office buildings, warehouses, etc.)

- covered and unheated (garages, carports, tents, etc.)

- uncovered (parking lot, field, etc.)

☐ Storage capacity (people, vehicles, parking, supplies, equipment, etc.)

☐ Amenities (shelter, toilets, washing facilities, communications, alternate power, etc.)

☐ Fuel availability on-site

- Type and grade of fuel (gasoline, diesel, marine bunker, aircraft, etc.)

- Fuel storage capacity

☐ Level of effort required to implement necessary security measures

☐ Purpose of location pre-event and how use of it as a staging area during response affects community recovery

MAPPING

The provincial government's Spatial Data Infrastructure provides government agencies, businesses and citizens with direct access to authoritative, geographic data through a wide variety of web applications and services. DRT data can be found via:

> The BC Data Catalogue: a place to find BC Government data, applications and web services and some other public sector data.

> iMapBC: for viewing and analyzing the thousands of geographic datasets stored in the BC Geographic Warehouse.

The Digital Road Atlas (DRA) program exists to provide a single, authoritative source of road data for the Province. The program services clients and users in the DRA Partnership through ongoing provision of data and services to meet the partners' specific needs. Key business areas that the DRA supports include:

- Emergency dispatch (BC Ambulance Service, E-Comm, RCMP)

- Disaster Management (Emergency Management BC, private partners from the oil and gas sector, Ministry of Health, RCMP)

- Planning and Analysis (Ministry of Forests, Lands and Natural Resources Operations, BC Assessment Authority, Natural Resources Canada, Insurance Corporation of British Columbia)

- Demographic Analysis (BC Stats, StatsCan)

Pre-identified Disaster Response Transportation routes and nodes are catalogued in the provincial Digital Road Atlas.

In order to update the DRT layers, new information needs to be sent by government authorities to GeoBC (GeoBCInfo@gov.bc.ca) so that updates can be applied to the dataset. Once the database has been updated the new information will be available from the BC Data Catalogue and iMapBC.

DRR SIGNAGE

DRRs need to be adjustable to meet the needs of a particular emergency. Also, like any infrastructure, DRRs are susceptible to hazards and could potentially be negatively impacted by the emergency event. For these reasons, it is not recommended to install DRR signage pre-event.

Short term DRRs will utilize coordinated convoys for movement and, therefore, use of DRR signage will not be required.

Medium and long term DRRs should utilize DRR signage in accordance with current traffic control standards.