

Shipping Containers Report – Committee of the Whole – June 18, 2020

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Background:

The use of steel shipping containers on residential and rural properties is a land use that has been increasing over the past decade. Shipping containers (aka intermodal, ISO cargo, freight containers, sea cans, c cans, etc.) are designed for the movement of goods, primarily overseas. With increasing construction costs for traditional wood-framed ancillary storage structures, shipping containers are being offered for sale to individuals as a secure and affordable form of storage. Shipping containers sold to the public can vary greatly in condition – from rusted or damaged through to refurbished or new. Most commonly, they are sold as a used product when they have exceeded their lifespan for commercial shipping.

Shipping containers are 8 ft. (2.43 m) wide and commonly come in 20 ft. (6.1 m) or 40 ft. (12.2 m) lengths. Standard height is 8.5 ft. (2.6 m), with a less common tall version at 9.5 ft. (2.9 m). Other less common lengths are available. They are structurally integral, meaning that the entire unit as designed contributes to its overall structural strength. They are only made to carry weight on the four corners where additional containers rest. Any modifications to the frame or wall panels could compromise the overall integrity of the unit.

Shipping containers are not designed to be a structure, nor do they conform with Building Codes. In BC (and other jurisdictions with provincial or national building codes), structures that utilize shipping containers as building components require engineering design and oversight of construction to ensure they meet or exceed current building code requirements. The unique buildings that sometimes make the news – from a simple carport roof supported by stacked containers on either side, to complex hotel and affordable housing structures - require engineering oversight during design and construction. As the complexity of a shipping container building increases, the costs increase, and at some point becomes no longer a viable alternative to traditional forms of construction.

In the Cariboo, and elsewhere in rural BC, shipping containers are primarily used for on-ground storage. Residents often find, after some research with our building department, that it becomes cost prohibitive to utilize shipping containers as structural parts of a larger building.



Figure 1. Shipping containers on an urban lot.

Through 2015 and 2016, Planning staff developed amendments to ancillary structure regulations, including consideration of shipping containers. At the October 29, 2015 Committee of the Whole meeting, staff were directed to address shipping container regulations separately from the ancillary structures update. A discussion paper regarding shipping containers was presented at the November 25, 2016 Board Meeting (see attached report). The Board directed staff to solicit feedback from all area Advisory Planning Commissions during training in 2017. Due to staff turnover, APC training did not occur in 2017, and APC feedback was not sought on the 2016 discussion paper.

Regulating Shipping Containers:

Rural local governments commonly regulate shipping containers in one of three ways:

1. Prohibit shipping containers in all or some zones. Shipping containers could be either *explicitly* prohibited in the text of a zoning bylaw, or *implicitly* prohibited by being silent on the use.
2. Allow shipping containers unrestricted as an ancillary structure. When a zoning bylaw is silent on shipping containers, they may be considered as an ancillary structure. This is the current practice in the Cariboo Regional District. This is also the practice in the Regional District of Fraser-Fort George, Regional District of Bulkley Nechako, and Peace River Regional District.
3. Regulate a maximum number of shipping containers in all or some zones. Additional regulations regarding location, screening, and use could also be utilized. This is the practice in Squamish-Lillooet Regional District, Thompson Nicola Regional District, District of 100 Mile House, City of Quesnel, and City of Williams Lake.

Local government regulation of shipping containers varies. Municipalities generally are more restrictive in the number and location of shipping containers than regional districts. Table 3 of this report provides a summary of regulations in neighbouring regional districts and CRD member municipalities.

Current CRD Regulations:

Currently, the CRD’s zoning and rural land use bylaws are silent on shipping containers. Staff have historically interpreted a shipping container as an ancillary structure, and therefore conformance with setbacks and ancillary coverage limits is required. A shipping container simply placed “as-is” on a property and used for storage, is not considered a building by inspection staff and therefore no building permit is required for it to be placed on a property. If the shipping container is used for human occupancy or used as part of a larger building, the building bylaw is triggered, a permit required, and professional engineering is necessary.

Shipping containers are normally 8 ft. (2.4 m) wide and commonly come in 20 ft. (6.1 m.) or 40 ft. (12.2 m.) lengths, thereby having an area of 160 sq. ft. (14.86 sq. m.) or 320 sq. ft. (29.73 sq. m.), respectively. Under current zoning regulations this allows up to eight 40 ft or sixteen 20 ft containers on parcels under 0.4 ha (0.99 ac) and a maximum of fifteen 40 ft or thirty 20 ft containers on parcels over 32 ha (79.1 ac.), with a range of maximum units on parcel sizes between (see Table 1 for summary). In a reasonable scenario (Table 2), on an R 2 parcel of 0.2 ha (0.49 ac.), with a house footprint of 111.5 sq. m. (1,200 sq. ft.), single garage/carport 22.3 sq. m. (240 sq. ft.), and a 37.1 sq. m. (400 sq. ft.) shop, an additional twelve 20 ft shipping containers could be placed on the lot.

Table 1 - Maximum Shipping Containers Permitted Under Current CRD Ancillary Regulations			
Lot Size	Max Ancillary Area	Maximum 20 ft Containers	Maximum 40 ft Containers
Less than 0.4 ha (0.99 ac)	250 sq. m. (2,691 sq. ft.)	16	8
0.4 ha to less than 2.0 ha (0.99 ac to less than 4.94 ac)	300 sq. m. (3,229 sq. ft.)	20	10
2.0 ha to less than 4.0 ha (4.94 ac to less than 9.88 ac)	350 sq. m. (3,767 sq. ft.)	23	11
4.0 ha to less than 32.0 ha (9.88 ac to less than 79.07 ac)	400 sq. m. (4,306 sq. ft.)	26	13
32.0 ha and greater (79.07 ac and greater)	450 sq. m. (4,844 sq. ft.)	30	15

*Note assumption that no other ancillary structures are located on the parcel.

Table 2 – Potential Development Scenario Under Current CRD Ancillary Regulations								
Property Zone	Lot Size	House Footprint	Max Ancillary Area	Single Garage/ Carport (12x20 ft)	Shop (20x20 ft)	Remaining Ancillary Area	Number of 20 ft Containers Permitted	Number of 40 ft Containers Permitted
Residential 2 (R 2)	0.2 ha (0.49 ac)	111.48 sq. m. (1,200 sq. ft.)	250 sq. m. (2,681 sq. ft.)	22.30 sq. m. (240 sq. ft.)	37.16 sq. m. (400 sq. ft.)	190.54 sq. m. (2,050 sq. ft.)	12	6

Lakeshore Residential (RL)	0.4 ha (0.99 ac)	None	75 sq. m. (807.3 sq. ft.)	N/A	N/A	75 sq. m. (807.3 sq. ft.)	5	2
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As they are considered ancillary structures, on residential, rural, and commercial zoned parcels, shipping containers are permitted only in conjunction with a principal structure (i.e. a dwelling on residential or rural properties, or business building on a commercial property). Some lakefront parcels allow up to 75 sq. m. (807.3 sq. ft.) of ancillary space prior to requiring a principal dwelling, which equates to five 20 ft containers or two 40 ft containers.

Some examples of shipping container placement throughout the Cariboo are provided below in Figures 2 through 5. This is not intended as an enforcement exercise nor to imply compliance or non-compliance with CRD bylaws, but is to provide some context for the Board in their discussion.



Figure 2. Shipping container (20 ft) in front yard of a Residential 2 (R 2) zoned parcel.



Figure 3. Shipping container (20 ft) in front yard of a Residential 2 (R 2) zoned parcel.



Figure 3. Partially screened containers (40ft) on General Industrial (M 2) zoned parcel.



Figure 4. Shipping container (20 ft) in side yard of Residential 2 (R 2) zoned parcel.



Figure 5. Shipping container (40ft) on Rural 3 (RR 3) zoned parcel, supporting carport roof.

Regulatory Considerations:

Prohibitions: The Board may wish to consider prohibiting shipping containers in residential zones. Commonly, shipping containers are considered to distract from the aesthetic character of country residential neighbourhoods. They may also contribute negatively to property values. In areas where shipping containers are regulated, they are most often prohibited in residential zones. This includes the District of 100 Mile House, City of Quesnel, City of Williams Lake, Thompson Nicola and Squamish Lillooet Regional Districts.

Maximum Number: Based on current maximum ancillary floor area regulations in the CRD, up to sixteen 20 ft shipping containers could be permitted on residential parcels under 0.4 ha (0.99 ac.). The maximum increases to thirty 20 ft containers on parcels over 32 ha (80 ac.). This assumes there are no other ancillary structures on a property. The Board may wish to consider implementing a maximum number of containers based on property zone (or property size) to reduce the overall impact of shipping containers on a single property.

Siting: At a minimum, shipping containers should meet property line setbacks. Requirements to place containers behind the rear of the principal dwelling could be utilized to keep shipping containers out of front & side yards and reduce the visual impact to the general public. Regulations should also state that the shipping containers are placed at grade and not stacked or buried for safety and aesthetic reasons.

Screening: Screening requirements could be considered. Options include screening three sides (leaving access to the container doors), or screening from the front property line only, and/or screening from view from lakes. Screening could include tight board fencing of minimum height of the container, and/or vegetative screening, specifying minimum plant height and spacing. Note that vegetative screening requirements can be challenging to enforce and are not always functional in practice, given the hard growing conditions and potential destruction by wildlife in the Cariboo.

Cladding: Cladding such as wood or vinyl siding can be required to cover the industrial look of the shipping containers. This could be a practical alternative to vegetative screening. Staff recommend cladding requirements on Residential zoned properties.

Engineering: Some jurisdictions consider shipping containers as a building which cannot meet Part 9 of the building code and thus require engineering for the footing/placement of the container. As a matter of practice, CRD building inspectors do not consider shipping containers as structures and therefore do not require engineering, unless they are to be used as part of a larger building. For clarity, it is recommended that this intent is specified in CRD Building Bylaw No. 4997, 2016.

Ventilation: During previous Board discussions, concerns were raised regarding storage of flammable materials and associated ventilation of these structures. Research found few jurisdictions which regulate ventilation of shipping containers. Maple Ridge requires ventilation modifications. Some jurisdictions prohibit storage of flammable liquids such as fuel and oil. It would be challenging to enforce as often these containers are specifically used to store motorized equipment such as lawn mowers and ATVs.

Staff could develop a guide for shipping containers educating the public on best practices for storage and ventilation.

Connecting to Services: It is recommended for clarity to prohibit connection of shipping containers to water, sewer, or electrical systems. This will help to reduce fire risk and prevent them from being used for human occupancy. If they are used as building components, then a building permit and engineering would be required, and such a prohibition of connections would not apply.

Modifications: As shipping containers are structurally designed as one integral unit, any modifications to the unit could compromise its structural integrity. Modifications could be prohibited unless a building permit is issued, along with necessary engineering oversight. This may contradict ventilation best practices and could require additional research.

Temporary Use Permits: In the November 25, 2016 discussion paper (attached), staff recommended issuing Temporary Use Permits to allow for shipping containers on a case-by-case basis. This is no longer recommended, given the demand on staff time for administration and enforcement that such a process would require.

Lawful non-conforming use (i.e. "Grandfathering"): If the Board wishes to regulate shipping containers, all containers existing prior to adoption of any bylaw amendments would become lawful non-conforming, provided they were installed in compliance with existing zoning / land use bylaws at the time of placement (i.e. setbacks, ancillary area). Lawful non-conforming containers would be permitted to remain until such time as they are removed from the parcel or otherwise destroyed or incapable of being maintained. If complaints are received by bylaw enforcement, the onus is on the applicant to prove, on a balance of probabilities, that the existing container was placed and lawfully used prior to the implementation of shipping container regulations. Those with lawful non-conforming uses could be permitted to continue the uses for a substantial amount of time, i.e. the life span of the containers.

Summary:

If the Board wishes to regulate shipping containers, staff recommend the following:

1. In Residential zones, allow a maximum of one 20 ft. container, with cladding, and prohibit in front and side yards (R 1, R 1-1, R 2, R 3, R 4, RL 1, RL 2, RS 1, RS 2).
2. Develop maximum permitted number of shipping containers and siting requirements (i.e. rear/side yard only) for Rural and Resource/Agricultural zones (RR 1, RR 2, RR 3, RA 1, R/A).
3. Develop maximum number and location criteria for Commercial zones, no limit in Industrial zones.
4. Prohibit structural modifications, other than ventilation.
5. Prohibit connection to water, sewer, or power to reduce fire and human occupancy hazards, unless engineered and permitted as a building.
6. Develop best practices guide for storage of flammable liquids.
7. Amend Building Bylaw to clearly articulate exemption for stand-alone shipping containers used for personal storage.

Note that the above proposed regulations are only for shipping containers used exclusively for storage, and without structural modification to the unit. Any integration into a building would require a building permit and would then need to be engineered to comply with the building code. With engineering oversight and a building permit, structural modifications would be permitted.

Recommendation:

That the report be received for information. *Further action at discretion of the Board.*

Table 3. Regulation Overview of Shipping Containers in Neighbouring Jurisdictions

Local Government	Regulates Containers	Zones Permitted	Zones Prohibited	Screening Requirements	Setbacks	Regulation Overview
RD Fraser-Fort George	No	All	None	No	As per zoning	Comply with ancillary structure regulations (size, coverage, setbacks, etc.).
RD Bulkley Nechako	No	All	None	No	As per zoning	Comply with ancillary structure regulations (size, coverage, setbacks, etc.).
Peace River RD	No	All	None	No	As per zoning	Comply with ancillary structure regulations (size, coverage, setbacks, etc.).
Thompson Nicola RD	Yes	Resource, Agricultural, Rural, Commercial, Institutional, Industrial	Residential, Resort Commercial, Comprehensive Development	On Lakefront / Riverfront parcels.	As per zoning	<ul style="list-style-type: none"> • Maximum one 40ft or two 20 ft containers on resource, agricultural, rural zones • Max. two 40ft or four 20 ft containers on commercial, institutional zones • Must be located to rear of principal structure (in rear yard). • Permitted in any yard (front, side, rear) on Lakefront/Riverfront parcels, but must be screened.
Squamish Lillooet RD	Yes	Agricultural & Rural	Residential, Commercial, Industrial, Institutional, Comprehensive Development	Must be screened.	As per zoning	<ul style="list-style-type: none"> • Maximum two containers on parcels under 5 ha (12.2 ac). • No limit on parcels over 5 ha (12.2 ac.) with farm class. • Can stack two high. • One container in all zones during active building permit.
City of Williams Lake	Yes	(Permanent) Commercial, Industrial, Institutional, Acreage Reserve	(Temporary – max 30 days) Residential, Rural Residential	No	7.6 m. front 1.5 m. rear and interior side 3.0 m. exterior side.	<ul style="list-style-type: none"> • Must be painted, clean, no rust. • Temporary containers – max 30 days or during active building permit. • Temporary containers have 0 m setbacks

Local Government	Regulates Containers	Zones Permitted	Zones Prohibited	Screening Requirements	Setbacks	Regulation Overview
Dist. of 100 MH	Yes	Commercial, Industrial, Institutional	Residential	Yes. Screening exempt on Industrial parcels not visible from Hwy 97.	As per zoning	<ul style="list-style-type: none"> • Prohibited in residential zones. • Maximum one container on parcels 0.4 ha (0.99 ac.) or less. • Maximum two containers on parcels over 0.4 ha (0.99 ac.). • Must be ancillary to existing use. • Permitted on residential parcels during active building permit only. • Can stack two high.
City of Quesnel	Yes	Agricultural, Commercial, Industrial, Institutional	Residential	No. (Screening required in Development Permit Areas)	As per zoning	<ul style="list-style-type: none"> • Prohibited in residential zones. • Treated as ancillary in other zones.