DISASTER RECOVERY PROGRAM FLOOD MITIGATION MEASURES

PURPOSE

To outline alternative solutions for minimum flood mitigation measures when building owners apply for Disaster Recovery Program (DRP) funding to perform repairs on their property.

DISCUSSION

The scale of damage and obstacles to recovery as a result of the 2013 flooding in Southern Alberta has resulted in the decision by the Government of Alberta to appoint an advisory panel on community flood mitigation, to provide direct input on the latest flood prevention technology from around the world. In the interim period, flood mitigation measures have been established and revised through consultation with municipalities, industry and owners to provide minimum impact to the building structure and systems. The measures include locating electrical equipment above the flood level and the selection of building materials and finishes which are less likely to be damaged by flood water or easier to restore. These measures are consistent with the recognized disaster recovery mitigation measures under the Government of Canada's Disaster Financial Assistance Arrangements (DFFA) Guidelines and the U.S. Federal Emergency Management Agency (FEMA).

All flood mitigation measures are to be included under one flood mitigation permit form (see attached form) issued by the DRP and certified by a safety codes officer employed by the municipality or an accredited agency. The municipality or accredited agency will include all measures under the flood mitigation permit form and perform necessary inspections by the appropriate safety codes officers. The flood mitigation permit form certifies compliance with flood mitigation measures when signed and dated by a safety codes officer.

GENERAL REQUIREMENTS

Homeowners and small businesses located in the flood fringe must take the minimum flood mitigation measures identified below to satisfy conditions for DRP funding in the flood fringe. The following measures are referred to as "wet flood-protection", which are intended only to minimize damage and to speed restoration in the event of a flood. This is accomplished in four primary ways:

1. Basements. The objective is to minimize moisture damage or facilitate disposal of materials and restoration.

   Alternative solutions require moisture resistant flooring and include but are not limited to:
   - The choice to leave the basement unfinished and use minimal materials;
   - The choice to use cleanable and moisture resistant materials;
   - The choice to use disposable materials allowing for easy restoration.

2. Electrical equipment: The objective is to minimize the risk to life safety by providing a safe means to de-energize and re-energize the building. This allows for the de-energization of electrical equipment without having to access the basement and stand in flood water. Another consideration is being able to supply power for restoration services while being able to isolate electrical equipment damaged or made unsafe from flood waters.

   Alternative solutions include but are not limited to:
   - Re-locate the main electrical panel out of the basement and isolate circuits feeding electrical outlets and equipment in the basement so that power can be restored quickly in the event of a flood.
   - Installing a weather proof service disconnect switch on the outside of the building between the meter socket and the existing panel in the basement. This switch would have provisions for disconnection of the existing panel.
   - Installing a service panel in the garage if one exists, and feeding the house as a sub-panel. Receptacles within the garage could supply power for restoration, while the house remains de-energized.

   The Canadian Electrical Code rules regarding location and clearances for electrical panels would still apply in all cases. Other installation methods may be acceptable. Contact the Authority Having Jurisdiction (municipality or accredited agency) in your area for clarification.

3. Penetrations: The objective is to minimize water seepage into the building.

   Alternative solutions include but are not limited to:
   - Seal piping, wiring, conduit penetrations at basement walls.
   - More extensive sealing of penetrations such as windows and other exterior measures may have unintended consequences (i.e. the prevention of emergency window egress) and therefore should be undertaken on the advice of a professional.

4. The objective is to protect plumbing fixtures/equipment located in basements from backflow from the public sewers.
   - Solution: Backflow prevention devices are required under the National Plumbing Code as adopted by regulation in Alberta. All backflow prevention devices shall be installed in accordance with manufacturer's recommendations and the Plumbing Regulations.
   - Plumbing fixtures/equipment located in basements shall be protected from backflow from the public sewers. All backflow prevention devices shall be installed in accordance with manufacturer's recommendations and the Plumbing Regulations.

Questions regarding this bulletin may be directed to the Safety Services Branch.
Toll free telephone number: 1-866-421-6929.

[Original Signed]
Harry Li
Acting Chief Building Administrator

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Dan Niven
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APPENDIX NOTES

Acceptable materials for flood damage reduction:

Proper selection of building materials and finishes which are less likely to be damaged by flood water will reduce the extent of damage and amount of time it takes to return the facility to operation. For example, the DFAA relies on "specific repair projects to reduce vulnerability to future emergencies". For more information on provincial mitigation solutions recognized by DFAA and federal funding support to provinces and territories, please link to http://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/gdlns-dsstr-ssstnc/index-eng.aspx#s6

Similar measures are recognized by FEMA for structural materials and finish materials commonly used in the construction of floors, walls, and ceilings, with a level of acceptability given for each material. For example, "Flood damage-resistant material" is defined as "any building product [material, component or system] capable of withstanding direct and prolonged contact with floodwaters without sustaining significant damage." The term "prolonged contact" means at least 72 hours, and the term "significant damage" means any damage requiring more than cosmetic repair.

Following is a link to this document:

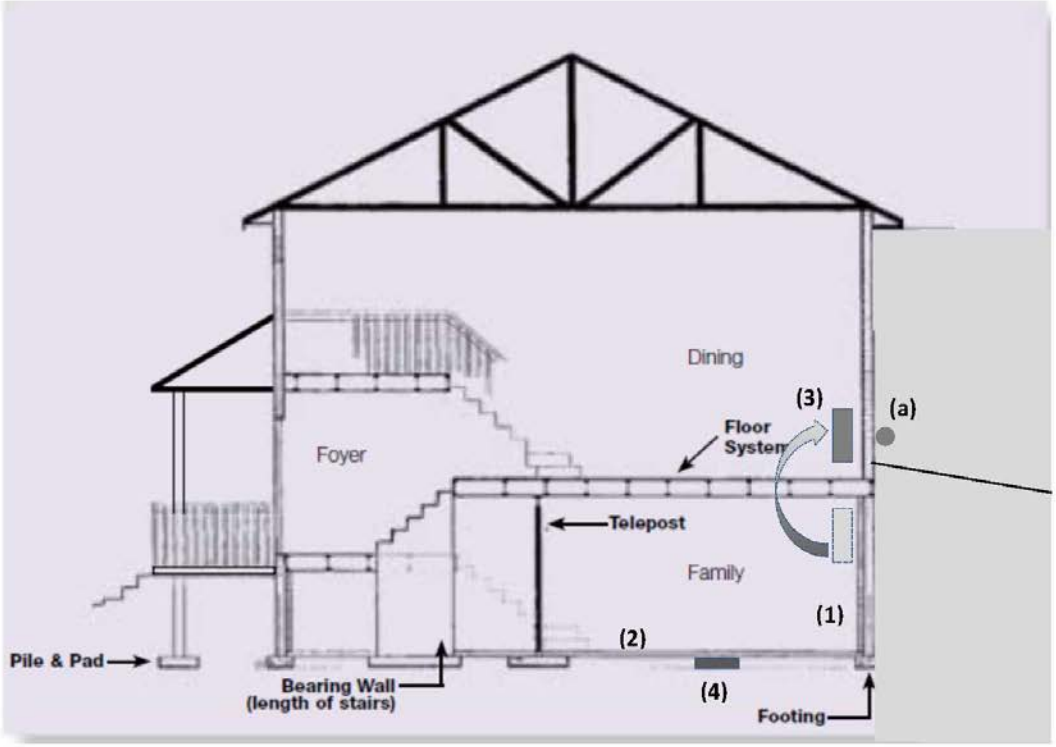
https://s3-us-gov-west-1.amazonaws.com/dam-production/uploads/20130726-1502-20490-4764/fema_tb_2_rev1.pdf

Please note that other applicable requirements of the Alberta Building Code such as flame spread rating, smoke development classification, material standards, etc., must still be complied with.

The following <u>are examples</u> of flood damage-resistant building materials acceptable for reconstruction work under the DRP program. This is not an exhaustive list and in no way precludes the use of other products. Materials and products that are not listed may still be used if accepted by the local building official (Building SCO). In such cases, manufacturers' literature (i.e., specifications, materials, safety data sheets, test reports etc.) may be used to determine if the product meets flood damage-resistance requirements. Acceptance should be based on sufficient evidence provided by the applicant that the materials proposed to be used will resist flood damage without requiring more than cosmetic repair and cleaning.

1. Construction Materials for Walls and Ceilings
    a. brick, metal, concrete, concrete block, porcelain, slate, glass block, stone, and ceramic and clay tile
    b. cement board, reinforced concrete
    c. polyester epoxy paint
    d. pressure treated lumber or steel studs
    e. pressure treated and marine grade plywood
    f. foam and closed-cell insulation
    g. water resistant non-paper faced gypsum exterior sheathing
    h. wall panel, steel
2. Materials for Flooring
    a. concrete, concrete tile and precast concrete
    b. latex or bituminous flooring, ceramic, clay terrazzo
    c. vinyl and rubber sheets and tiles
    d. pressure treated wood
3. Other
    a. metal doors
    b. fibreglass or vinyl doors

Flood Mitigation Sketches



Alternative solution 3- (a)

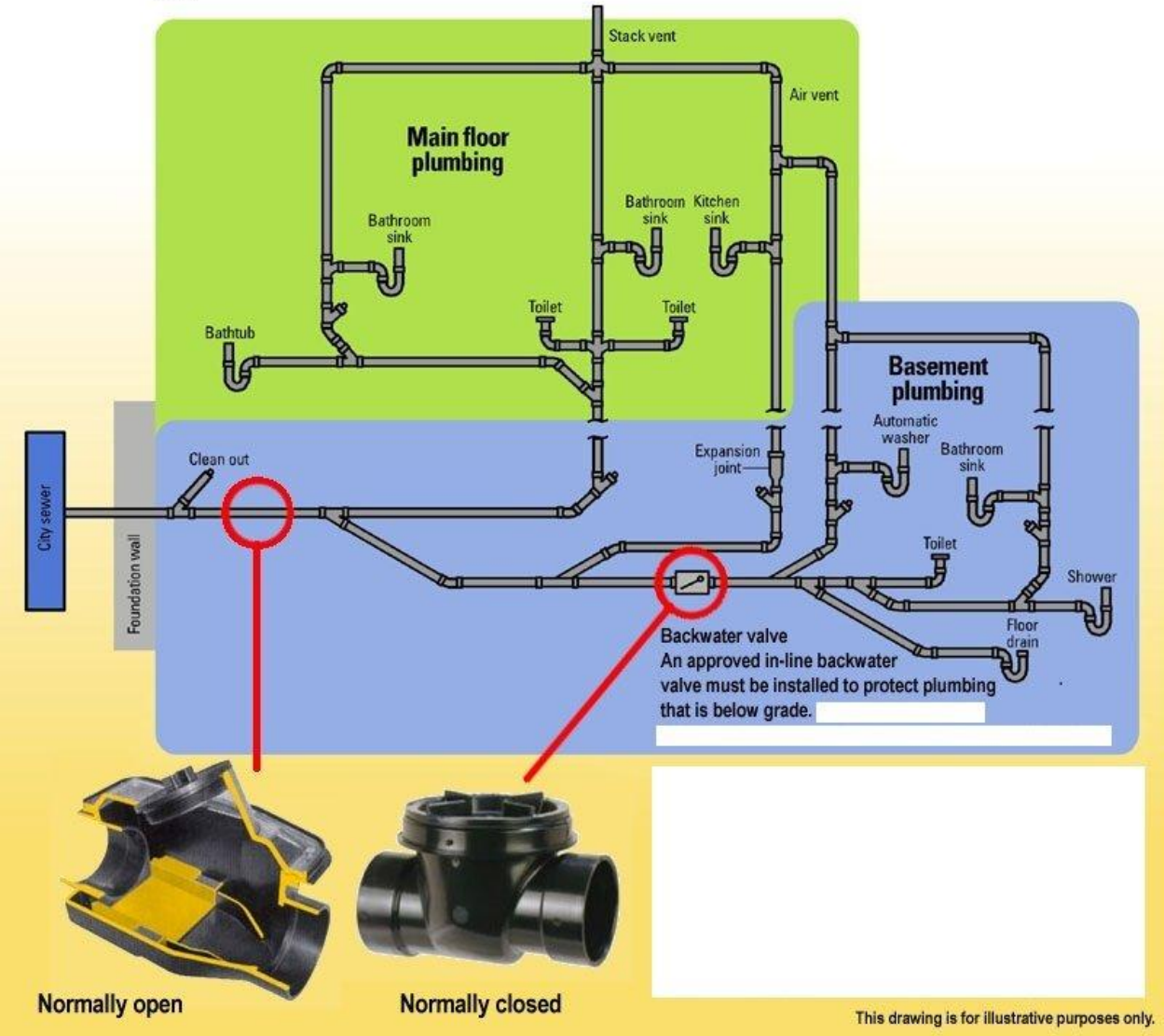
(1)- (2) Walls and Floors: Use cleanable moisture resistance material or materials easy to dispose and restore.

(3) Relocate Electric Panel or use alternative solution (a): mount a service disconnect SWITCH on the outside of the home or garage.

(4) Install a backflow prevention device.

Service Disconnect SWITCH, located outside the house or garage.

Typical household backwater valve installations



Flood Mitigation Permit Form

Disaster Recovery Program

1-866-825-4455

PLEASE PRINT

Project Location	
Project Address	Municipality

Applicant/Owner Information		
Owner Name	Contact Person	Phone
Address (if different than Project Address)		Fax
DRP Reference Number		

Permit Information			
Building	Contractor Name	Building Permit Number	
		Issuer signature (or attach permit copy)	
	Basement Penetrations Sealed	☐ Yes ☐ No ☐ NA (if NA explain)	
	Basement materials Acceptable	☐ Yes ☐ No ☐ NA (if NA explain)	
Building Certified Compliant		SCO Signature	Date
Electrical	Contractor Name	Electrical Permit Number	
		Issuer signature (or attach permit copy)	
	Disconnect or panel above grade	☐ Yes ☐ No ☐ NA (if NA explain)	
	Basement circuits isolated	☐ Yes ☐ No ☐ NA (if NA explain)	
Electrical Certified Compliant		SCO Signature	Date
Plumbing	Contractor Name	Plumbing Permit Number	
		Issuer signature (or attach permit copy)	
	Back Water protection in place	☐ Yes ☐ No ☐ NA (if NA explain)	
Plumbing Certified Compliant		SCO Signature	Date

Project Information		
Applicant's Declaration, I certify that information provided above and/or submitted with this application is true and correct.		
Please Print Name	Signature	
Address	Phone Number	Date