

# PILOT ON DECONSTRUCTION OF BUILDINGS LEADING TO REUSE... TO PUT AN END TO DEMOLITION

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*You can view the report at [ritmrg.ca/projets](http://ritmrg.ca/projets) d'innovation  
The toolbox is accessible by links in table 9*





# RITMRG

## Who is it ?

## Where is it ?

### 2 municipal partners

- ✓ MRC du Rocher-Percé et Ville de Gaspé : 32 000 people

### Specialised in managing residual materials:

- ✓ Owner and operator of landfill, sorting material, ecocenter
- ✓ Manager of collection and transport contract (chips on all bins, incentive pricing)
- ✓ Green agents

**In Gaspésie**, at the very end of the province of Québec  
please come visit us ... 1000 km from Montreal ... very close  
-)

# Why this project ?

Two gaspésien towns Chandler  
et Grande-Rivière had to take  
down 5 buildings

Reuse is a priority in the 2022-  
2029 plan  
and

Landfill is expensive !

In the field of construction, renovation and  
demolition (CRD), materials are consumed  
as single-use resources.

**What if we could extend the lifespan of  
resources through reuse ?**

A pilot project can help to develop an  
effective deconstruction process, which  
promotes reuse, with decision support  
tools tested live in the field

**To convince ...this is what we need !**

# The project in 3 steps

## Deconstruct

1. Five buildings, 2 sites
2. Manual approach leading to reuse of material
3. In stage (empty spaces, strip, cut into sections, condition)



## Document

1. Administrative
2. The technical
3. The environmental
4. The economic
5. The social

## Develop the tool box

1. Registers, cost grids, administrative tools, quotation clauses, posters, stakeholder matrix, risks and solutions, process mapping
2. For transferability elsewhere to other cities and municipalities



# Site No.1

Old hardware stores  
in Grande-Rivière  
4 buildings  
Massive space

Wood and metal  
10 m. x 13 m.  
7,5 m x 7,5 m.  
16,5 m. x 15 m.  
48 m. x 6,5 m.

A perfect site for  
deconstruction !



## Site No.2

Old bar in Chandler

1 building

Little work space

Wood, sheet metal,  
shingles, gypsum,  
asbestos, brick

49 x x 58 m

Building abandoned for  
more than 10 years



# CONDITIONS, RESULTS AND OBSERVATIONS

	<b>Site 1 : Old hardware stores (4 buildings)</b>	<b>Site 2 : Old bar (1 building)</b>
Conditions	28 days with 5 employees 1 skytrack et 1 lift	10 days with 5 employees for deconstruction 5 days with 2 employees for demolition sky track and a lift + mechanical shovel
Results	16 % to landfill 14 % to ecocenter 70 % to reuse	22 % to landfill 74 % to ecocenter 4 % to reuse
Observations	<ul style="list-style-type: none"> <li>• Initial training on materials and their destination is a must</li> <li>• Employees quickly adapt to this new approach</li> <li>• The foreman must be present to avoid loss of focus</li> <li>• The nearby space promotes conditioning (remove nails..)</li> </ul>	<ul style="list-style-type: none"> <li>• A building abandoned for too long greatly limits the reuse of materials</li> <li>• If the wood crushed by bulldozer couldn't be recycled to the ecocenter, 96 % of the material would be headed to landfill</li> <li>• Limited space requires increased vigilance in terms of security</li> </ul>

# Material sales

## The good part!

- with social media
- 8 weekends
- 150 buyers
- 4 200 items sold
- \$18 000 in revenue
- Price list at 50 % of the market
- Researched materials
  - 2x4, 2x6, plywood, sheet metal
  - Conditioned (without nails)
- For what ?
  - Galleries, chalet renovation, hunting blinds, animal shelters

Triez simplement, triez maintenant!

Chantier de reconstruction d'ici vers le réemploi

**2 x 4 ou 2 x 3**

6 pieds + ou -	2 \$
8 pieds + ou -	3 \$
10 pieds + ou -	4 \$
12 pieds + ou -	4 \$

**2 x 6**

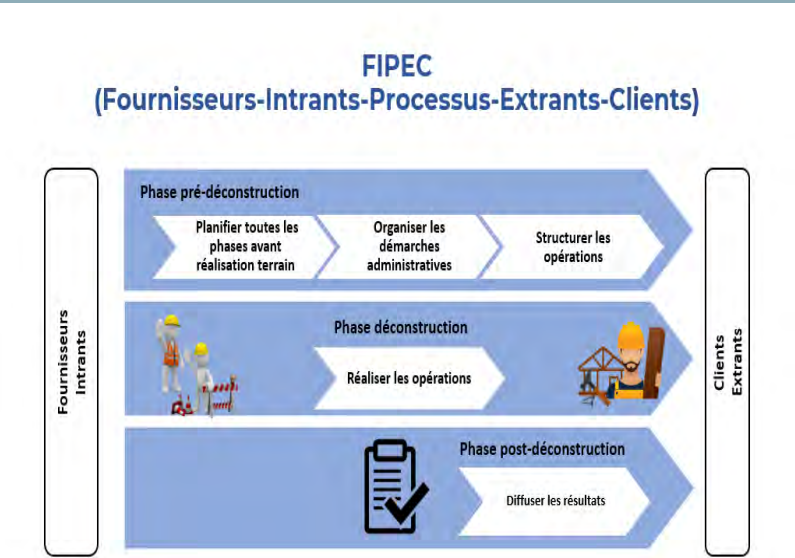
6 pieds + ou -	3 \$
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10 pieds + ou -	6 \$
12 pieds + ou -	8 \$

Régle internationale de l'échelle des mesures décimales de la Grande-Bretagne  
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1-800-368-2744, page 0020





# THE TOOL BOX



- Process mapping
- Interactive budget table
- Suggested quote clauses
- Communication tools (posters, guidelines...)
- Questionnaires for entrepreneurs
- Registers (daily, monitoring of outputs...)
- Price list, sales register
- Matrix of challenges / issues and solutions

Tableau 3 : Analyse des risques selon la matrice Probabilité / Impact du projet.

Numero du risque	Risque	Conséquence	Actions pour diminuer le risque	Responsable
1	Respect de l'échéancier	- Indisponibilité de l'entrepreneur - Dépassement budgétaire - Non réalisation du projet	- Identifier en période les plus à risque notamment le calendrier et la disponibilité de l'entrepreneur - Choisir des périodes de marge de manœuvre avec les intervenants (Villes, Clientes, sites, d'accès), équipes de l'entrepreneur et dans le calendrier de la promoteuse	Promoteuse
2	Mauvaise de main d'œuvre	- Impact sur l'échéancier (retard) - Impact sur le budget (dépassement) - Équipe de qualité du travail - Non réalisation du projet	- Valider les obligations/compétences, engagements de l'entrepreneur (contrat) - Accompagnement de l'entrepreneur (présentiel) - Assurer des règles d'emploi d'équipes (déplacement) - Offrir du « coaching » et accompagnement à l'entrepreneur et son équipe, ce qui lui permettrait une recherche plus large de candidats avec un peu moins d'expérience	Promoteuse / Entrepreneur
3	Accidents de chantier	- Non disponibilité de la main d'œuvre (marque de main d'œuvre) - Impact sur l'échéancier (retard) - Impact sur le budget (dépassement) - Équipe de qualité du travail - Non réalisation du projet	- Offrir une formation spécifique sur la déconstruction aux employés - Bénéficier avec l'entrepreneur son plan d'urgence pendant les travaux et son plan d'intervention en cas d'accident	Promoteuse / Entrepreneur
4	Conditions météorologiques	- Impact sur l'échéancier (retard) - Impact sur le budget (dépassement)	- Prévoir la flexibilité dans l'échéancier - Choisir des intervenants sérieux et dotés d'un plan de protection	Entrepreneur / Promoteuse
5	Resources de gestion limitées	- Impact sur l'échéancier (retard) - Impact sur le budget (dépassement) - Non réalisation du projet	- Inclure une ressource supplémentaire pouvant accompagner dans toutes les démarches	Promoteuse

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# ECONOMIC AND ENVIRONMENTAL RESULTS

<b>Indicator</b>	<b>With démolition</b>	<b>With deconstruction</b>
Landfill	95 %	less than 22 %
Reuse	0 %	70 %
Savings investment		2 to 5 %
Savings resources		144 tons
Duration	4 weeks	6 weeks

# SOCIAL BENEFITS

Job creation	+
Image and pride	++
Awareness	+++
Innovation	+
Social involvement	++
Transferability	+++

# Finally

The deconstruction of buildings leading to reuse has a future if ...

We **change our approach** upstream (commitment of work donors like municipalities or private)

We work in **collaboration** with the entrepreneur, that they benefit from additional training and that they dare to do things differently

We, as user and material generators, **change the way** we do things and assign value to the resource



Régie intermunicipale  
de traitement des matières  
résiduelles de la Gaspésie

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Réduire l'empreinte écologique, **c'est l'affaire de tous.**

# YOU WANT TO TALK ?

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# WHO WAS INVOLVED ?

A multi-tasking project manager



**MFT et Fils, Duguay  
Sanitaire**  
Commîtted entrepreneurs



**Villes de Chandler et de  
Grande-Rivière**  
Motivated work donors



Important financial partner



*Cette initiative est offerte par l'entremise du Fonds municipal vert qui est offert par la Fédération canadienne des municipalités et financé par le gouvernement du Canada.*

**CERIEC et équipe de recherche ETS**  
Inspiration and spark !



**Hélène Gervais**  
The angel who challenges !



You have some doubts ?  
A team makes a difference !

# ISSUE : LACK OF AGILITY

We must do otherwise !



Step	Issues	Solutions
Drafting the project	Many versions are needed by the financials partners <i>(ex : 3 partners with 3 different forms)</i>	<b>Harmonized</b> forms and requirements
Project evaluation	A good evaluation of the costs of deconstruction and the potential of the reuse of materials <i>(ex : limited access to the site can limit the evaluation)</i>	1- An <b>inventory</b> of the buildings concerned (specially the abandoned ones) 2- An <b>analyze</b> of their potential 3- An <b>inventory</b> sheet for new buildings when citizens applying for the permit
Financial demands	Incompatible or misaligned timelines	1- Aligned processes between funding agencies 2 - Group meeting if there is more than one partner 3 - Rapid disbursement clauses to relieve cash flow

# ISSUE : LACK OF PLANIFICATION

I know ...time is rare ! But it is worthed !



Step	Issues	Solutions
Mobilization at the site  Case of abandoned buildings	Abandoned buildings reserve surprises ...bad ones sometimes  <i>(ex : access problem, security issues, degradation of materials..)</i>	1- <b>Regulate</b> the deadlines linked to the abandonment of buildings 2- <b>Adopt</b> an action plan for this purpose 3- <b>Take inventory</b> of abandoned buildings and qualify their condition 4- <b>Confirm</b> the potential of the building (possible reconversion) 5- <b>Validate</b> the potential of materials considering degradation 6- <b>Publicize</b> information related to the deconstruction site before the beginning (dates, safety rules, directives for traffic ...)

# ISSUE : CONTRACTUAL RULES

And innovative project deserve an innovative approach



Step	Issues	Solutions
Drafting the quote	Few technicals references and experiences for that kind of project and requirements are quite rigid ( <i>ex : confidentiality rules, the lowest bidder approach</i> )	1- Submission formula with quality criteria, non-fixed price 2- Information meeting Collaborative approach instead of the classic « you make it and we pay »
Quote preparation	Get quotes ( <i>ex : standard rules with to much administrative clauses</i> )	1- Simplified quote preceded by an information meeting
Quote tender	Get competitive quotes for deconstruction	1- Reference clauses, adapted to the situation of innovation and unconventional approach



# ISSUE : INNOVATION

We are so nervous  
when it's new !



Step	Issues	Solutions
The first meeting	Misunderstanding by the contractor regarding the objectives of the contract and different approaches <i>(ex : how to manage materials, the credibility of the foreman in front of his team )</i>	1- Validate the perception, knowledge of the materials, needs and expectations to the contractor regarding interactions with the client 2- Validate before starting the contract, the identification tools, the terms, the materials circuits
Deconstruction phase	Structures made up of several materials <i>(ex : walls, materials less interesting in terms of reuse)</i>  The pace of work and its impact on the schedule and budget <i>(ex : deconstruction does not progress as quickly as demolition)</i>	1- A color code to identify the categories of materials (those which will require reflection or a change of strategy depending on the progress of the work) 2- A full-time foreman, especially at the beginning 3- Areas identified to quantify in volume BEFORE their release 4-An open exchange mechanism (to express doubts and realign priorities regularly with the client's manager) 5-An audit from the start and a budget for unforeseen events

The future of deconstruction leading to reuse is inseparable from municipal environment by...

## HOW THE MUNICIPAL SECTOR CAN CONTRIBUTE ?

- Fueling the thinking of decision-makers
- Planning pilot projects
- Identifying opportunities
- Integrating all clauses the could promote an approach supporting the promotion of deconstruction and reuse
- Freeing up a team to support entrepreneurs to ensure proactive progress on the ground

# HOW THE ENGINEERING SECTOR CAN CONTRIBUTE ?

The engineering community must also be involved by ...

- Contributing to their client reflections and encouraging them to do differently
- Integrating all clauses that could promote an approach supporting deconstruction and reuse
- Proposing a team to support contractors and project owners and ensure proactive progress in the field
- Supporting this approach through its questions, its expertise, its tools