



Construction of a Noise Barrier Along A-20 in Beaconsfield Between Devon and Jasper Roads

May 17, 2022

Presentation Outline

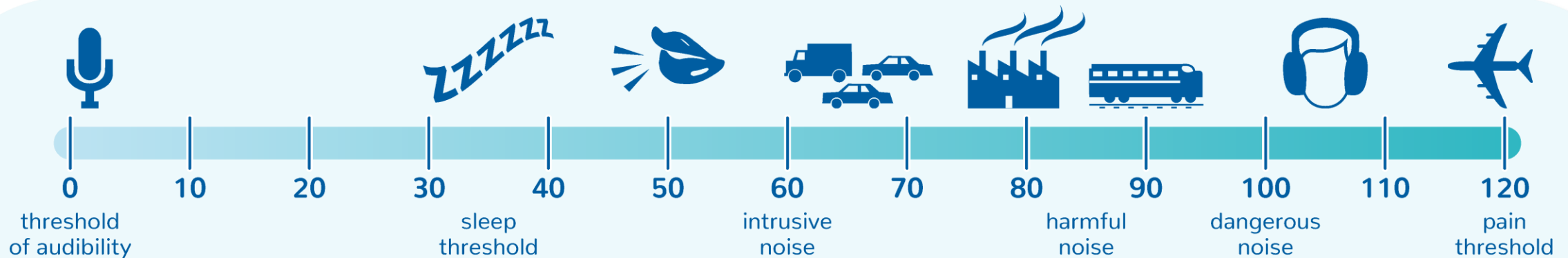
- **Basic Concepts**
- **Road Noise Policy**
- **Context**
- **Chosen Solution**
- **Cost Estimate and Next Phases of the Project**



Basic Concepts

NOISE SCALE

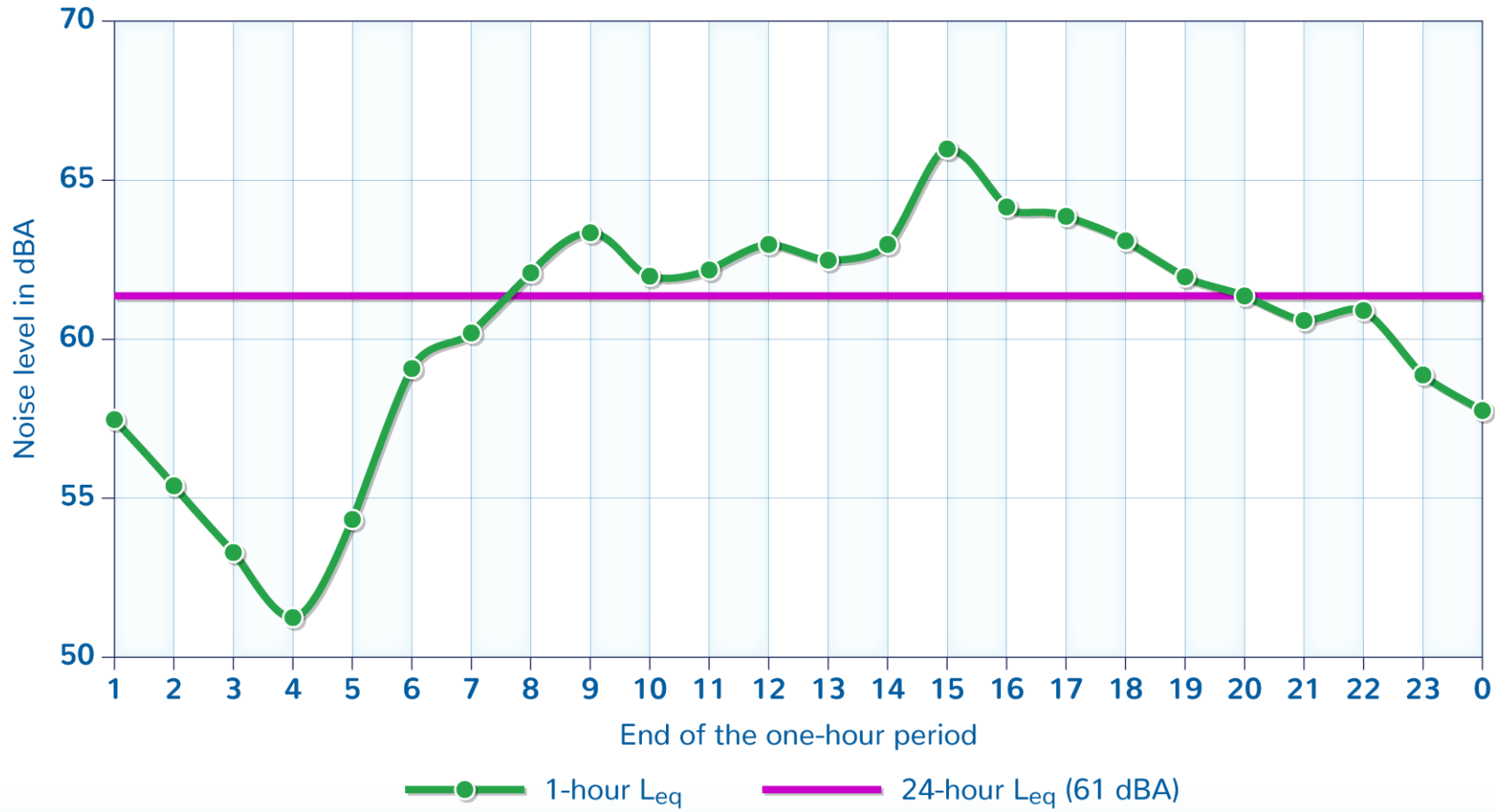
- Identified by intensity (sound level) and frequency (low- or high-pitched sounds)
- Unit of measure:
 - **dB** (decibel): noise level
 - **dBA**: decibel adjusted for the sensitivity of the human ear



Basic Concepts

DAILY VARIATION OF SOUND LEVELS

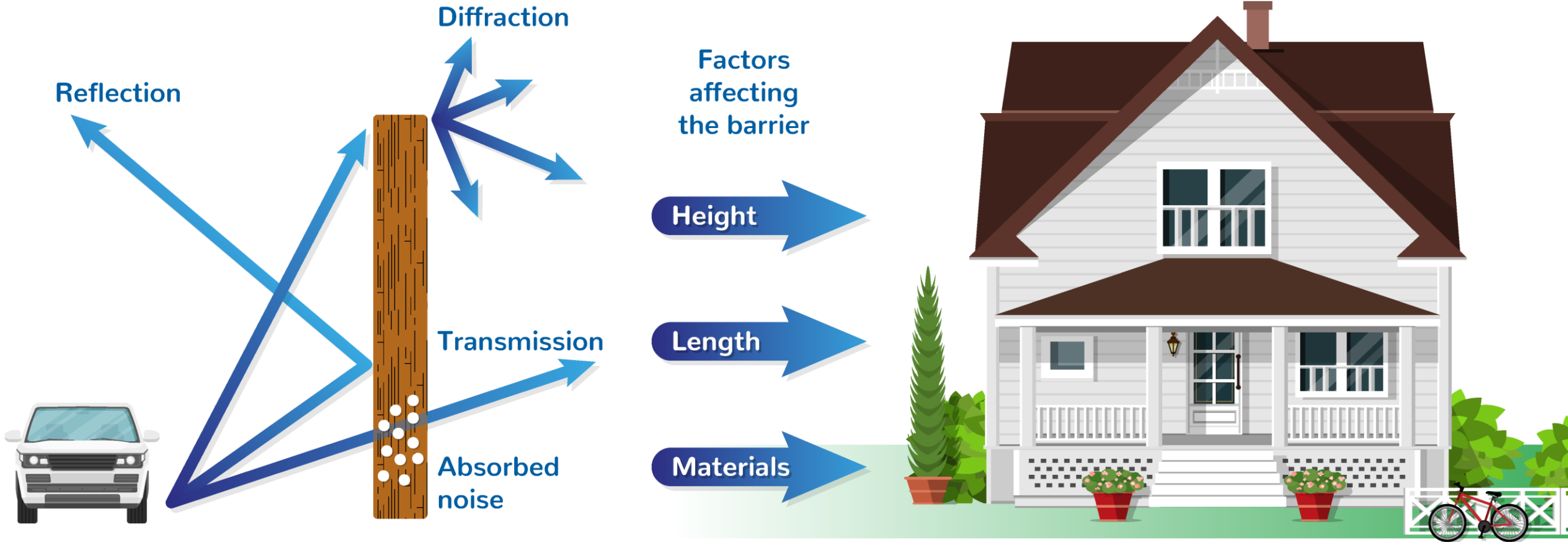
Example:



- The $L_{eq, period}$ corresponds to a set of sound level variations observed over a specific period of time
- The data is represented over a 24-hour period, using the 24-hour L_{eq} indicator

Basic Concepts

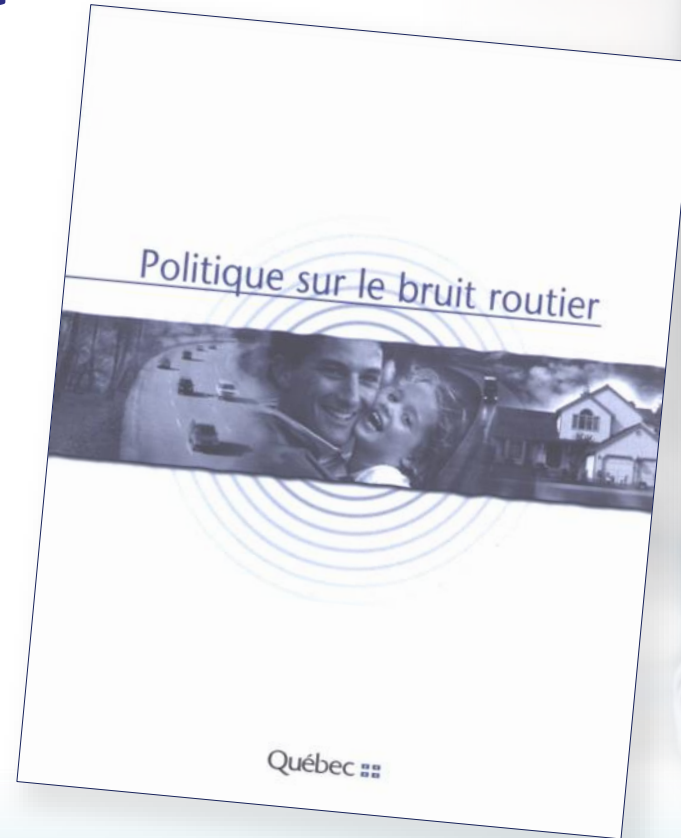
NOISE BARRIERS



Road Noise Policy

SENSITIVE AREAS

- Area where the soundscape is an essential element for the successful performance of human activities:
 - Residential areas
 - Buildings of an institutional nature
 - Recreational areas



Road Noise Policy

STUDY AREA ELIGIBILITY

- Built before March 1998
- Density threshold above 30 dwelling units/km
- Noise level set at 65 dBA (24-hour L_{eq})

Noise level 24-hour L_{eq} in dBA	Annoyance level
$65 \leq L_{eq}$	High
$60 < L_{eq} < 65$	Medium
$55 < L_{eq} \leq 60$	Low
$L_{eq} \leq 55$	Acceptable



Context

SUMMARY

Changes made to the A-20



Conducting the soundscape study



Signing the agreement for the feasibility study



Finalizing the feasibility study



Context

ANNUAL FLOW RATES



Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Morgan-Woodland annual flow	45 000	47 000	45 000	47 000	44 000	44 000	45 000	42 000	46 000
Woodland-Cartier annual flow	59 000	61 000	60 000	62 000	60 000	62 000	60 000	64 000	65 000

Context

LAND USE



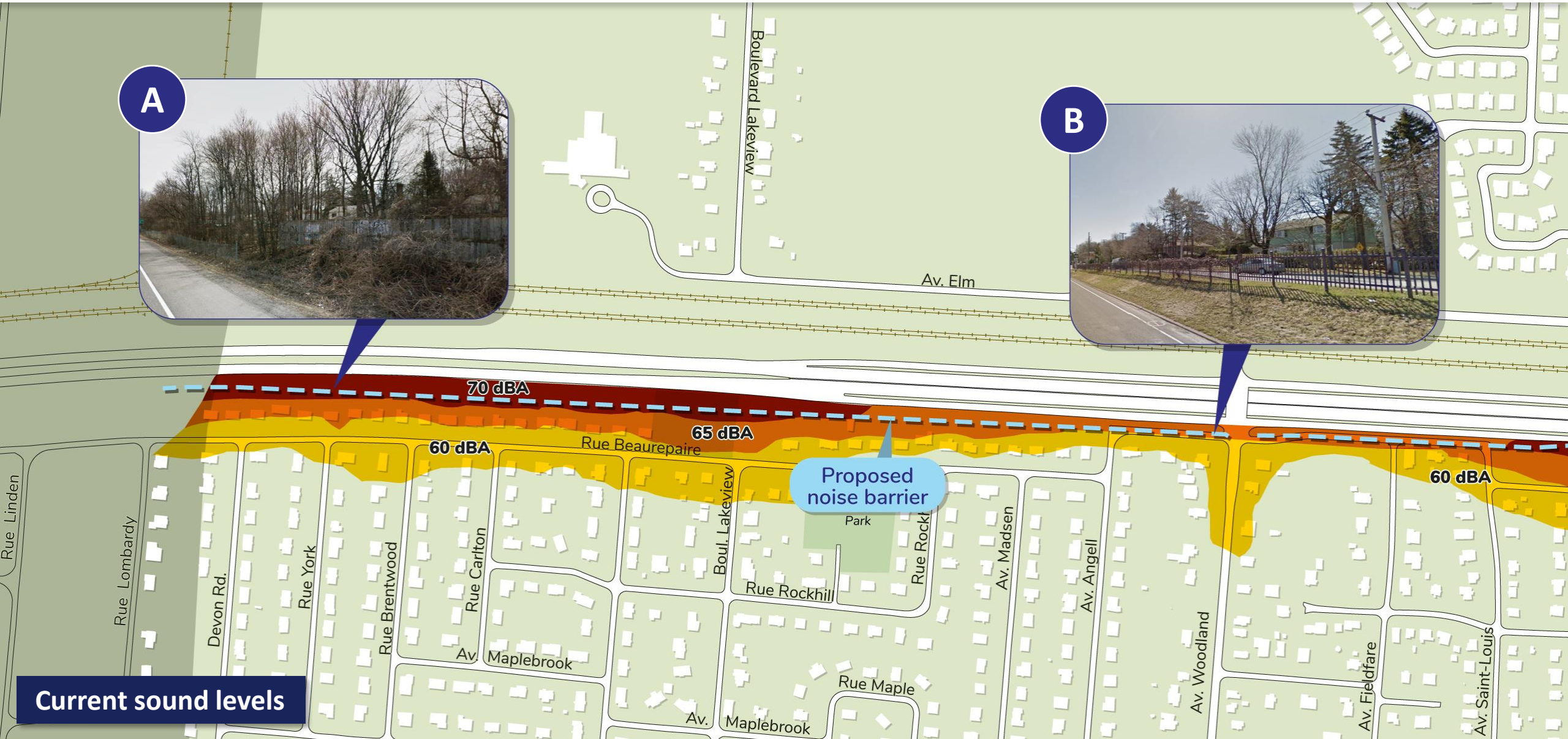
Context

LAND USE



Context

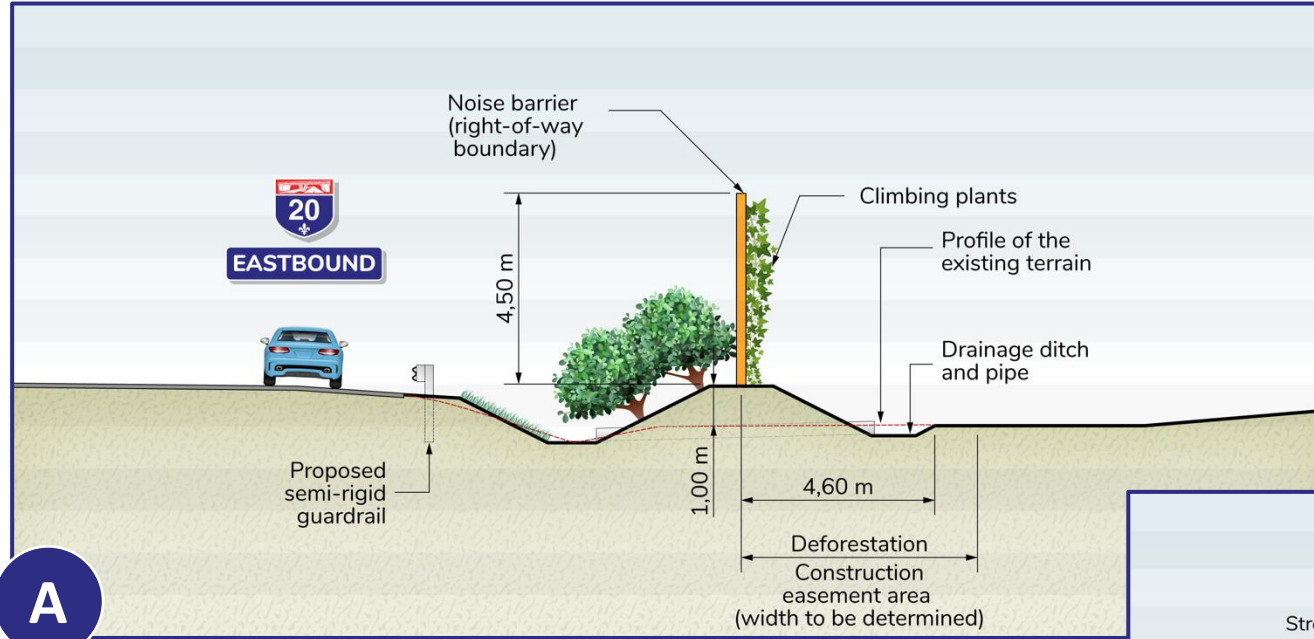
ZONE 1 – SECTOR BETWEEN THE WESTERN BOUNDARY AND AV. WOODLAND.....



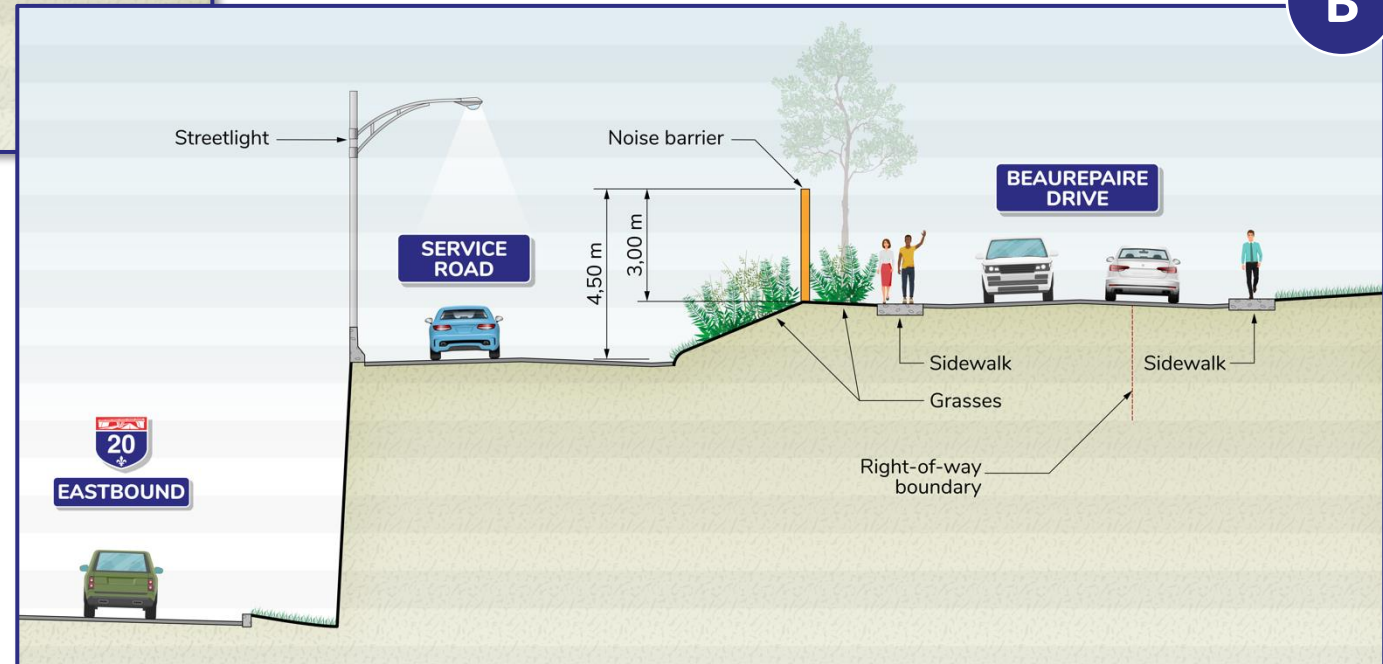
Current sound levels

Proposed noise barrier

ZONE 1 – SECTOR BETWEEN THE WESTERN BOUNDARY AND AV. WOODLAND



Height

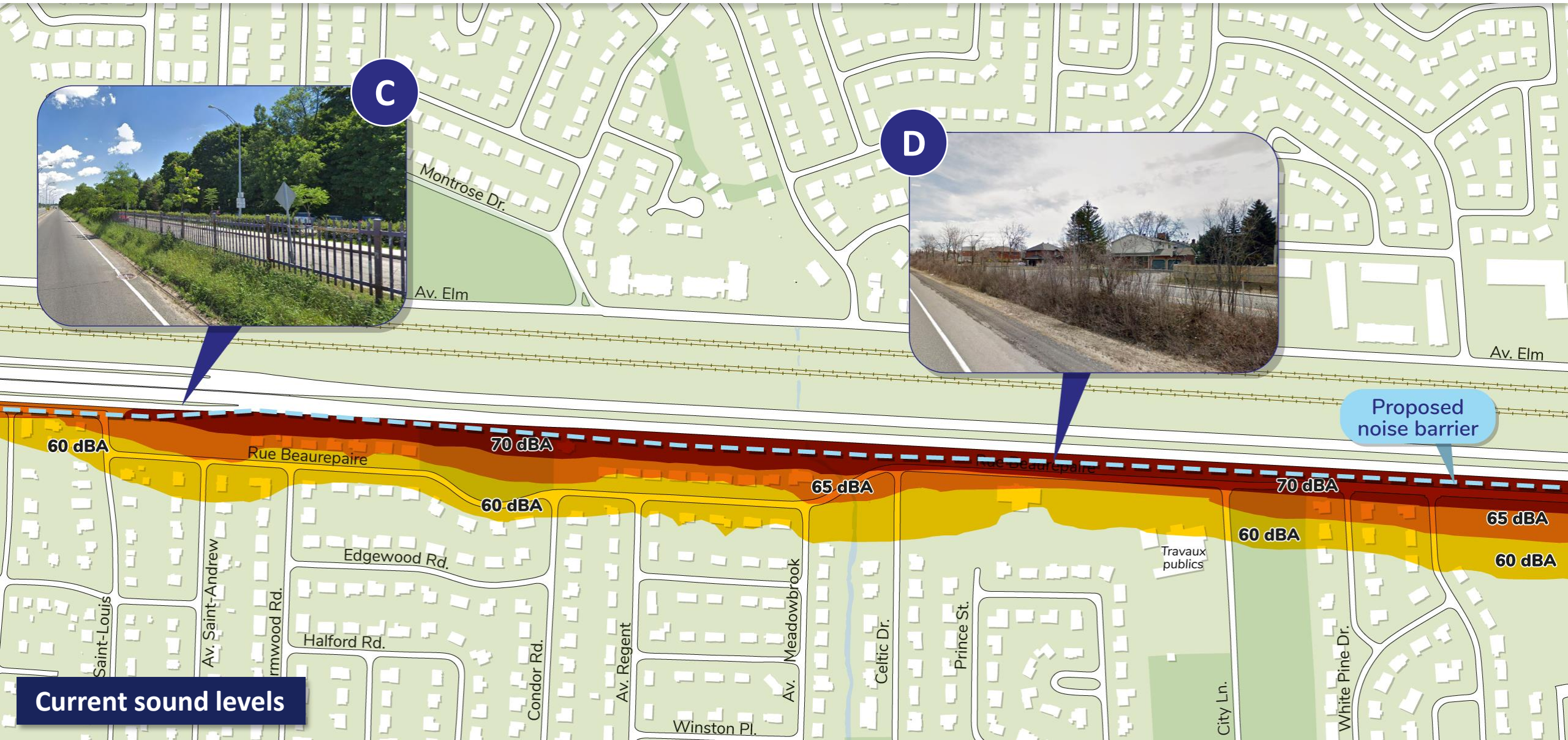


A

B

Context

ZONE 2 – SECTOR BETWEEN AV. WOODLAND AND WILDTREE RD.

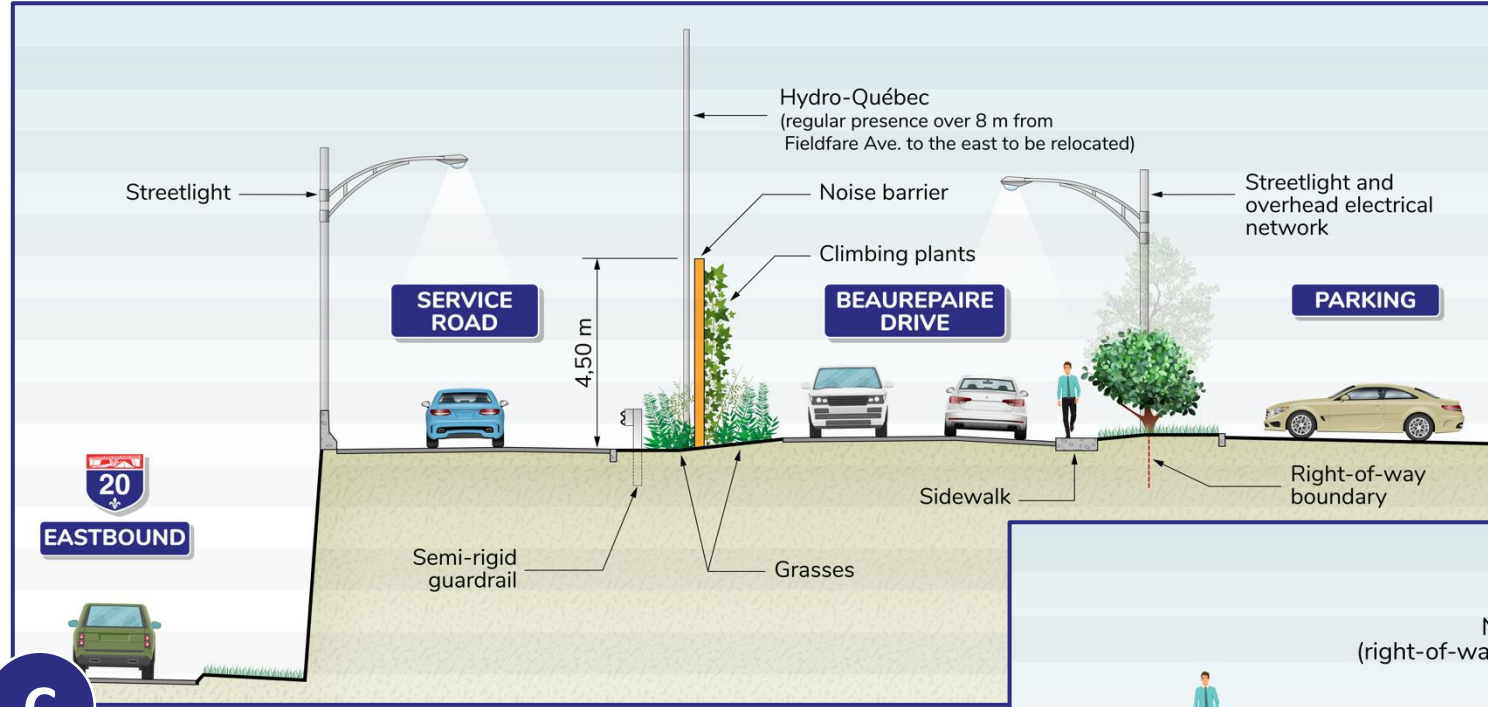


Current sound levels

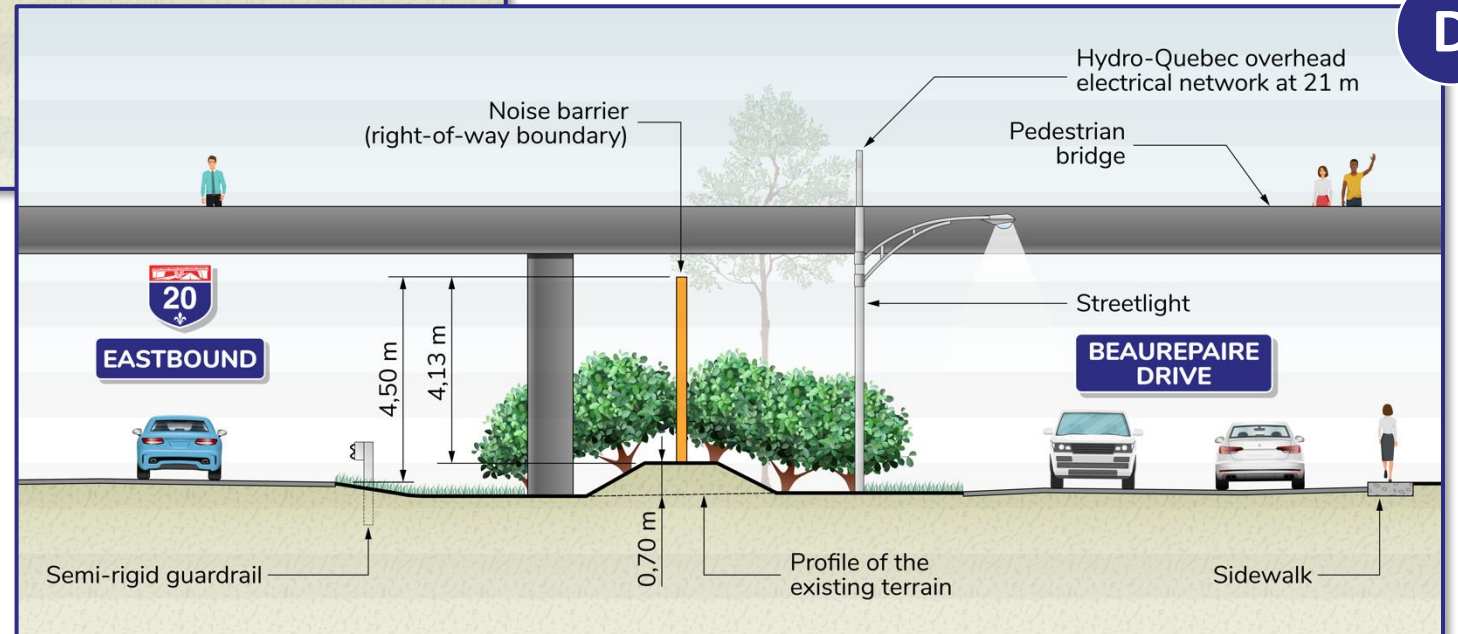
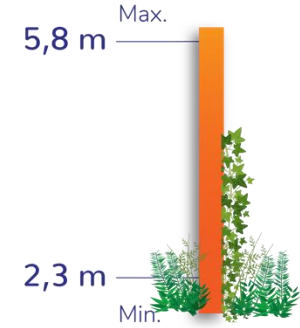
Proposed noise barrier

Context

ZONE 2 – SECTOR BETWEEN AV. WOODLAND AND WILDTREE RD.

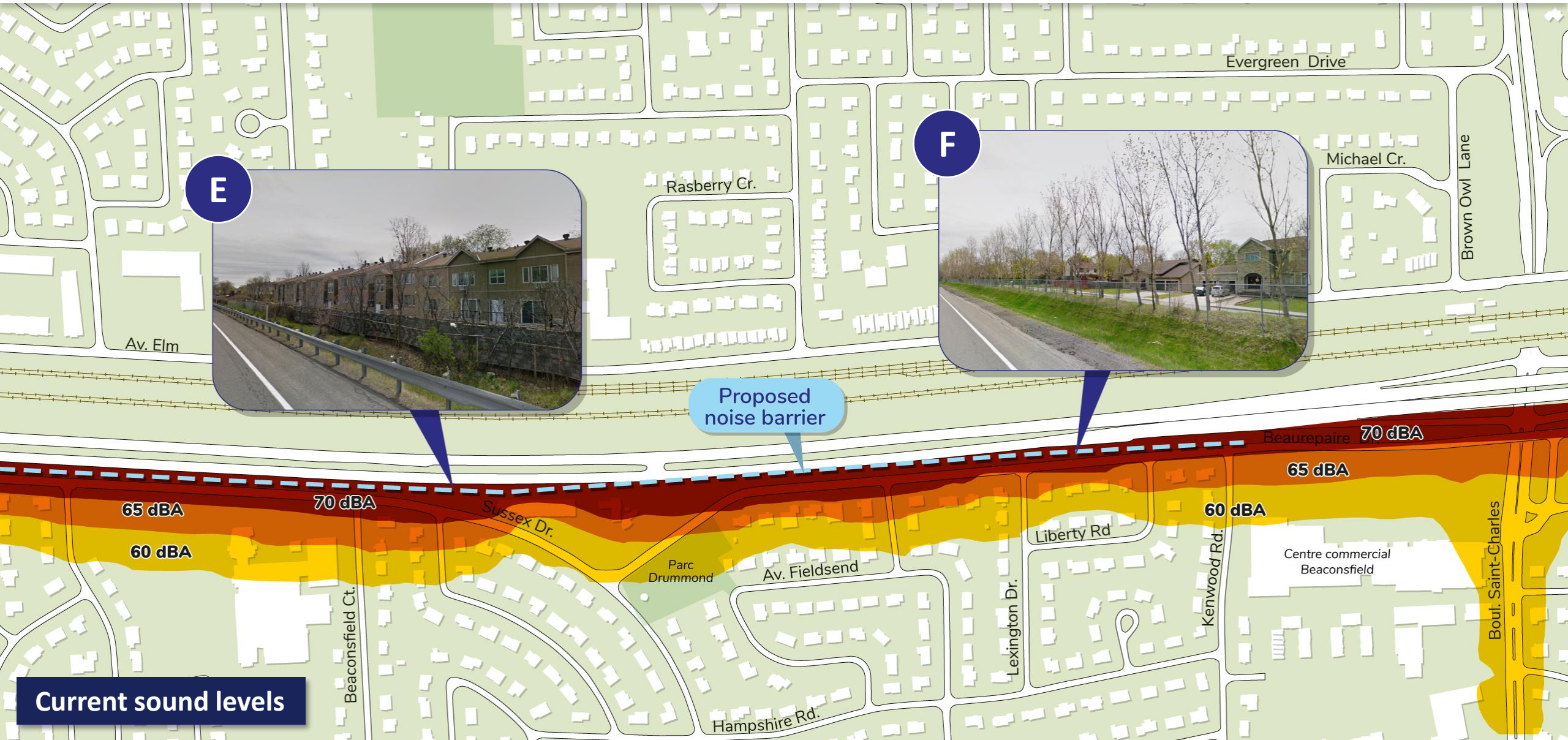


Height



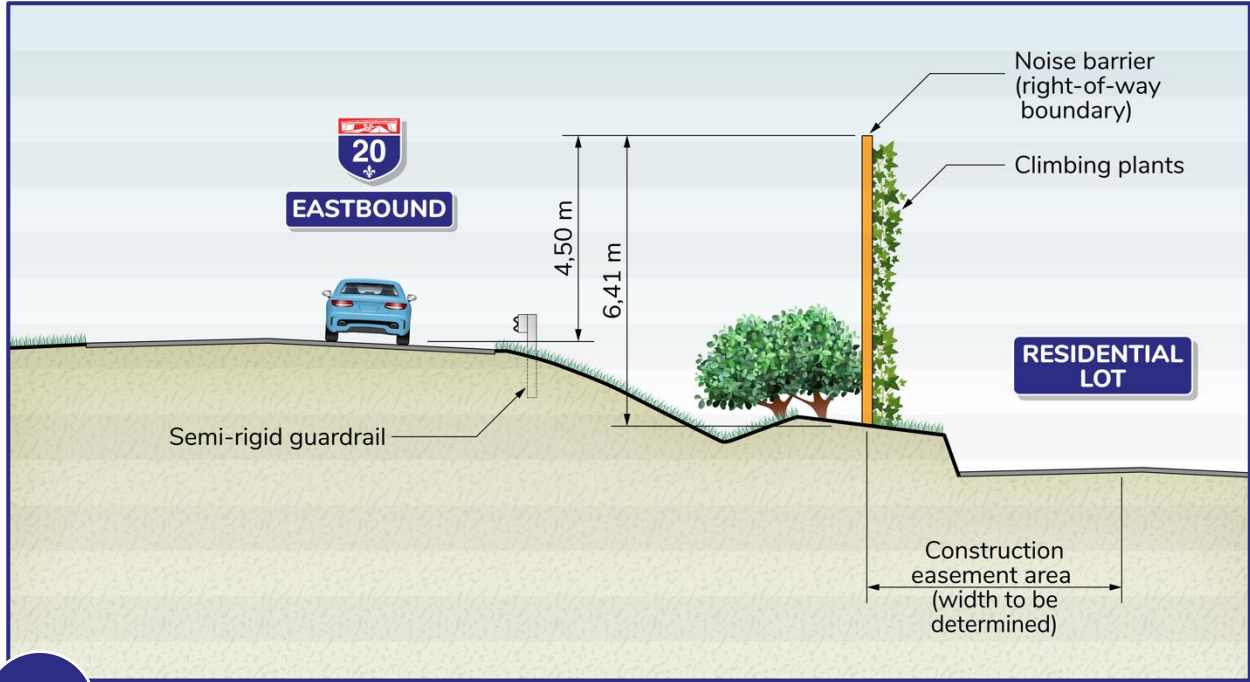
D

ZONE 3 – SECTOR BETWEEN THE HIGH SCHOOL AND BOUL. SAINT-CHARLES

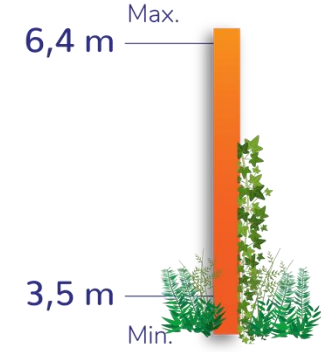


Context

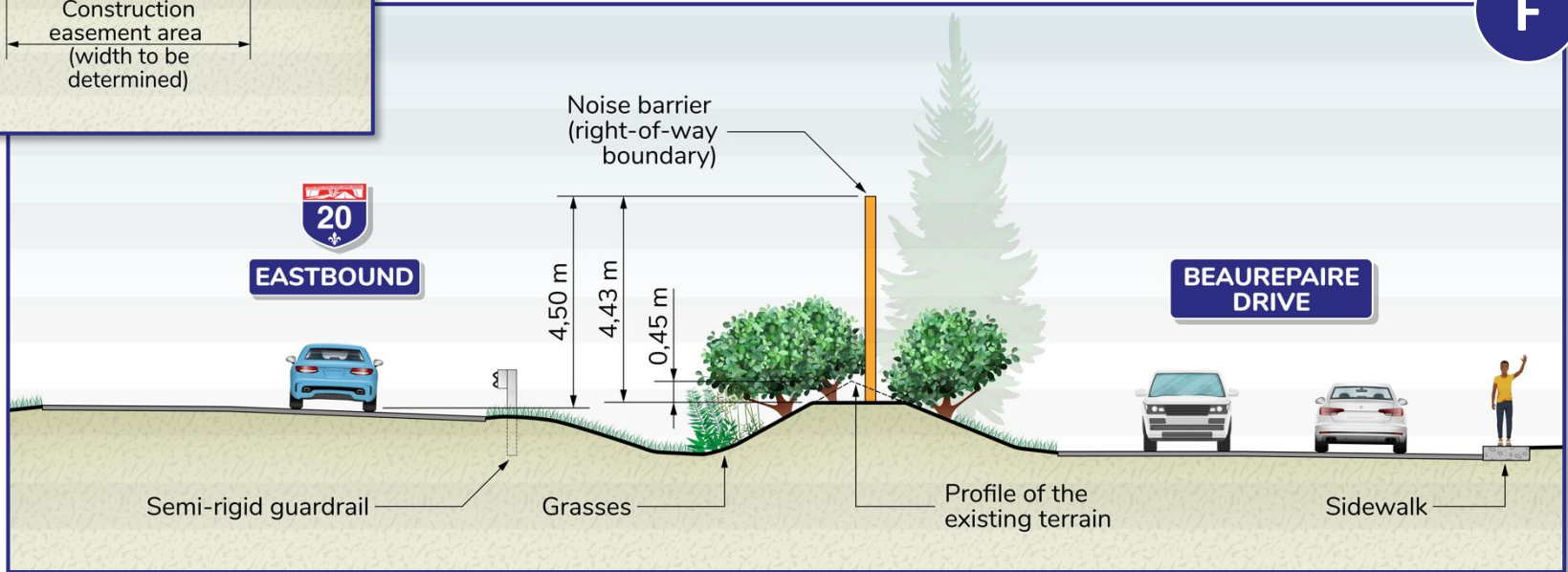
ZONE 3 – SECTOR BETWEEN THE HIGH SCHOOL AND BOUL. SAINT-CHARLES



Height



E



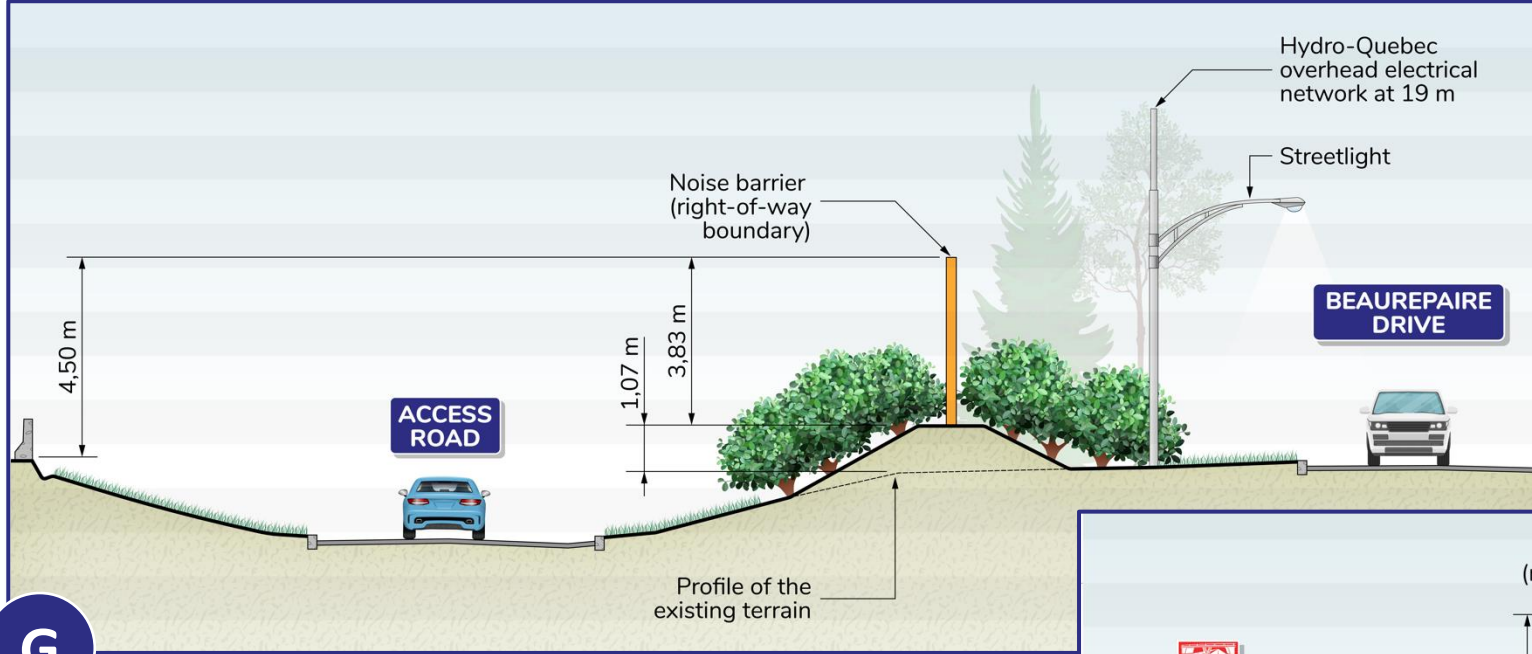
F

ZONE 4 – SECTOR BETWEEN BOUL. SAINT-CHARLES AND THE EASTERN BOUNDARY.....

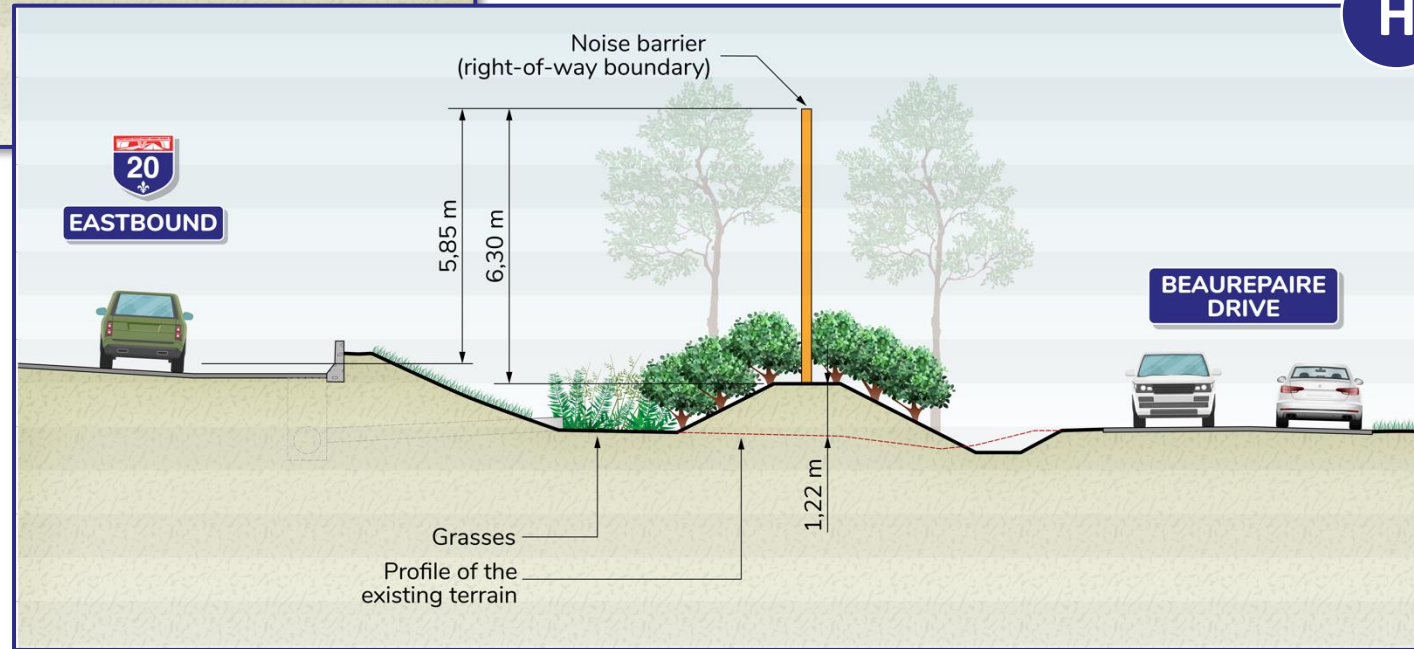
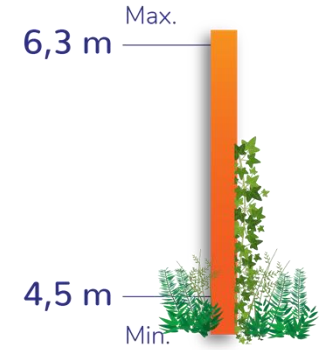


Context

ZONE 4 – SECTOR BETWEEN BOUL. SAINT-CHARLES AND THE EASTERN BOUNDARY



Height



H

General Findings

Zone	CURRENT level (dBA)	Annoyance level	PROJECTED level (dBA)	Annoyance level
1	63 to 65	Medium	54 to 56	Acceptable ✓
2	65 to 71	High	57 to 59	Low ✓
3	65 to 71	High	57 to 59	Low ✓
4	65 to 70	High	57 to 59	Low ✓



Characteristics of the Chosen Solution

Construction of a noise barrier along the A-20 between Devon and Jasper Roads

- Length → **approximately 5 km**
- Height → **varies between 1,5 and 6,4 m**
- Anticipated **noise reduction** based on modelling
→ **7 to 13 dBA**



Potential Solutions

SELECTION CRITERIA



Technical aspects

- Standards compliance
- Sustainability
- Cost
- Required maintenance
- Ease of installation

Community

- Alignment with community expectations

Compatibility with the highway environment

- Taking into consideration specific conditions related to a highway environment

Environment

- Ecological performance
- Respect for the environment
- Esthetics



Categories of Potential Solutions



Concrete



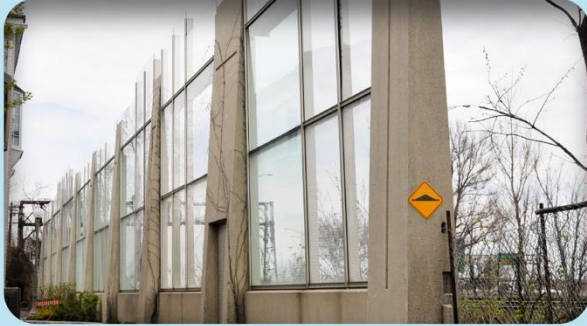
PVC



Woven willow



Transparent panels



Chosen Solution

BARRIER MADE OF WOVEN WILLOW RODS

Compared to other wall types

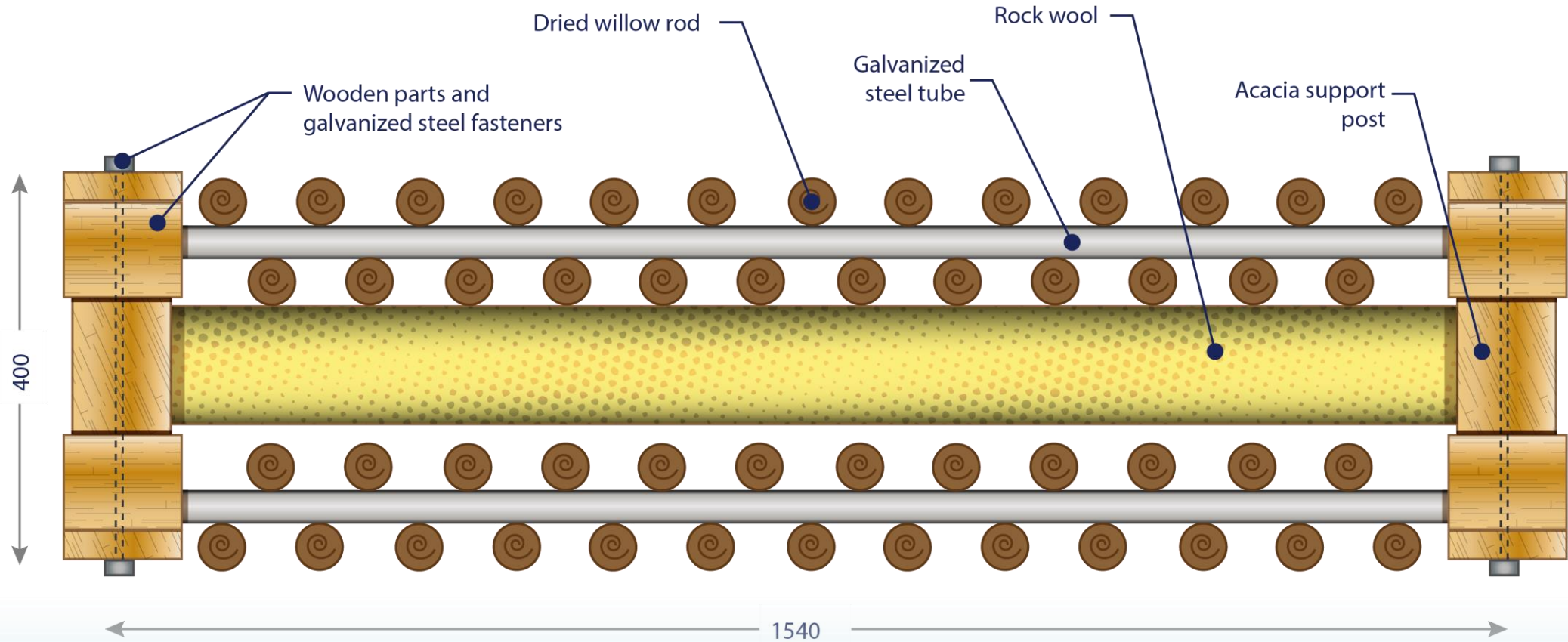
- **Integration** into the landscape
- **Competitive price** and **quick installation**
- **Low maintenance**



Chosen Solution

BARRIER MADE OF WOVEN WILLOW RODS

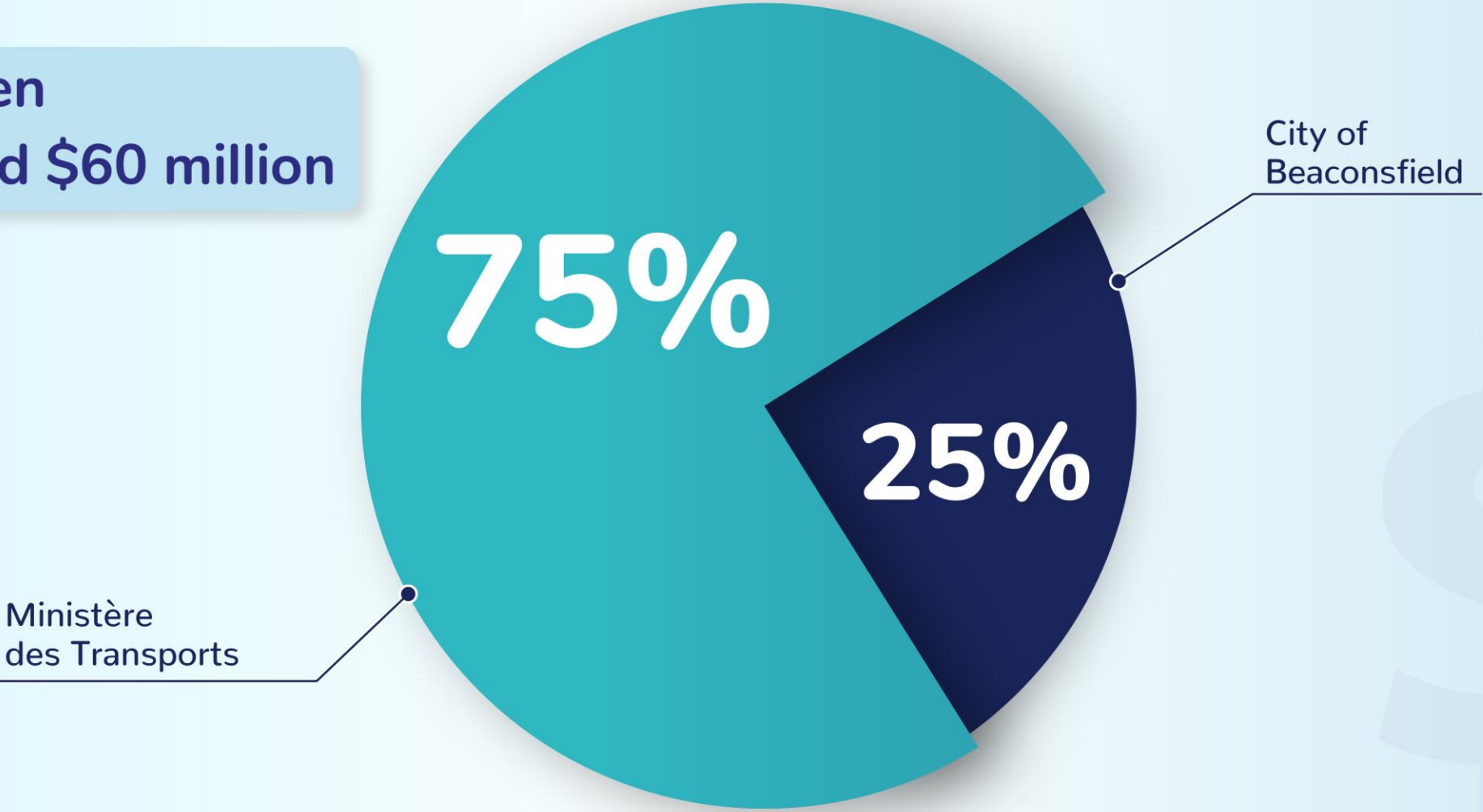
➔ Plan view of a barrier with 2 willow facades



Project Cost Estimate



➔ **Between
\$50 and \$60 million**



Next Phases of the Project



Agreement for the completion of the final design study



Agreement for the preparation of plans, specifications and construction



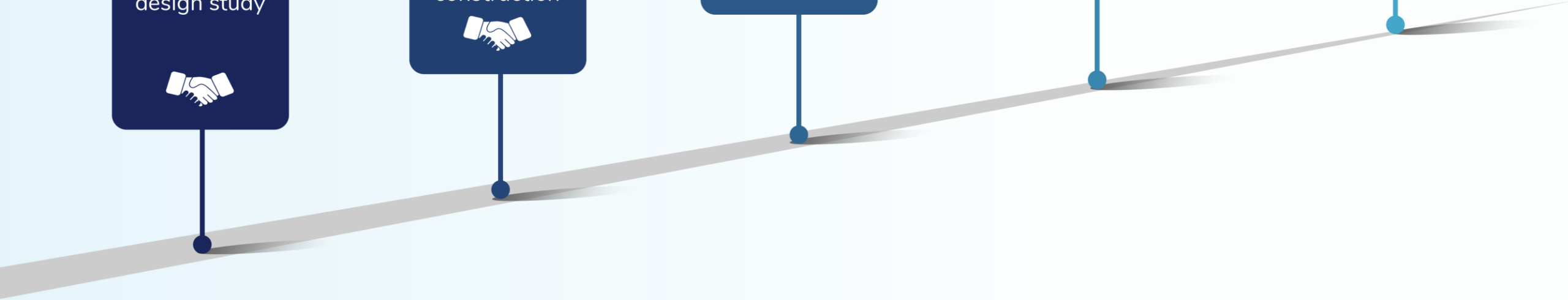
Relocation of public services



Construction bid notice



Construction to potentially commence in 2026





Question Period

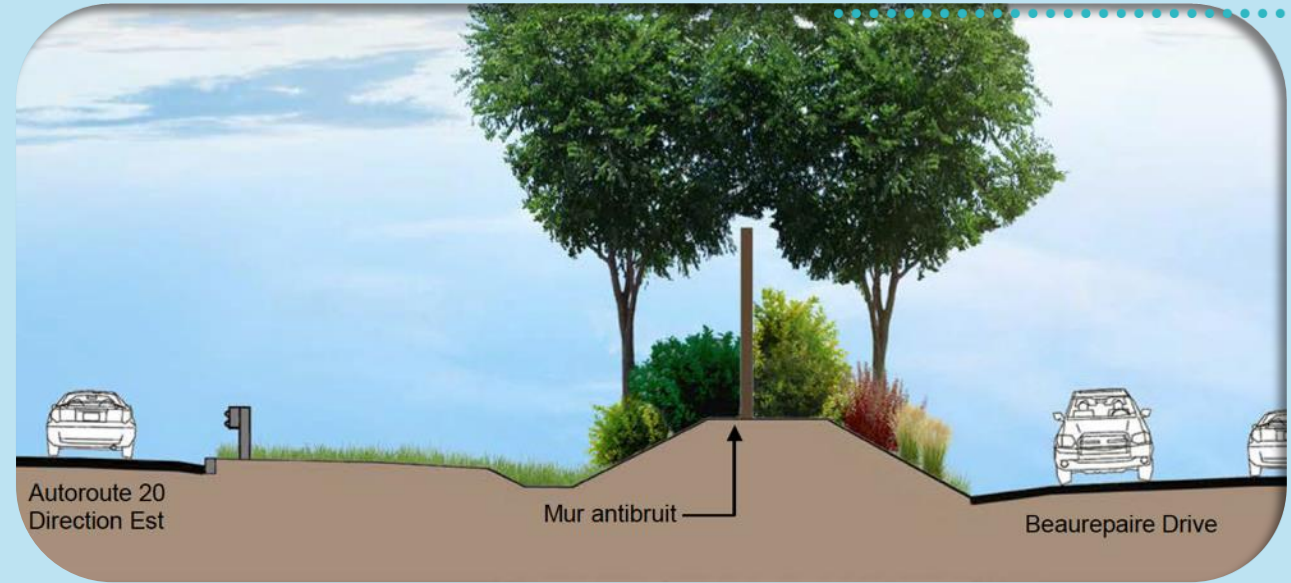
Appendix



Chosen Solution

BARRIER MADE OF WOVEN WILLOW RODS

Profile view of the proposed noise barrier

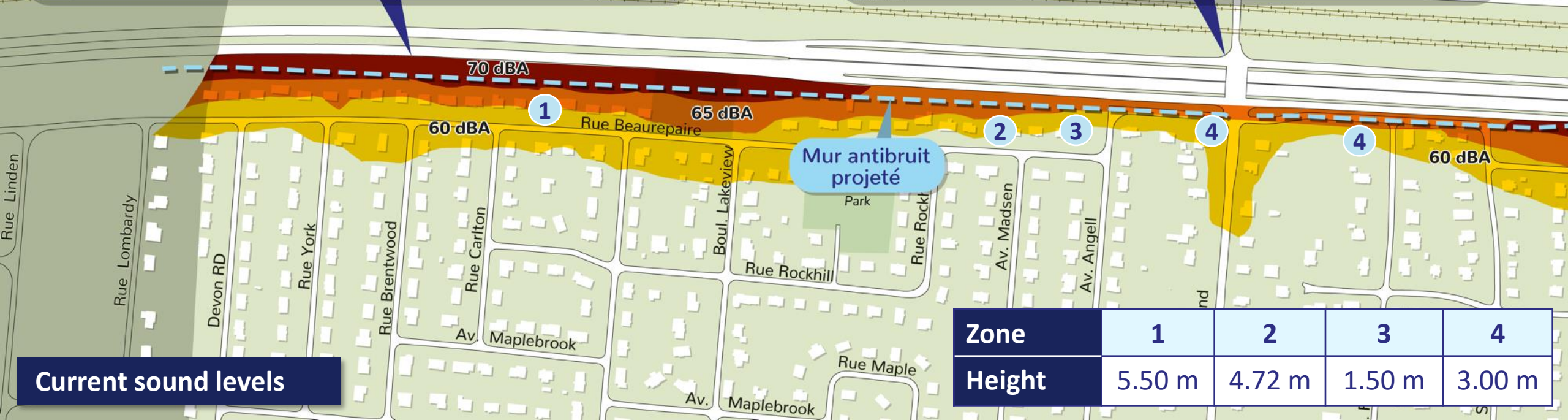
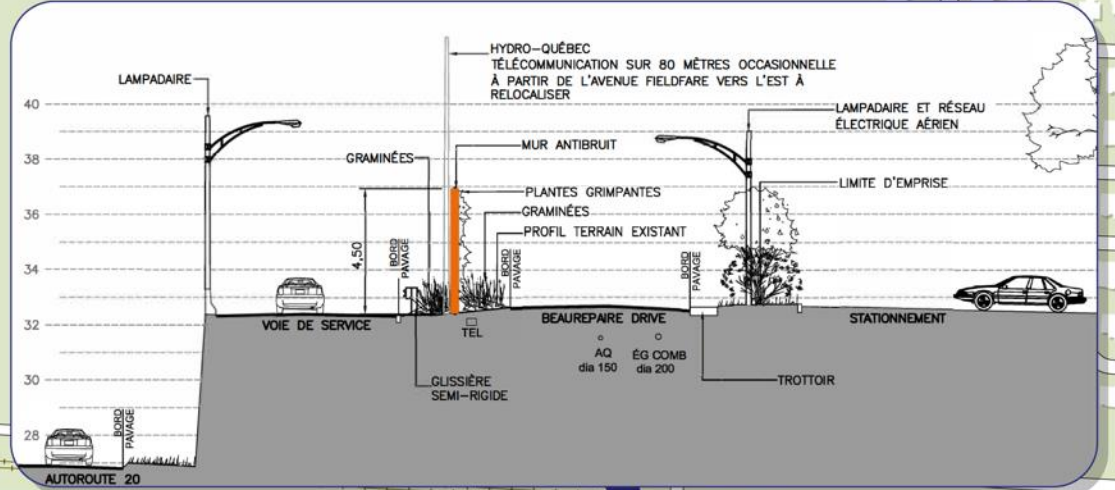
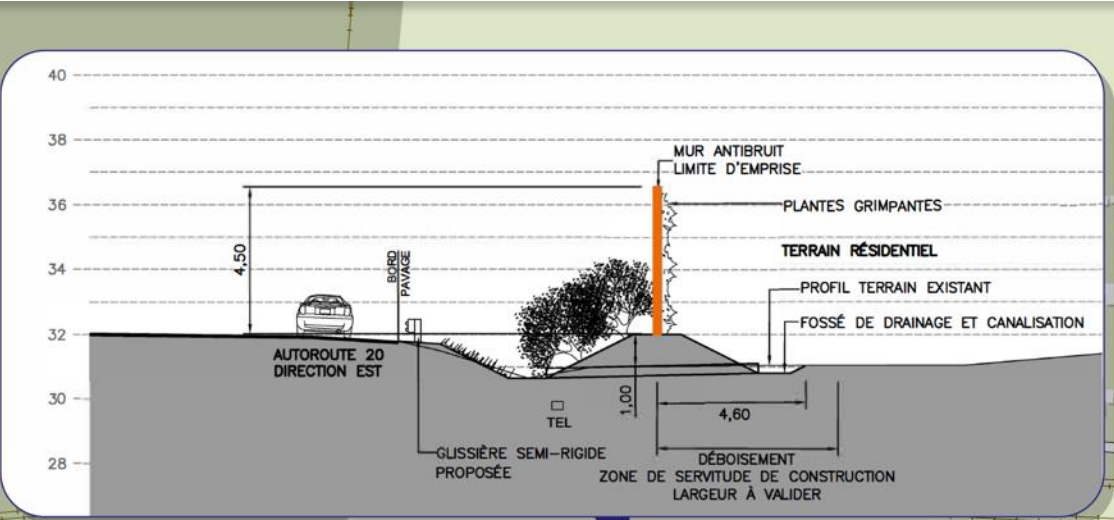


Landscaping options for the Beaconsfield residential side



Context

ZONE 1 – SECTOR BETWEEN THE WESTERN BOUNDARY AND WOODLAND AVE.

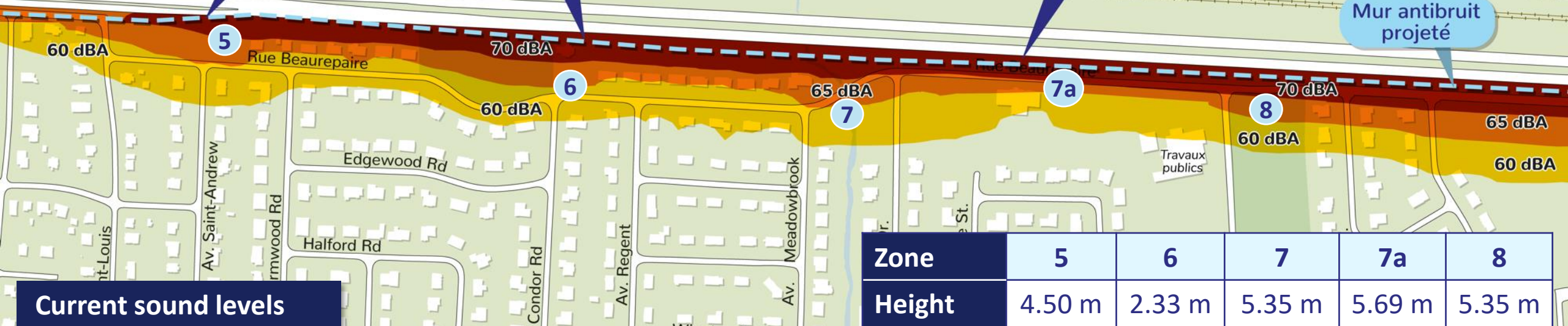
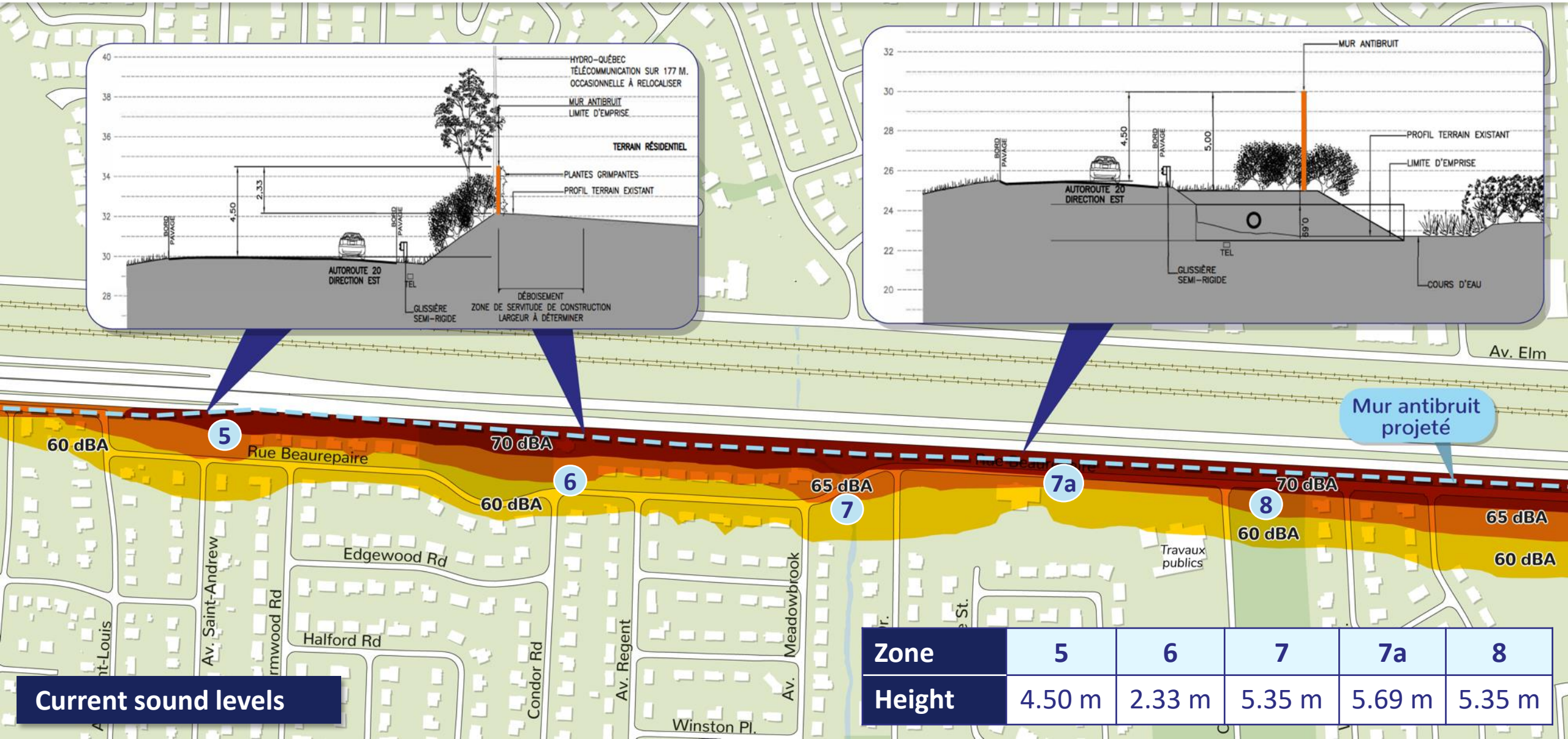


Current sound levels

Zone	1	2	3	4
Height	5.50 m	4.72 m	1.50 m	3.00 m

Context

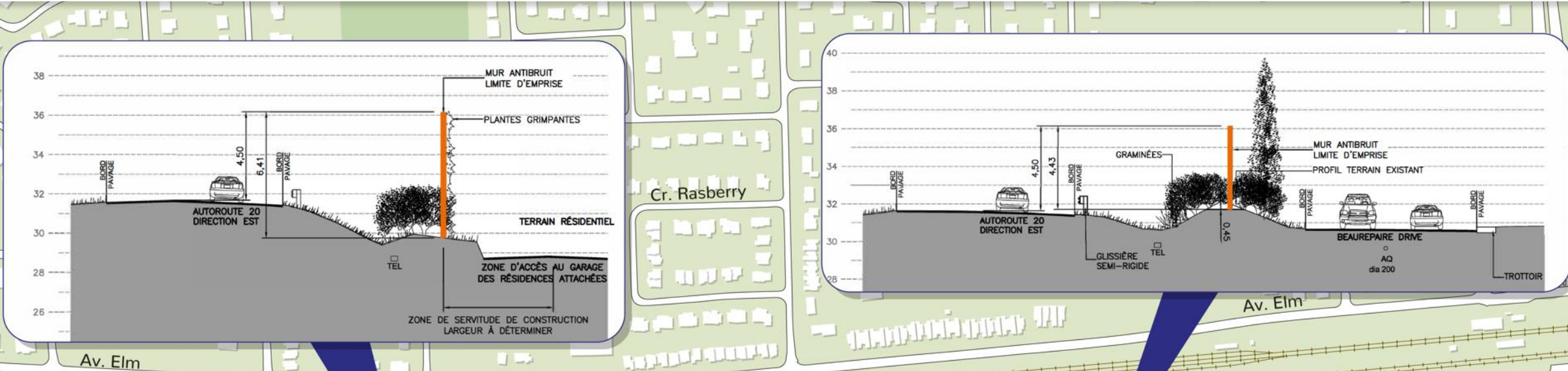
ZONE 2 – SECTOR BETWEEN AV. WOODLAND AND WILDTREE RD.



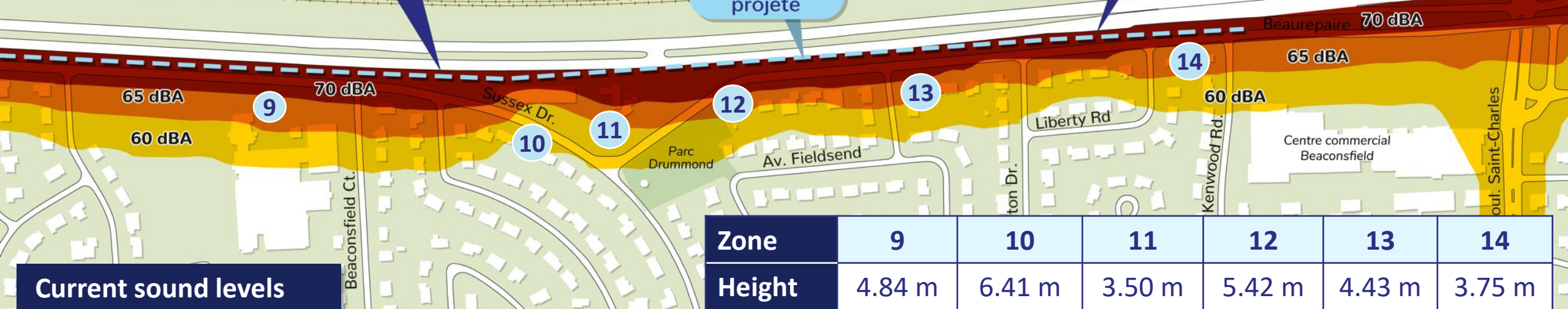
Zone	5	6	7	7a	8
Height	4.50 m	2.33 m	5.35 m	5.69 m	5.35 m

Context

ZONE 3 – SECTOR BETWEEN THE HIGH SCHOOL AND BOUL. SAINT-CHARLES



Mur antibruit projeté

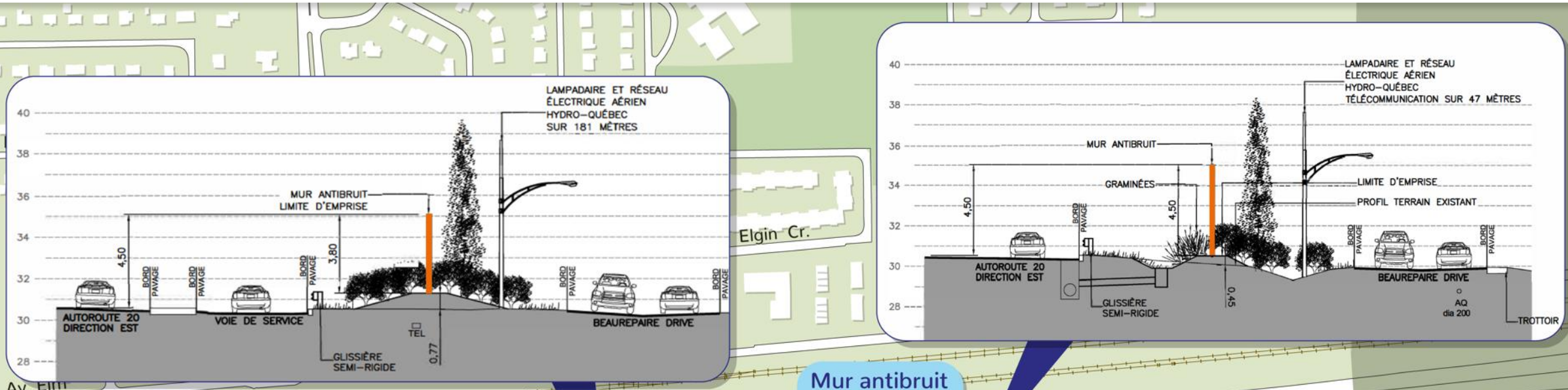


Current sound levels

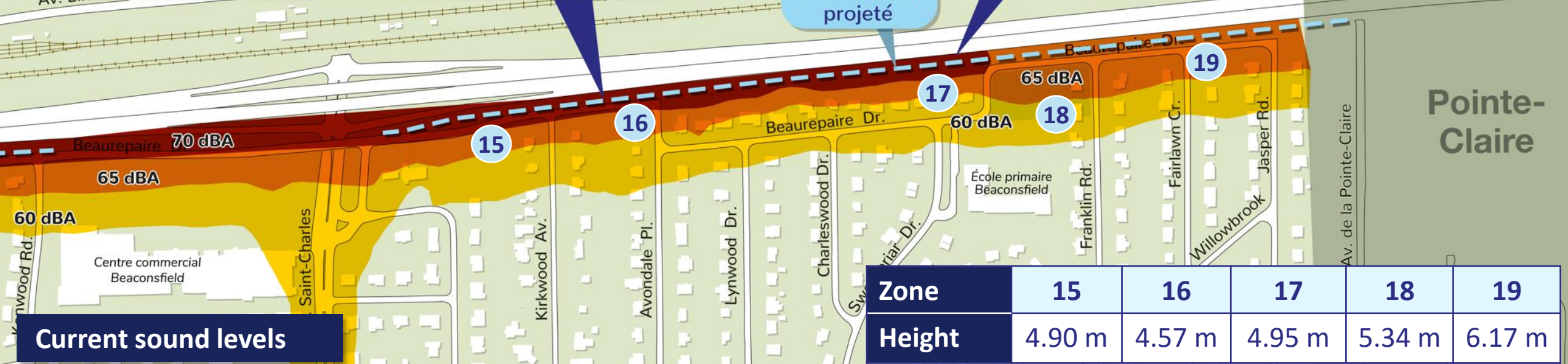
Zone	9	10	11	12	13	14
Height	4.84 m	6.41 m	3.50 m	5.42 m	4.43 m	3.75 m

Context

ZONE 4 – SECTOR BETWEEN BOUL. SAINT-CHARLES AND THE EASTERN BOUNDARY



Mur antibruit projeté



Current sound levels

Zone	15	16	17	18	19
Height	4.90 m	4.57 m	4.95 m	5.34 m	6.17 m