

HARMONY & DESIGN:
REPRESENTING MUSIC IN ARCHITECTURE

A Center for Music Education and Performance

1 Thesis Question

2 Research

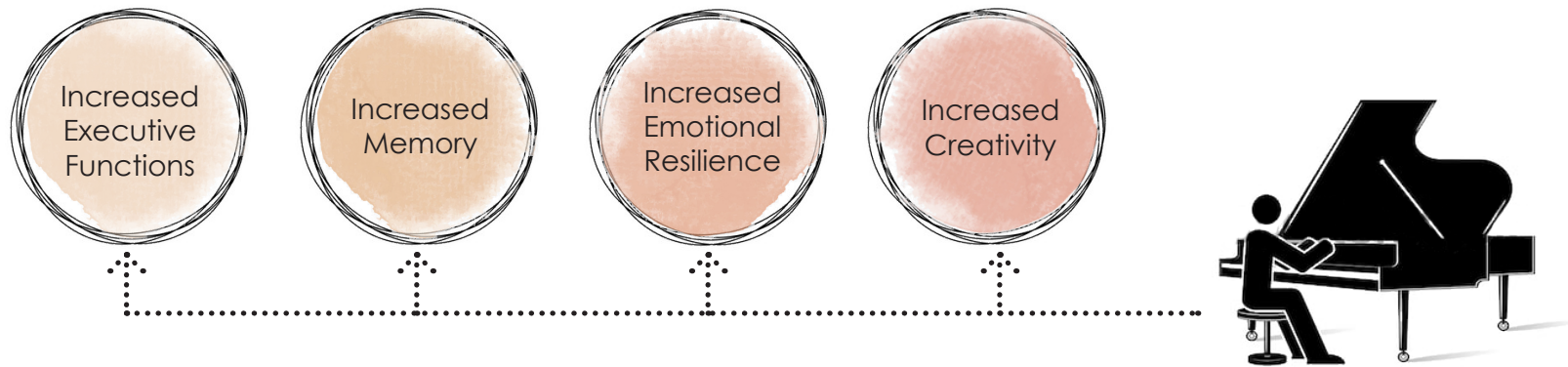
3 Site

4 Design

5 Representations

Why is the ability to play an instrument beneficial?

The ability to play an instrument or be a member of a musical group has been shown through numerous studies to help students in other aspects of their life including :



Executive functions have been shown to be a stronger predictor of academic success than IQ.

How can design improve music education?

Synesthesia

Evokes the automatic, involuntary, affect-laden, and conscious perception of a sensory or conceptual property that differs from that one of the trigger.

Through the representation of music in architecture, design can improve music education by enhancing the synesthetic experience of students, creating a more exciting and accessible space for young musicians.

Representing musical elements in architecture

MELODY

PITCH

HARMONY

DYNAMICS

INTERVALS

RHYTHM

TEMPO

PRELIMINARY RESEARCH

Brainstorming

1:1 1:2 2:3 3:4

ppp. fff

1:1 2:1 2:3 3:4

Fast:

Slow:

Slow NEUTRAL fast

wide step

- harmony (black lines) add texture to the melody (blue line)

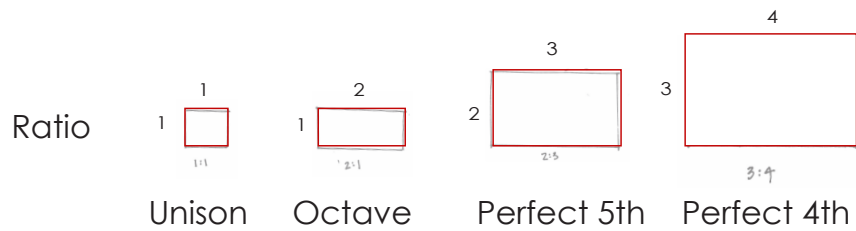
harmony + melody work together

The collage features several hand-drawn elements: rhythmic patterns with ratios (1:1, 1:2, 2:3, 3:4), waveforms in various colors (red, purple, blue, orange), geometric shapes (squares, rectangles), abstract line drawings (a brain-like shape, a spiral), and text annotations such as 'Fast:', 'Slow:', 'NEUTRAL', 'wide step', and 'harmony + melody work together'. There are also dynamic markings 'ppp.' and 'fff'.

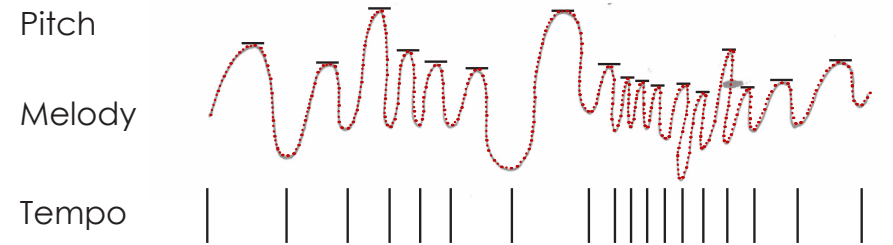
PRELIMINARY RESEARCH

Making Connections

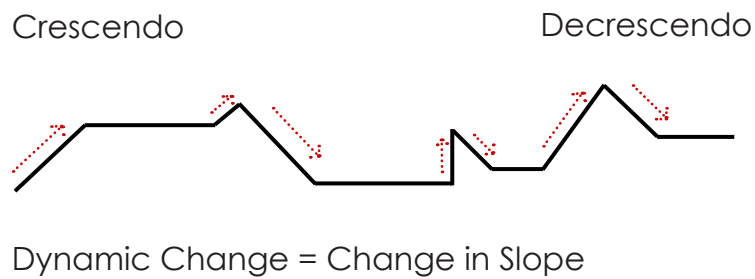
INTERVALS



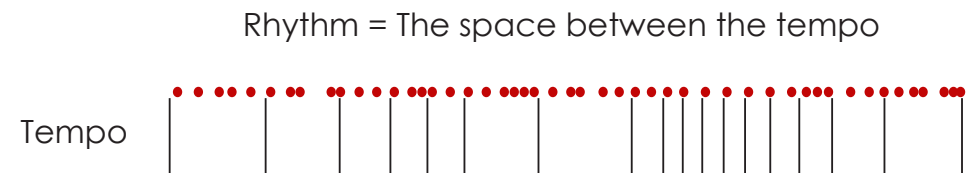
MELODY



DYNAMICS



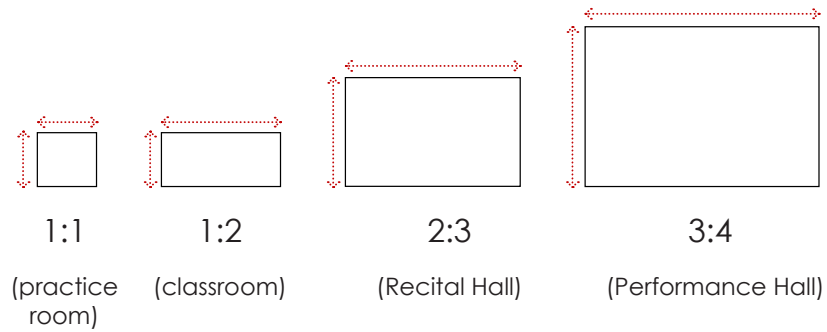
RHYTHM



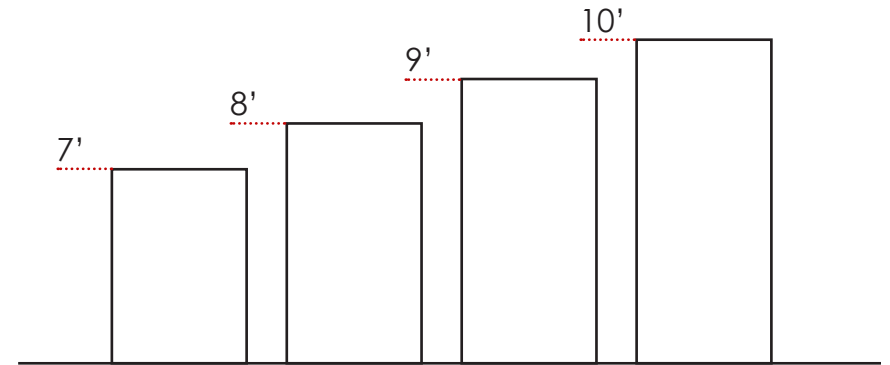
PRELIMINARY RESEARCH

Representing the Elements

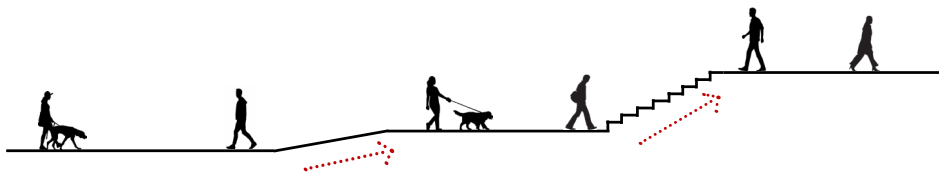
INTERVALS



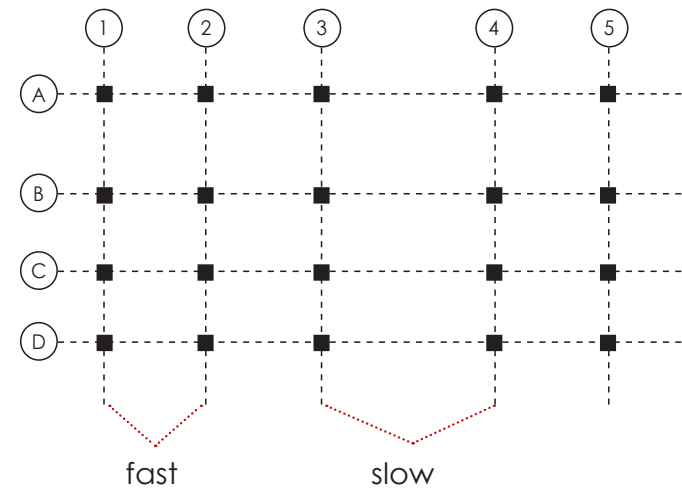
PITCH



DYNAMICS



TEMPO



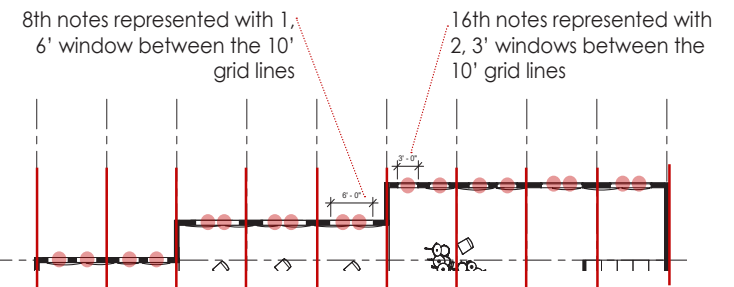
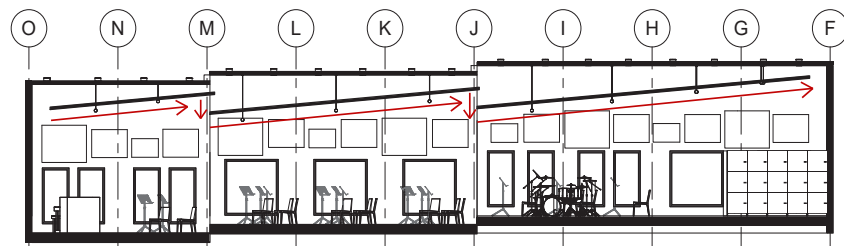
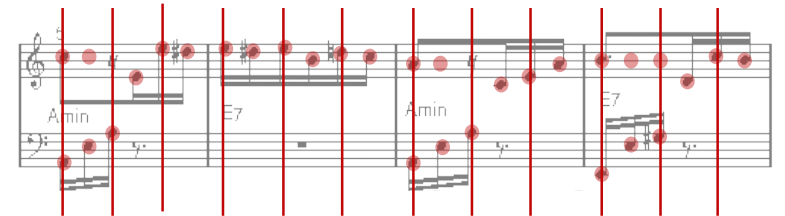
ARCHITECTURE AS A REPRESENTATION OF MUSIC

Fur Elise | Ludwig van Beethoven

PITCH & MELODY



TEMPO & RHYTHM

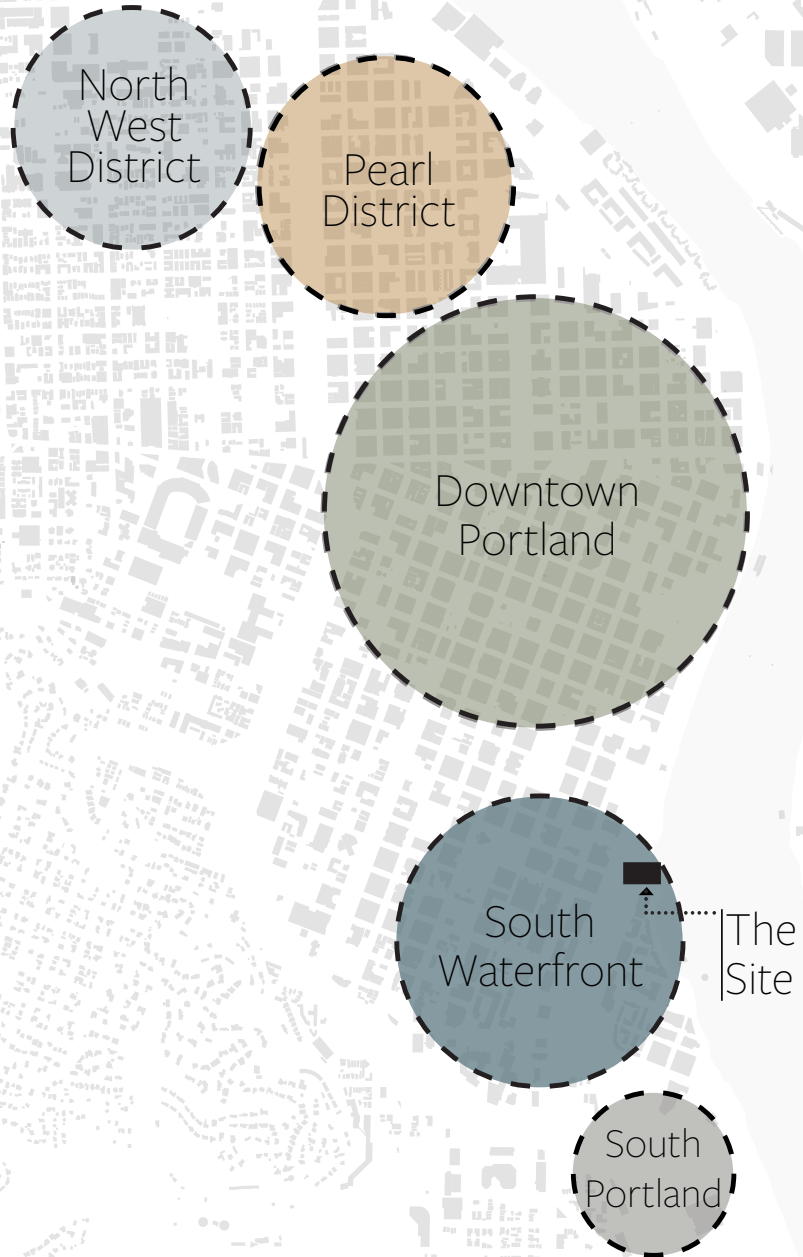




CENTER FOR MUSIC EDUCATION AND PERFORMANCE

THE SITE

Portland, OR



THE SITE & PARK EXTENSION

Portland, OR



THE SITE & PARK EXTENSION

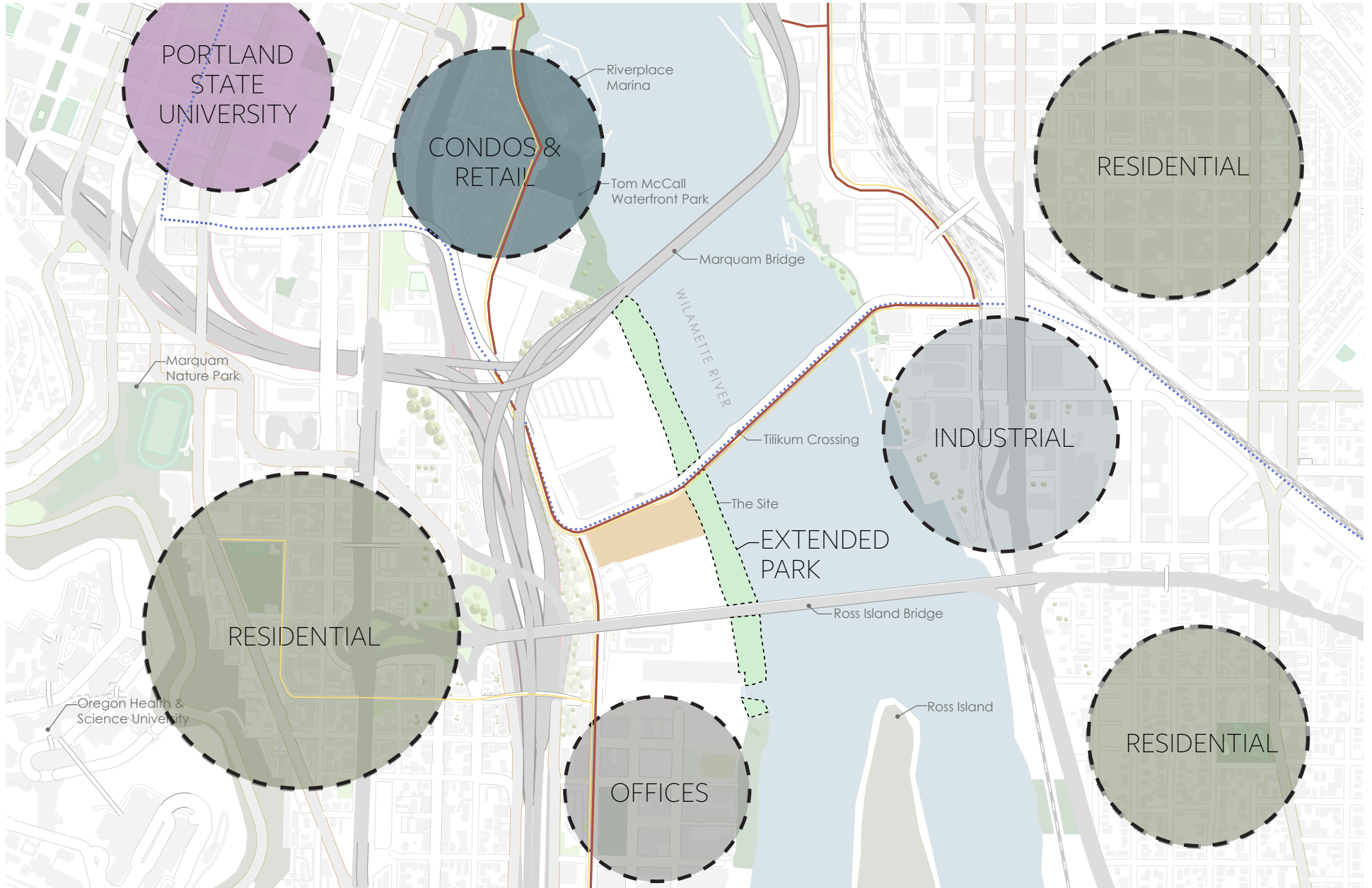
Portland, OR



THE SITE & PARK EXTENSION

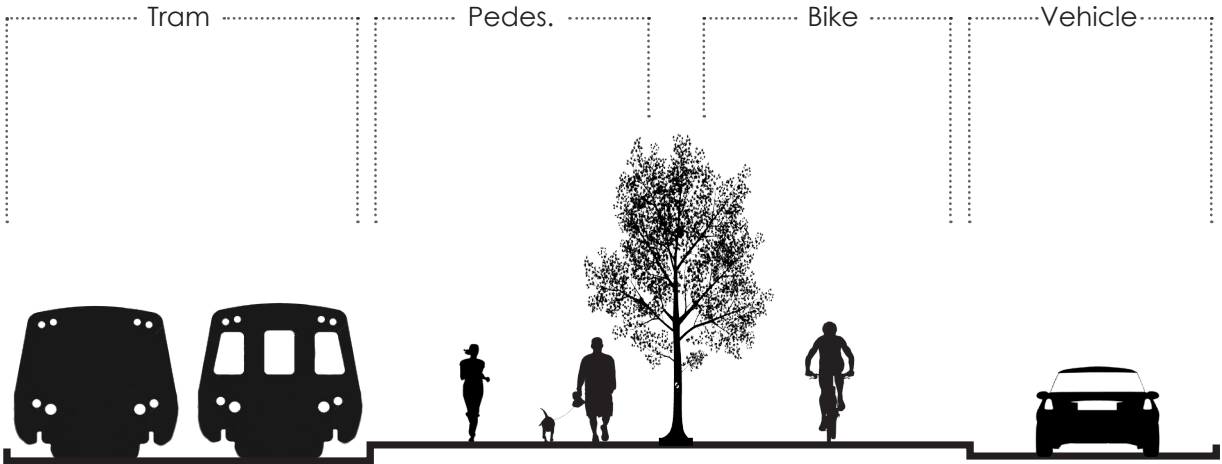
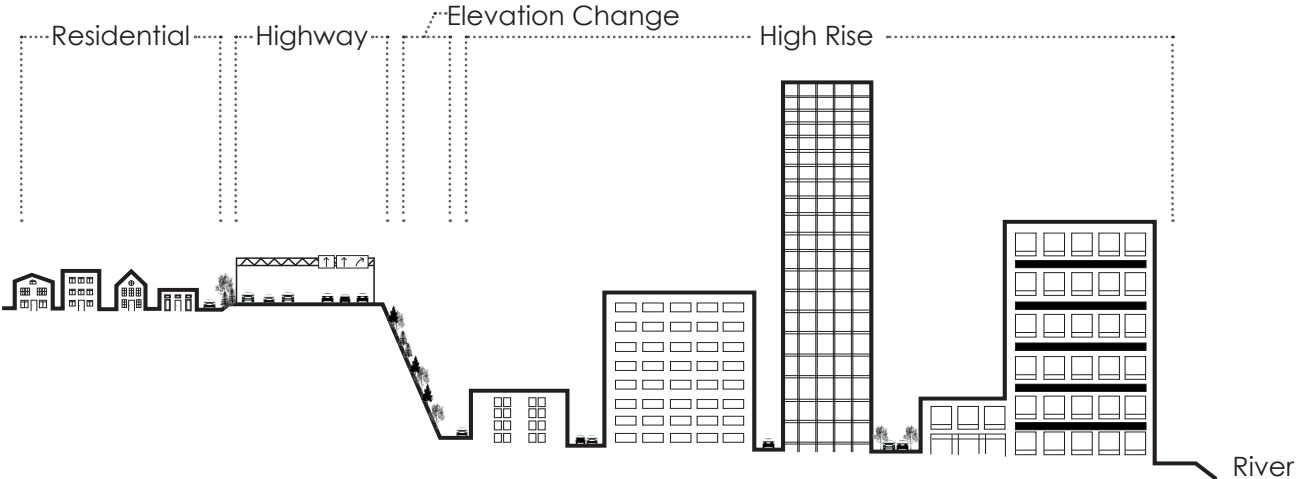
Portland, OR

..... Tram — Bike Lane — Pedestrian



LOCATION FEATURES

Site Sections





River View



Street View



View from OHSU



Tillikum Crossing

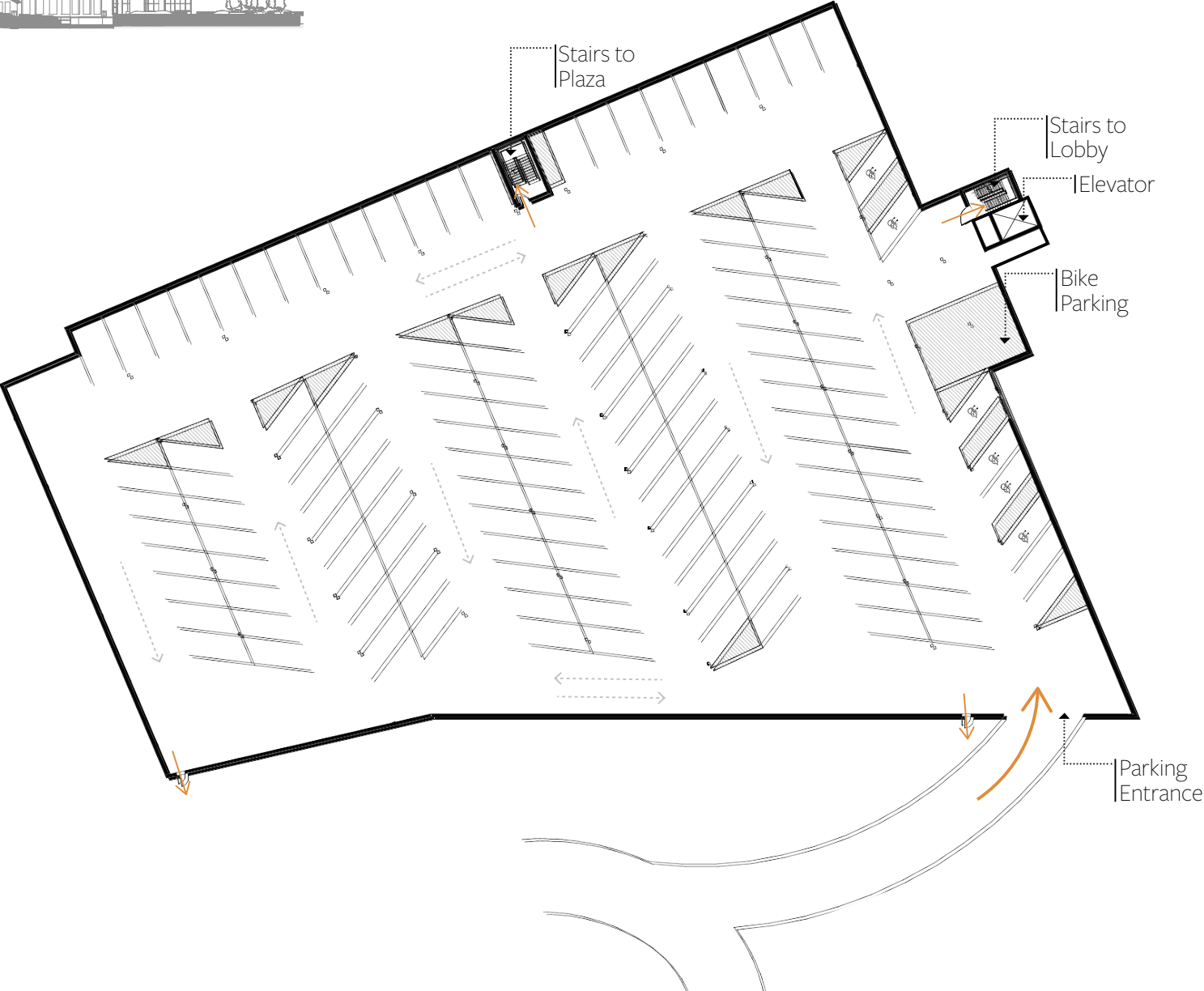
SITE PLAN

Food Hall, River Walk & Plaza



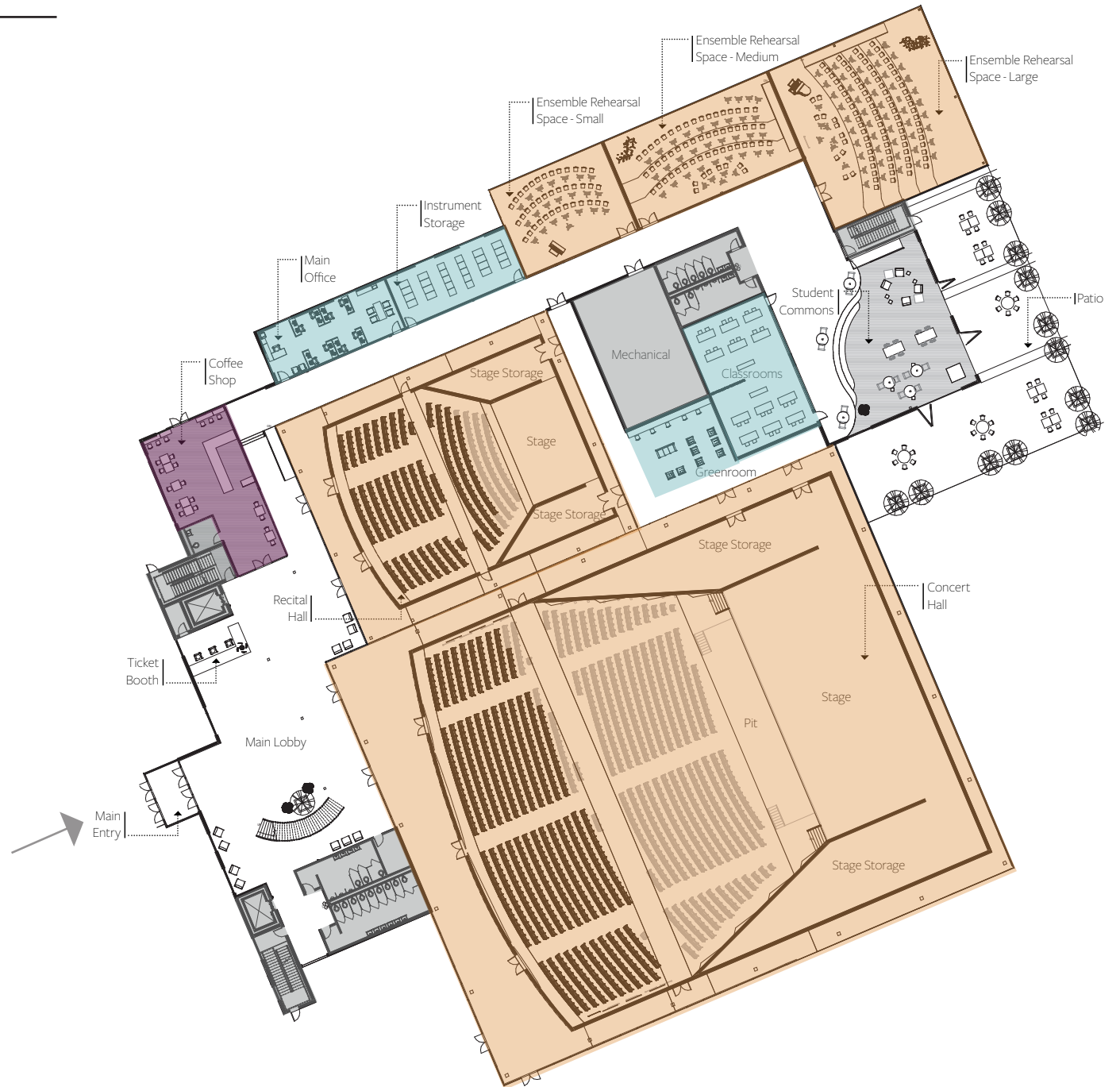
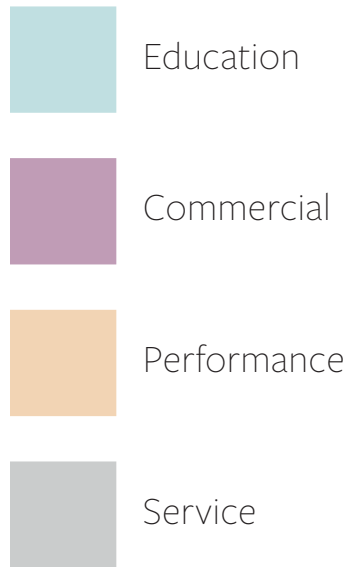
FLOOR PLANS

Ground Level - Parking



FLOOR PLANS

Level 1



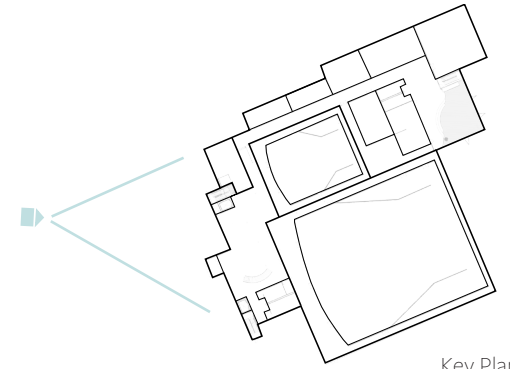
FLOOR PLANS

Level 2

- Green Roof
- Education
- Performance
- Service



ENTRY & SITE

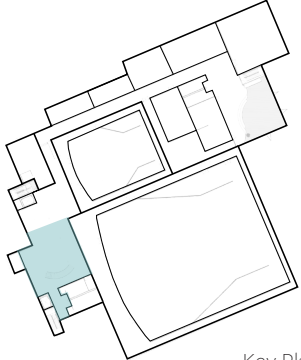


Key Plan



LOBBY

Level 1

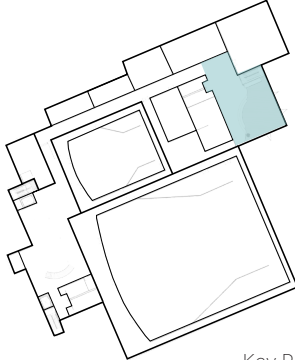


Key Plan



STUDENT COMMONS

Level 1

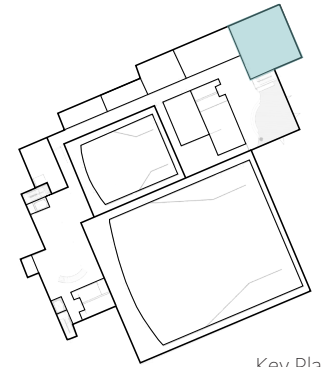


Key Plan



REMIX ROOM

Level 2

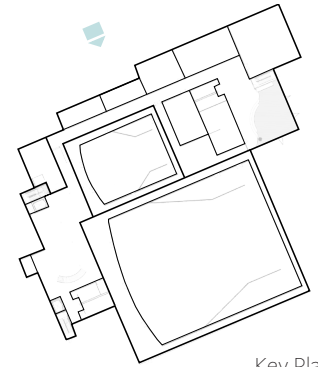


Key Plan

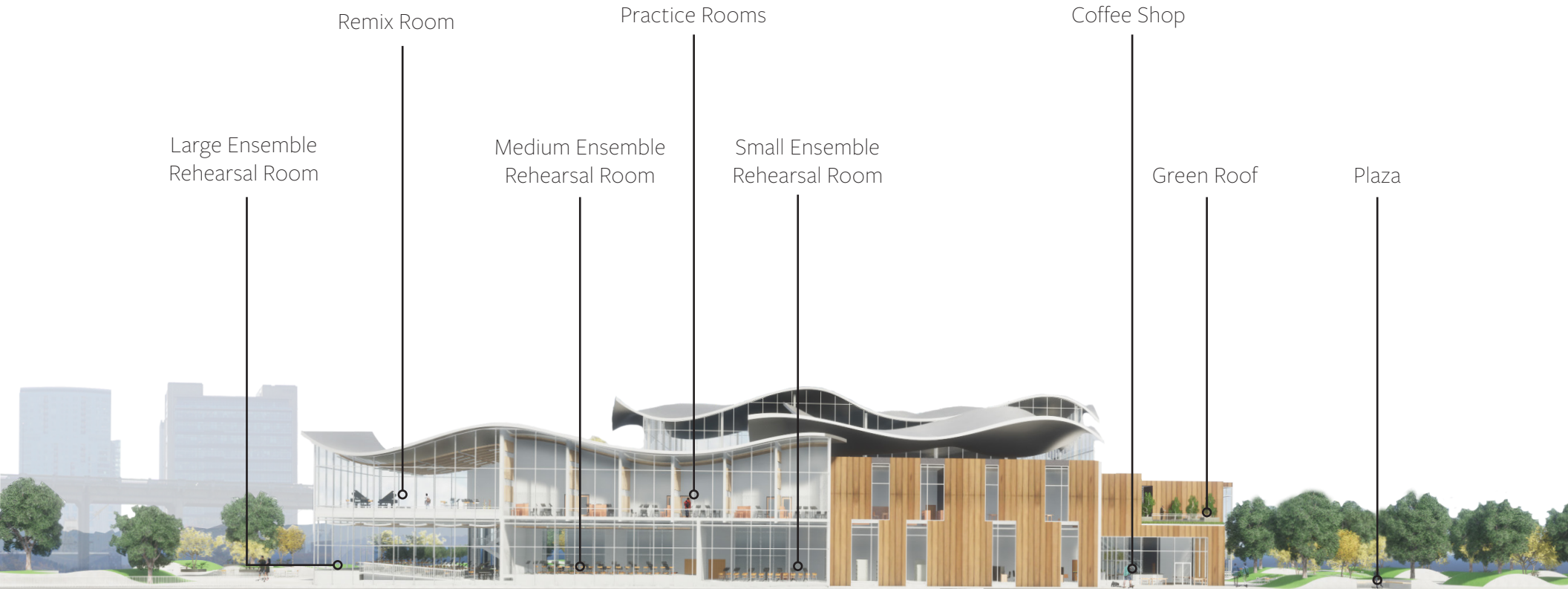


ELEVATIONS

North Elevation

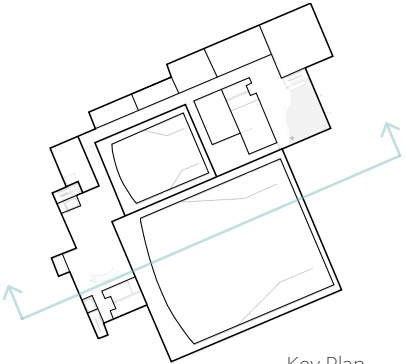


Key Plan

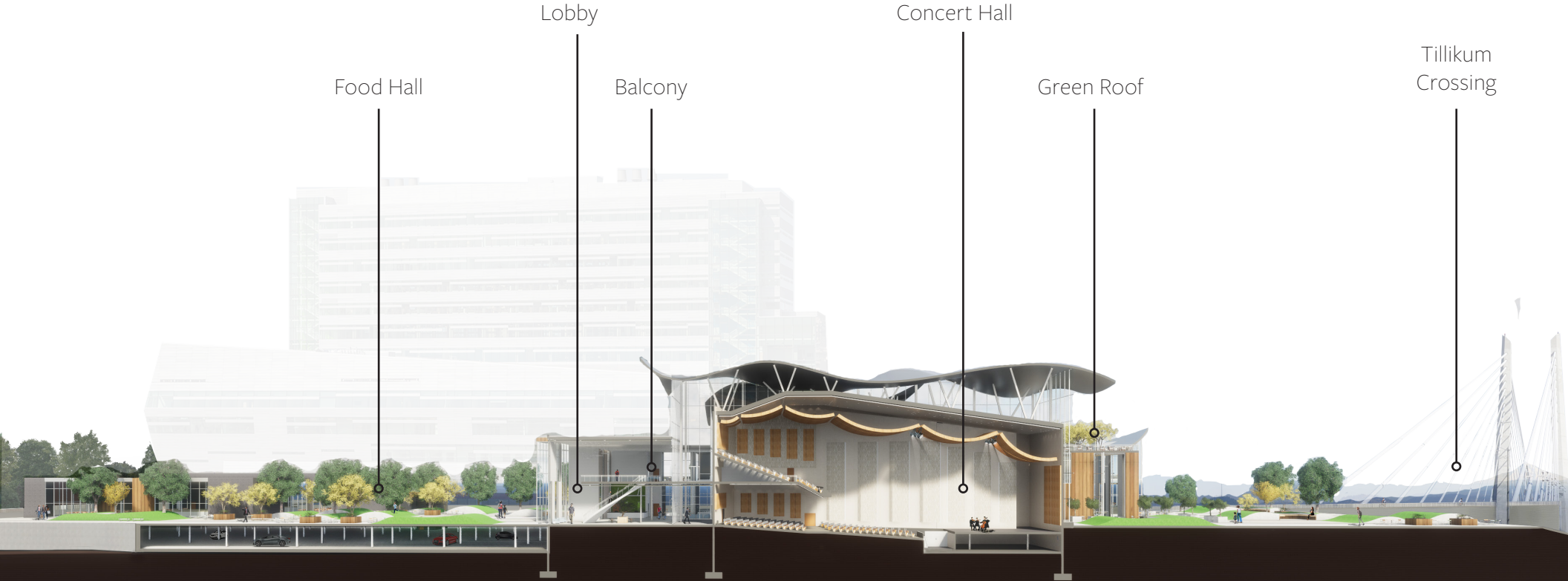


SECTION

Concert Hall

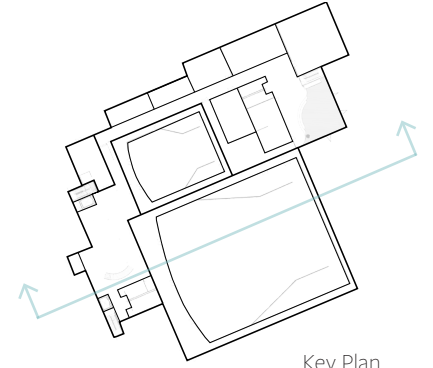


Key Plan

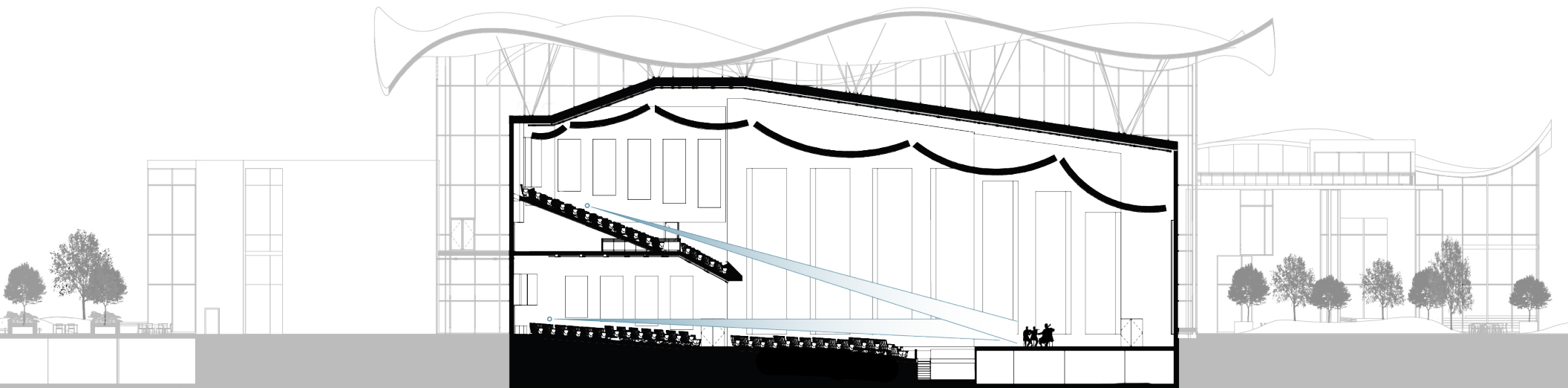


SECTION

Concert Hall Viewpoints

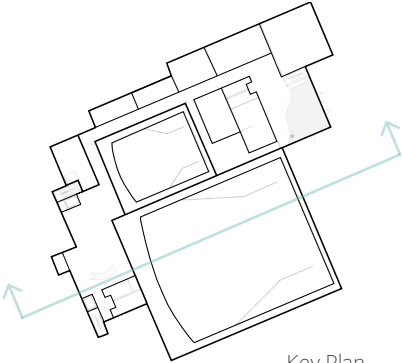


Key Plan

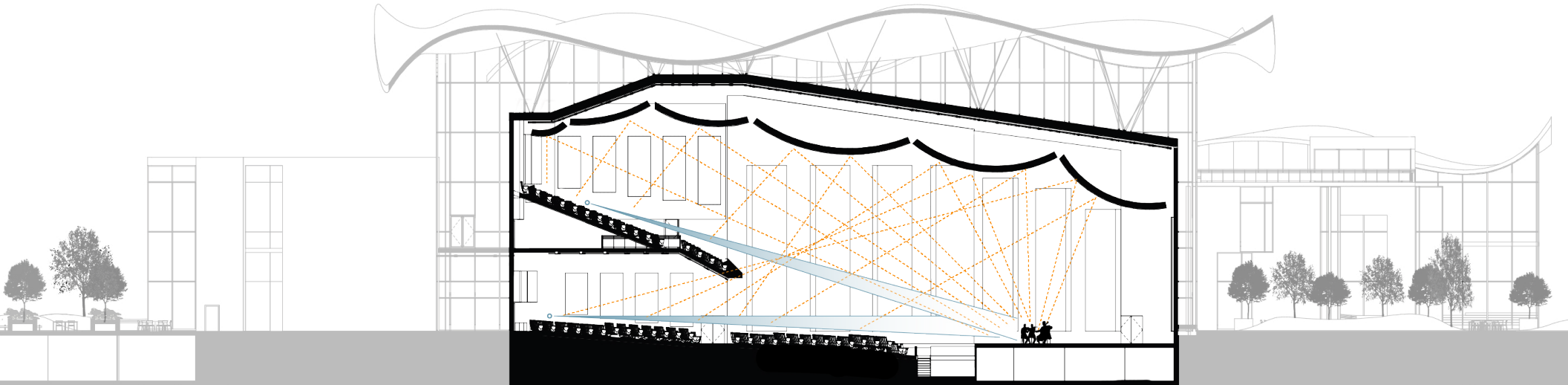


SECTION

Concert Hall Acoustics

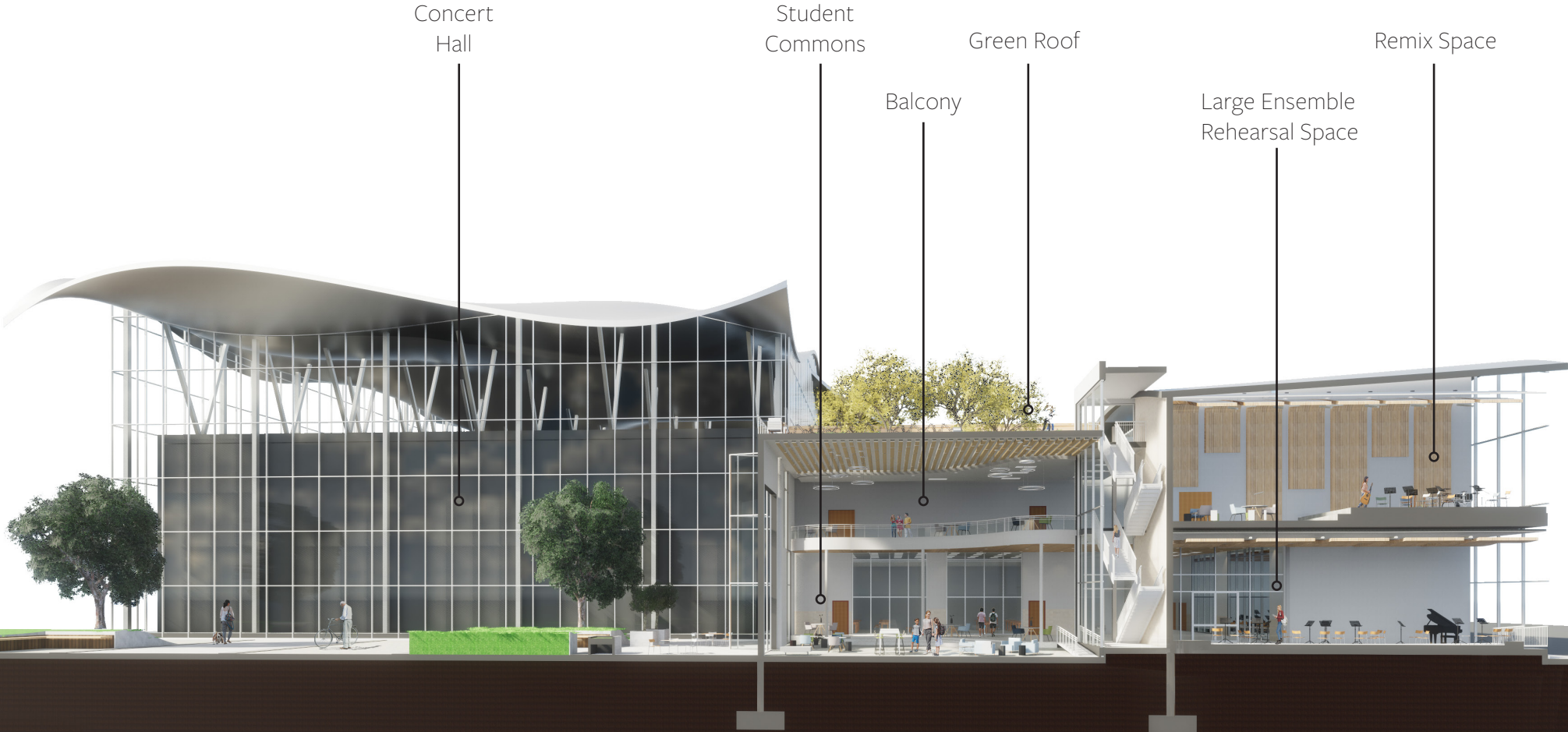
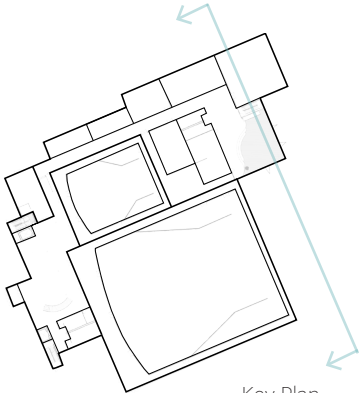


Key Plan



SECTION

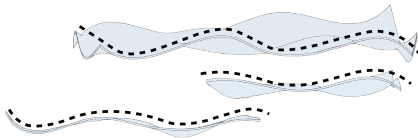
Student Commons



REPRESENTING MUSIC IN ARCHITECTURE

Melodic Line :

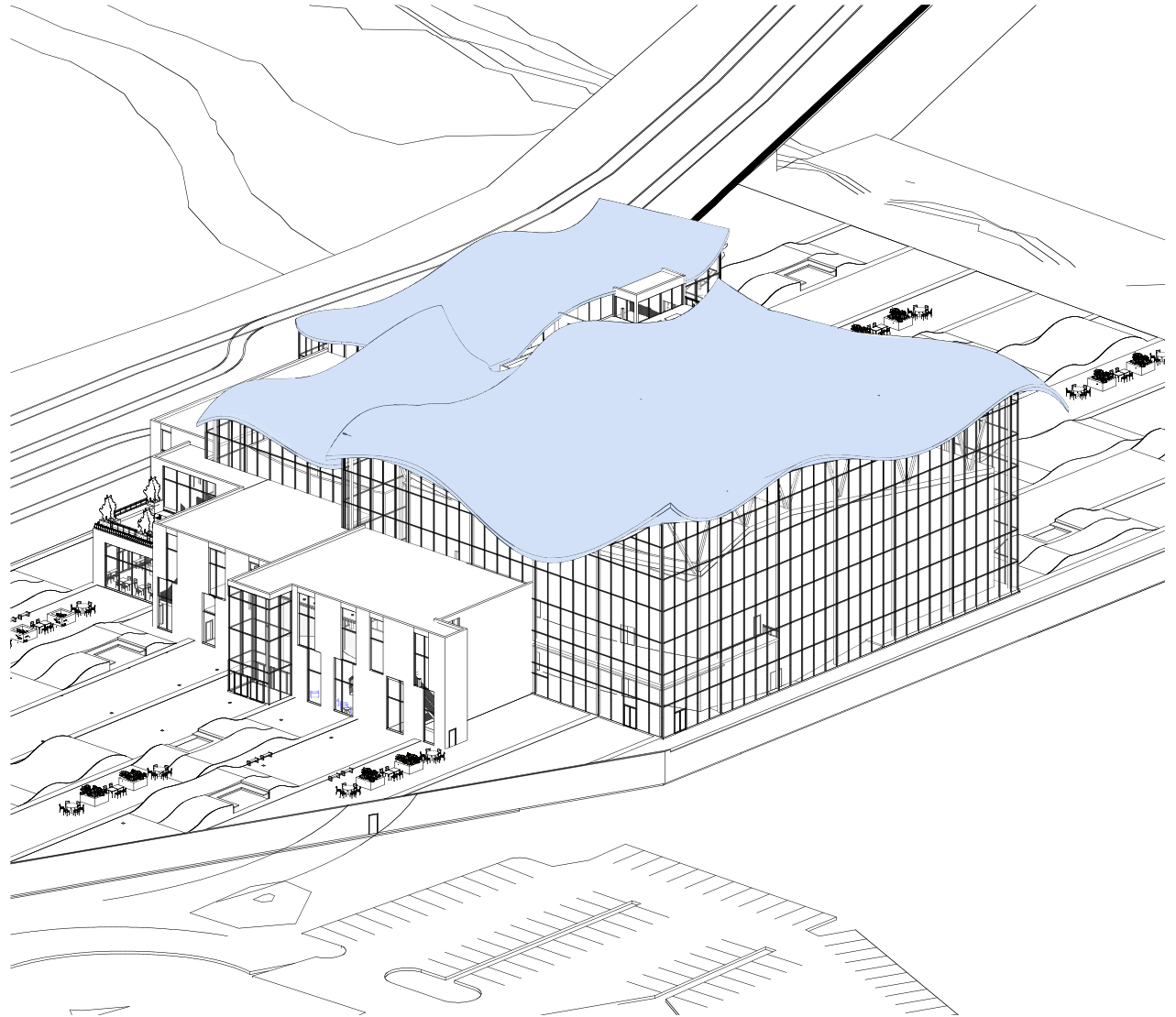
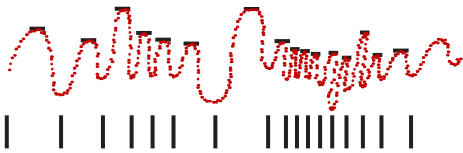
- Organic, wavy roof
covering musical performance
spaces (Concert hall, Recital hall,
Rehearsal spaces)



Pitch

Melody

Tempo



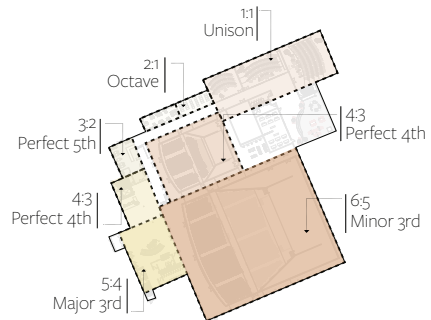
REPRESENTING MUSIC IN ARCHITECTURE

Melodic Intervals (1 = 30') :

- 6:5 | Minor 3rd
- 4:3 | Perfect 4th
- 2:1 | Octave

Harmonic Intervals (1 = 15') :

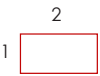
- 5:4 | Major 3rd
- 4:3 | Perfect 4th
- 3:2 | Perfect 5th
- 2:1 | Octave



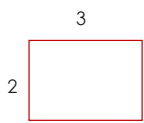
1



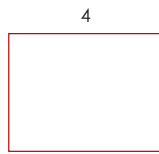
Unison



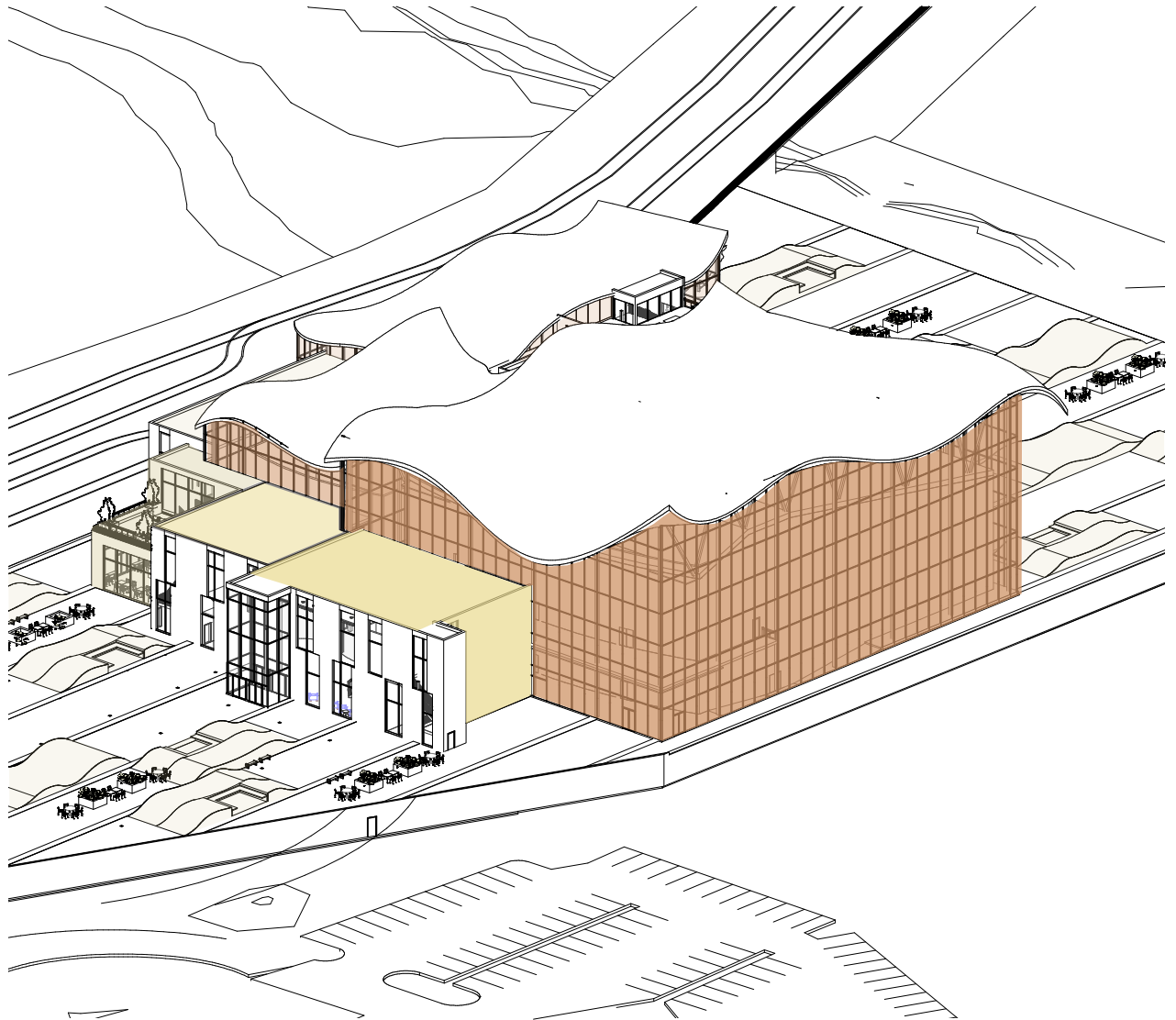
Octave



Perfect 5th



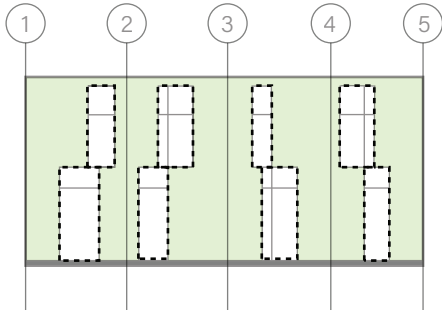
Perfect 4th



REPRESENTING MUSIC IN ARCHITECTURE

Rhythm

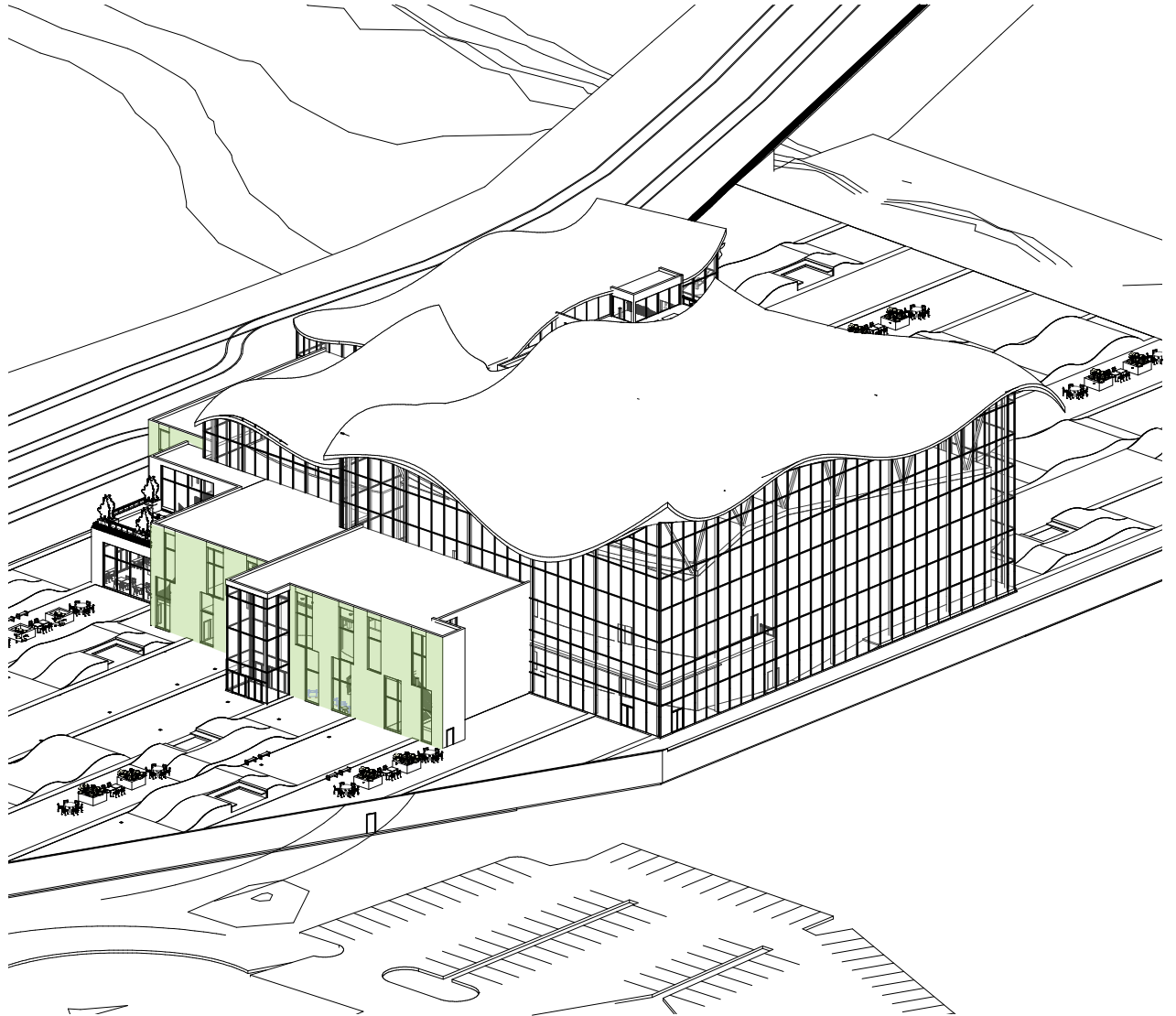
Represented by the punched openings in the front massing facades



Tempo



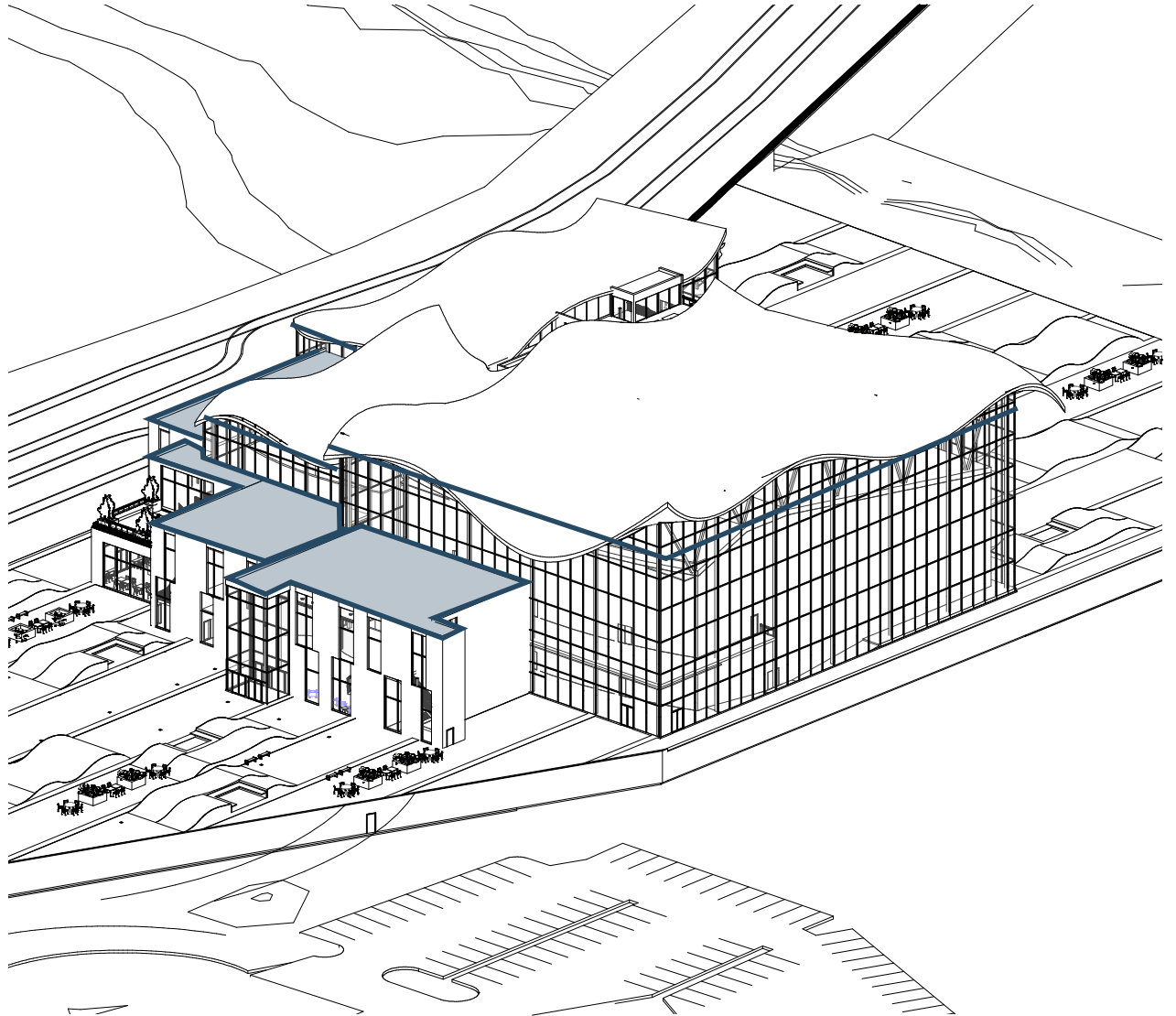
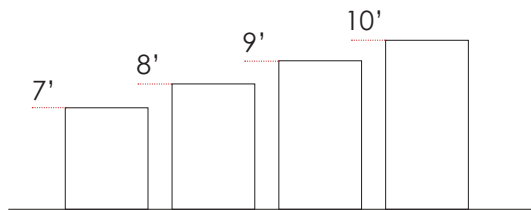
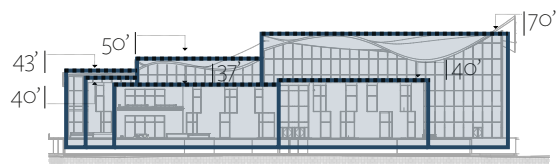
Rhythm = The space between the tempo



REPRESENTING MUSIC IN ARCHITECTURE

Pitch

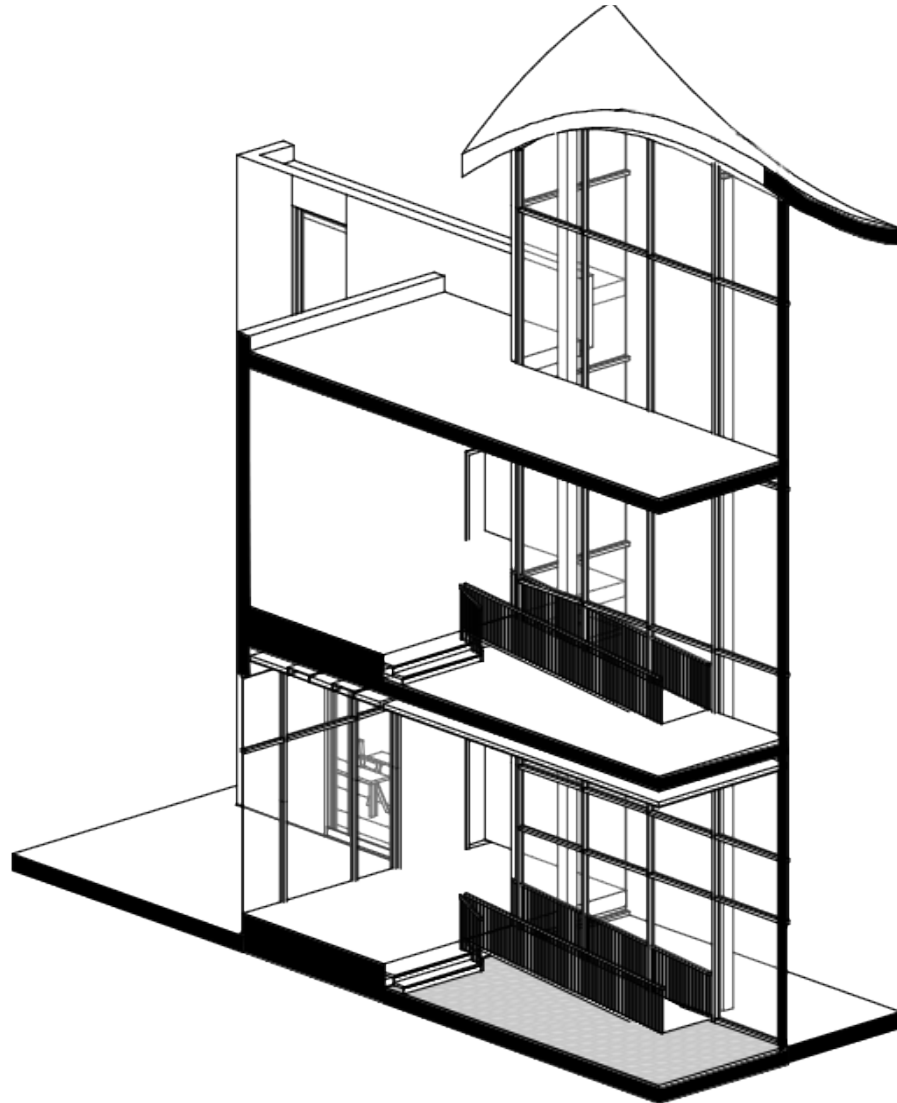
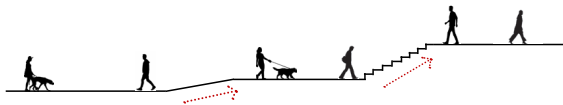
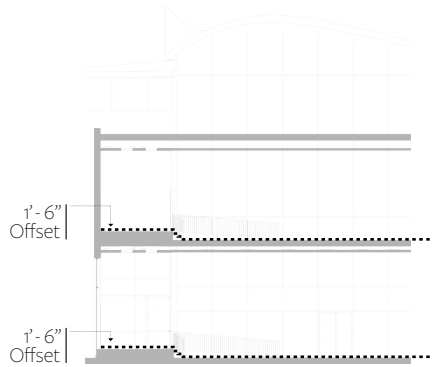
Represented by the varying roof heights in both the front masses as well as the performance spaces



REPRESENTING MUSIC IN ARCHITECTURE

Dynamics

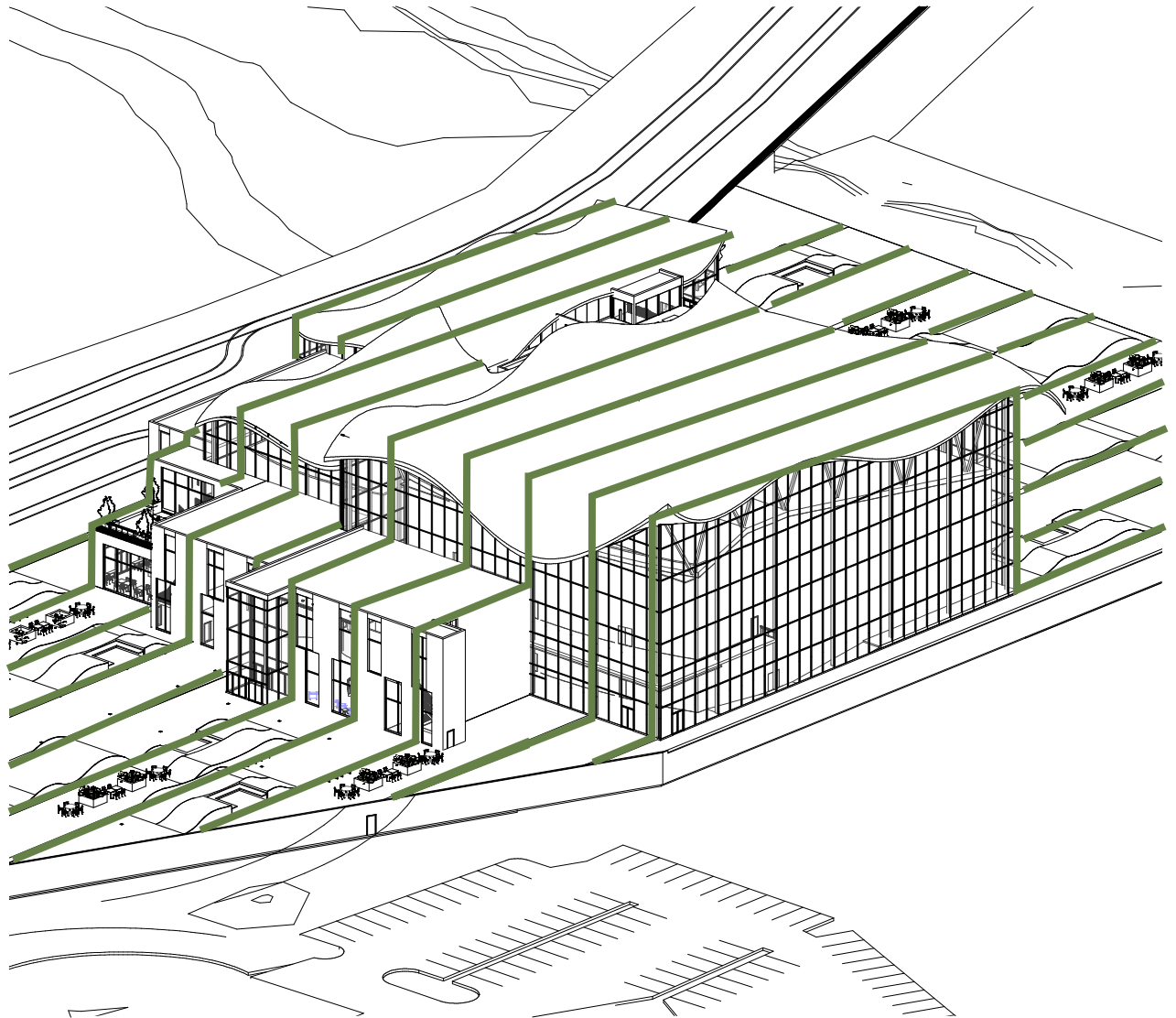
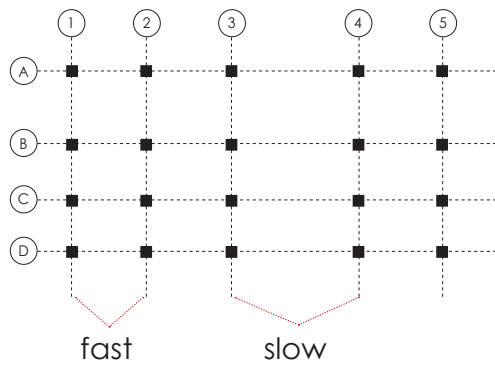
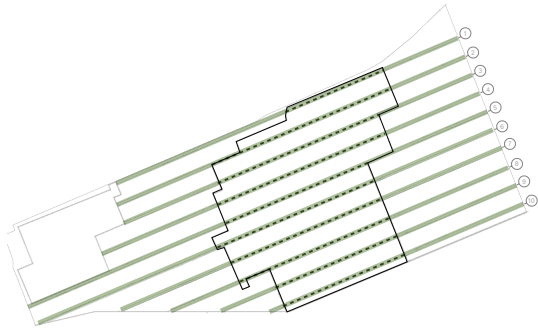
Represented by the change in elevation between the public and student space on both the first and second floors



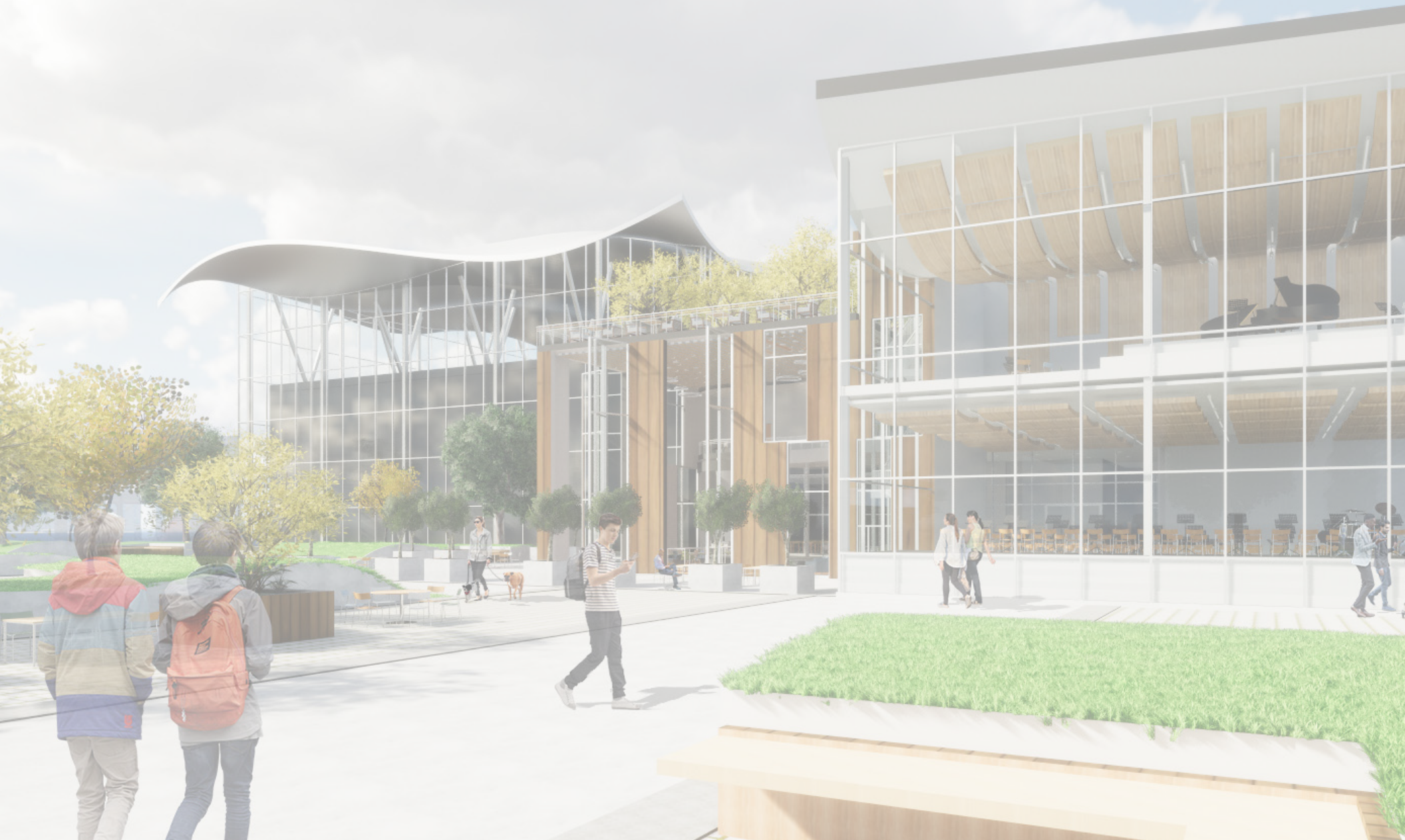
REPRESENTING MUSIC IN ARCHITECTURE

Tempo

- Starts in the Plaza
- Extends into the structural grid



“Music is liquid architecture; architecture is frozen music”
-Johann Wolfgang von Goethe



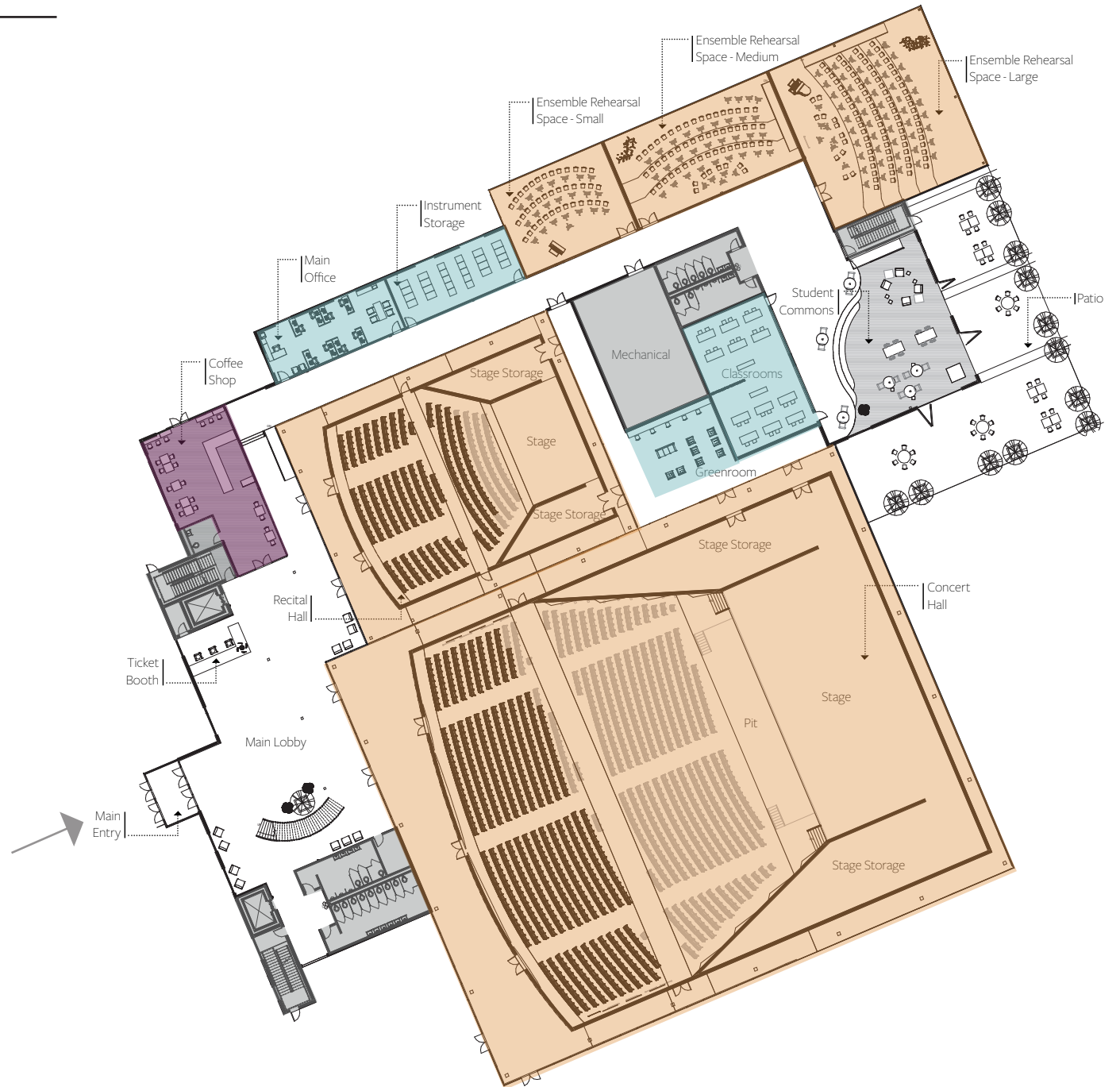
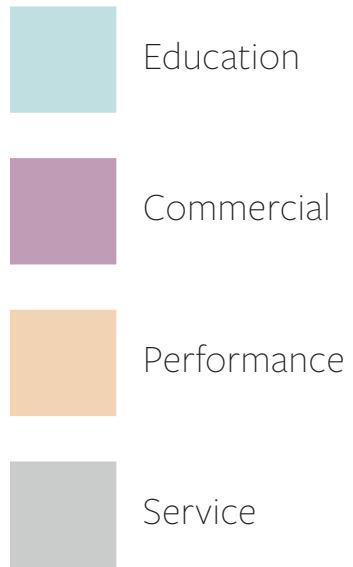
SITE PLAN

Food Hall, River Walk & Plaza



FLOOR PLANS

Level 1



FLOOR PLANS

Level 2

- Green Roof
- Education
- Performance
- Service



STRUCTURE & HVAC

Structure:

Hollow Steel Columns

8" x 8" supporting 1st & 2nd floor

10" x 10" supporting Recital Hall

12" x 12" supporting Concert Hall

Steel Floor Decking

3" steel decking

Reinforced Concrete Walls

Steel Joists

36" supporting Recital Hall

48" supporting Concert Hall

HVAC:

Variable Air Volume System (VAV)

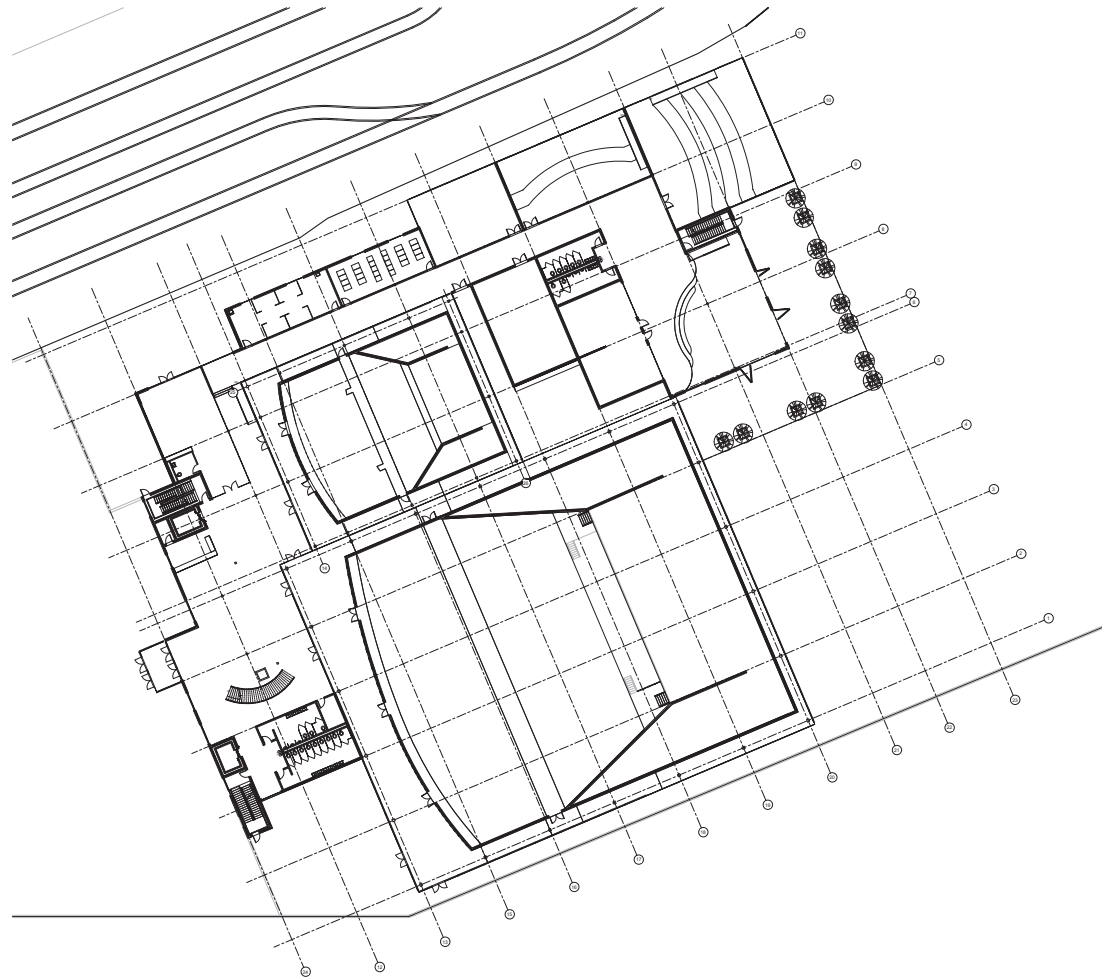
Good for schools and auditoriums

Low noise levels

Central Systems

Low noise levels

Lasts longer



MATERIALS



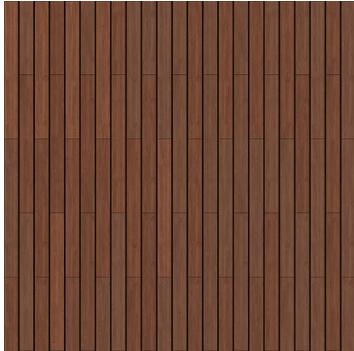
Concrete



Curtain Wall



Metal Panels



Wood