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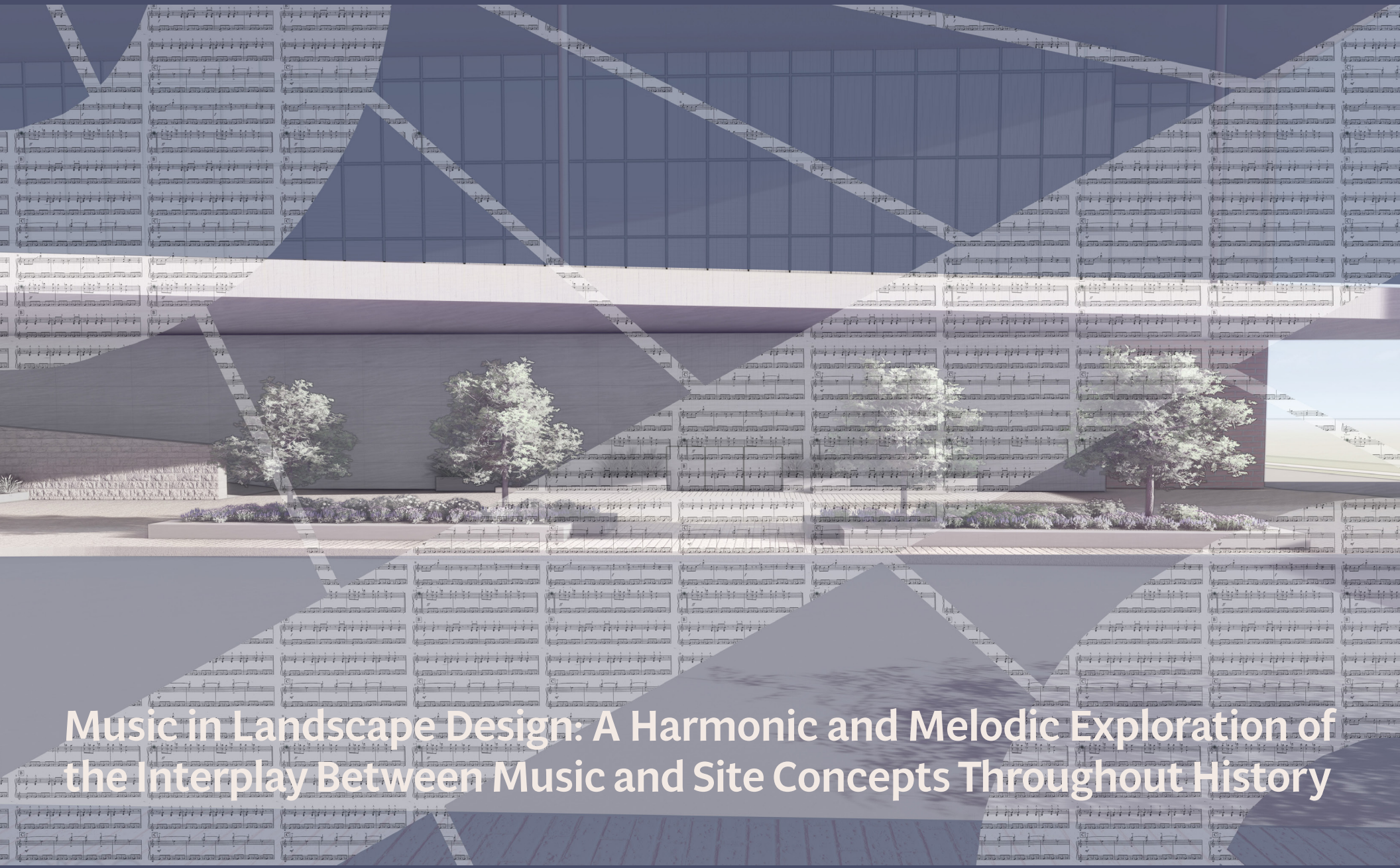

Music in Landscape Design: A Harmonic and Melodic Exploration of the Interplay Between Music and Site Concepts Throughout History

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MUSIC IN LANDSCAPE DESIGN: A HARMONIC AND MELODIC EXPLORATION OF THE INTERPLAY BETWEEN MUSIC AND SITE CONCEPTS THROUGHOUT HISTORY

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BLA, The University of Guelph, Canada, 2018

A Design Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF LANDSCAPE ARCHITECTURE DESIGN THESIS

ATHENS, GEORGIA
2024

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ABSTRACT

The relationship between landscape architecture and the arts is often examined through visual representation like drawings and images, but it's limited in depicting the dynamic nature of outdoor spaces. Unlike static visual arts, music has a closer relationship with landscape architecture as both involve the composition of elements to shape user experiences over time and space. Investigating the historical interplay between music theory and site design concepts serves to deepen our comprehension of how form and space are implemented in landscape design to influence user experience.

The main objectives to be explored in this thesis is to (1) identify common principles between music theory and landscape design, (2) investigate historical connections, and (3) explore emotional and experiential dimensions of site design through the use of musical concepts and terminologies.

This comprehensive approach, based in the language of music, serves to enhance our ability to articulate and refine the sensory and emotional dimensions rooted in the creation and perception of designed landscapes. The overarching goal is to contribute to a more innovative approach that spans across the realms of design and artistic expression within the field of landscape architecture. Essentially, this thesis aims to explore the interwoven threads of musical theory and spatial design, enriching our understanding of how the concept of space and form, whether literal or metaphorical, shapes both emotional and physical experiences.

2. OVERVIEW

OVERVIEW

The thesis will primarily focus on exploring the connection and concepts of music theory, history, and landscape architecture through form and space. It will investigate how these connections and concepts are transformed, organized, and used to define spaces and express emotions and invoke imagery. Main concepts of the relationship between music and landscape architecture include:

- The notion of “form” in music and site design
- The correlation between musical elements and natural sounds
- The deliberate spatial arrangement of elements
- Abstraction and interpretation (of form and space)

Music and landscape architecture share common elements related to the concepts of form and space. These concepts are central to both disciplines and their respective practices, guiding the organization of elements, the creation of spatial depth, the establishment of rhythm and flow, the evocation of emotions and atmospheres, and the potential for open interpretation. These parallels highlight the interdisciplinary nature of design and music, where principles can be applied across diverse creative fields.

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

FORM

In music, "form" is referred to as the overall structure of a piece. Form can include the arrangement of musical elements such as melody, rhythm, and harmony, the arrangement of instrumentation, the arrangement of sections of versus, choruses, and bridges in a song, a movement in symphony, and many more. Like different landscape elements in a space, form in music guides the listener (user) through the piece, creating some sense of coherence, order, and evocation of emotion. Precisely, in landscape architecture, "form" is the deliberate organization and layouts of elements within a designed space. The arrangement of elements such as pathways, seating areas, and other features are organized to create an appealing and functional layout within a space. Therefore, the form can determine how the space is experienced by the user and how the spaces are divided.

Form in Music:

Form is the structure and organization of a piece of music. There are usually three strategies that define form: (1) repetition, (2) variation, and (3) contrast. For instance, in the Ternary form, the initial movement establishes a key, followed by transitions to other keys, and ultimately returns back to the original key in a later section of the piece, (exposition, development, and recapitulation). Within this framework, the composer reinforces melodic motifs and harmonies, thereby underlining the thematic elements throughout the composition, which also signifies the transition to another movement within the piece. There are many types of forms in music (see Appendix).

Form in Site Design:

Form is the fundamental arrangement and coordination of elements within a design, providing the underlying structure of a composition [1]. It serves as the defining edge, encompassing both the overall arrangement of the design and the internal area formed by individual design elements. Form is highly versatile (edge and shape), with variations in character and complexity, ranging from simplicity to intricacy, asymmetry to symmetry, and characteristics that can be either human-made or organic. These forms can be either meticulously controlled or spontaneous in nature[2].

1. N. K. Booth, *Foundations of landscape architecture; Integrating form and space using the language of site design*, (J. Wiley, 2012), 2.
2. ibid

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

The edges of a form can manifest in different planes, including the vertical, ground, and overhead planes. The form's outline is shaped by factors like silhouettes, recessed voids within the ground, and the meeting points of various design elements that establish distinct lines. Notably, the use of contrasting materials and the juxtaposition of three-dimensional objects can further emphasize the expression of form.

The concept of form encompasses several fundamental aspects that serve as the foundation for shaping space. These aspects include primary shapes, form transformation, organizational structures, and unifying principles.

Primary shapes, such as circles, squares, and triangles, are the most basic geometric forms. They offer simplicity and familiarity and can function as individual spaces or building blocks for more complex compositions[3]. Organic shapes, found in nature, complement primary shapes and are prevalent in landscape design. These shapes, inspired by landforms, vegetation, and natural elements, contribute to the complexity of landscape spaces.

Form transformation involves altering shapes to create suitable forms for a given space. Five fundamental strategies for form transformation are addition, subtraction, synthesis, rotation, and intervention. These methods offer designers creative freedom to modify shapes effectively.

Organizational structures provide the underlying framework for a composition. They dictate the spatial relationships between objects, ensuring order and legibility in the design[4]. Common organizational structures include lines, grids, symmetry, asymmetry, and mass collection, which clusters forms together.

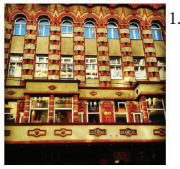
Unifying principles guide the arrangement of spaces and forms within organizational structures[5]. These principles, including dominance, similarity, interconnection, and compartmentalization, inform the size, appearance, and material of design elements. Dominance establishes visual authority, while similarity unifies elements through shared characteristics. Interconnection physically links design components, and compartmentalization frames and isolates selected elements within the composition.

In essence, these aspects of form and space offer a structured and organized approach to creating well-designed, coherent, and visually engaging spaces in both landscape architecture and various design expressions, from architecture to photography.

3. Booth, F*oundations of landscape architecture; form and space*, 5.
4. ibid
5. ibid

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

Form:

Terminology	Landscape Architecture Application		
	Pattern	Plan	Structural
Binary [6]		 1.1	 1.2
Ternary [7]		 1.3	 1.4
Rondo [8]		 1.5	 1.6
Theme and Variations [9]		 1.7	 1.8

The chart above provides a better understanding of the relationships between objects and shapes to create form patterns that correspond to musical terminology. Form, in addition to shapes, can refer to the spatial organization of structures, transitions, and overall framework of a site. The Appendix section at the end of the thesis paper provides a more detailed explanation of each type of musical form.

6. See Appendix, 81.
7. ibid
8. ibid
9. See Appendix, 82.

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

SPATIAL ARRANGEMENT

In music, the arrangement of sounds in time creates a sense of spatial dimension. The placement of instruments or voices and the dynamics of sound contribute to the perception of depth and space within a musical composition. In landscape architecture, the spatial arrangement of elements, such as plants and pathways, determines how users experience and navigate through the designed environment. The interaction of various components creates a sense of depth and space within the landscape.

Sense of Space in Music:

The concept of space, particularly in the context of sound and musical composition, holds profound implications. The concept of space extends to the literal and metaphorical dimensions, drawing parallels between the external localization of sound sources and the transformative metaphorical application of the term "space" to sound. In this complex relationship, musical space, characterized by its indivisibility and described as "a space without places" by Zuckerkandl[10], becomes a focal point of inquiry. The focus of the thesis would be on the structure of space, aiming to examine the correlation between music theory and site design.

Space and Music Notation:

Throughout history, the development of music notation has aimed to capture the essence of musical material, time, and space[11]. The earliest form of notation, known as neumes, finds its origins in the Greek word denoting 'sign' or 'nod'[12]. This method also encompassed the use of gestures by a conductor to roughly indicate the sound's location or delineate the spatial aspect of the performance. Over time, this evolved to establish a spatial relationship with the sung words. Further developments strengthened the spatial connection between neumes and the text, introducing lines to provide a relative pitch position[13]. Subsequently, considerations of rhythm, timbre, and volume were incorporated, collectively enhancing the user's perception of the musical space.

Similarly, in the realm of site design, symbols, signs, and notation serve as vital tools. Much like musical notation, plans and drawings necessitate the use of symbols and annotations to convey the designer's concepts effectively. The creation of a spatial connection between landscape elements and the designated space is reliant upon plans or drawings, supported by additional guidelines and symbols that enable the designer to comprehensively articulate their vision to clients or during the construction phase. It is essential to recognize that merely having "notes" or landscape elements is insufficient for the creation of a well-conceived space that enhances the user's experience.

10. V. Zuckerkandl, *Sound and symbol: music and the external world*, (Pantheon Books, New York, 1956), 276.
11. D. N. Buck, *A Musicology for Landscape; (*Routledge, 2017*), 23.*
12. ibid
13. ibid

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

RHYTHM

In a musical composition, rhythm is used to generate movement and flow. The piece's speed and dynamics are established by the listener through the use of rhythmic patterns. The way people move through a space is carefully investigated in landscape architecture, and features like sightlines and pathways are employed to provide users a rhythmic experience as they navigate the designed space. The overall user experience is influenced by the flow and rhythm of a space. The sense of time and space is shaped by rhythm in both fields.

Rhythm in Music:

Rhythm in music can be defined in various ways, but in general, it is the systematic arrangement of sounds and their duration. It's important to note that a melody relies on rhythm, while rhythm can stand alone, such as drumbeats. Unlike physical art forms like paintings or sculptures that exist in a space, music is dependent on the dimension of time[14]. Rhythm involves the organization of movement in both time and space, making it a fundamental aspect of music theory, composed of multiple elements. These elements encompass beat, metre, time signature, tempo, syncopation, and accents. Metre represents the underlying pulse of music, which consists of a sequence of strong and weak beats that establish a musical pattern. Time serves as the organizing principle that groups beats within the perception of music, and accents or stresses highlight specific notes or beats defining the timing in a piece of music. Tempo denotes the speed of beats, with a "moderate" tempo, for example, corresponding to the natural walking pace of 76-80 paces per minute[15].

Rhythm in Landscape Architecture:

Rhythm holds significance in both landscape design and human experiences. It is evident in the landscape through the arrangement of elements and patterns of repetition. Rhythms influence a variety of physiological functions within the human body, including heartbeats and breathing. Rhythmanalysis is a framework that uses one's body as a reference to comprehend the rhythms of the external world, emphasizing the close relationship between human rhythms and their surrounds[16].

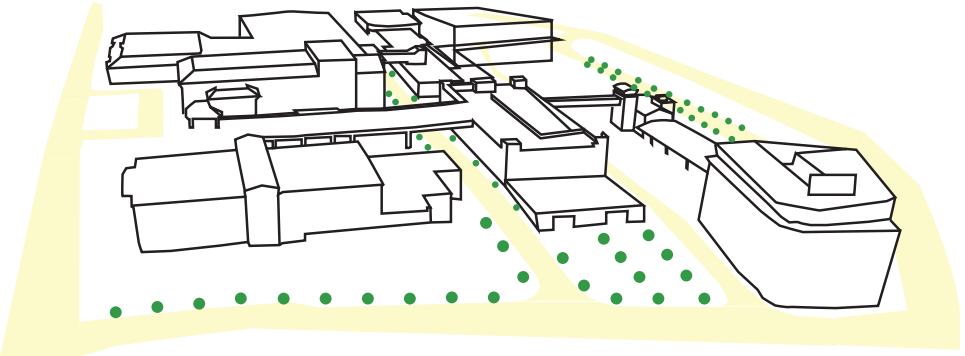
Rhythm in landscapes shares common principles with musical rhythm, emphasizes repetition, consistency, and order to influence perception and emotions. Landscape design and urban planning apply these concepts to create unique experiences for individuals who interact with their surroundings.

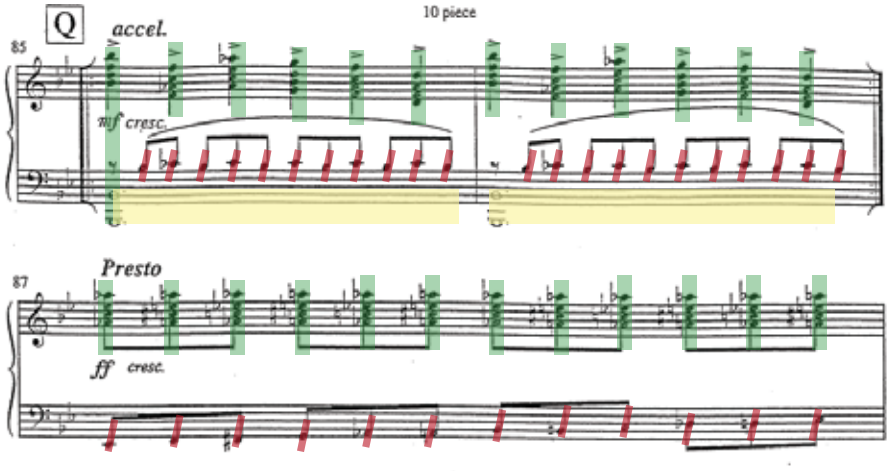
14. P. Crossley-Holland, "Rhythm," Encyclopedia Britannica, November 12, 2020, https://www.britannica.com/art/rhythm-music.
15. ibid
16. Sara, Adhitya, "The city as a rhythmic composition," *Musical Cities, Listening to Urban Design and Planning*, (UCL Press, 2017), 3.

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

Overall, rhythm impacts user experiences, whether in nature or in urban landscapes, by linking the user closely with their surroundings. Rhythm can be expressed in the landscape through a harmonious interplay of elements like street trees, lamps, and building shapes. Street trees offer a natural cadence, while lamps create dynamic light and shadow patterns. Building shapes and facades add diversity, with repetition and variation contributing to visual harmony. Together, these elements create a vibrant and cohesive environment, enriching the urban experience.

On the other hand, the absence of rhythm in urban landscapes can lead to visual disconnections, causing the environment to feel fragmented and chaotic. Inconsistent spacing, mismatched styles, or abrupt transitions disrupt the flow of the streetscape, diminishing its overall aesthetic appeal and functionality. However, in both music and landscape architecture, there is the concept of dissonance (harmony), which can be important to appreciate. Having variance specific to the goals and needs of the site can help decide the rhythmic flow and patterns that tie the site together, enhancing user experience.





Excerpt from Cats

Examples:

Rows of Street Trees and Shrubs[17]

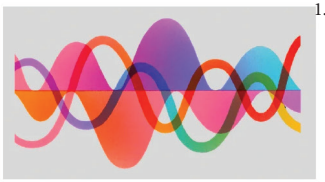
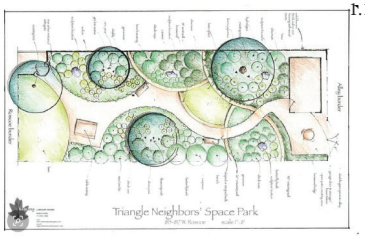
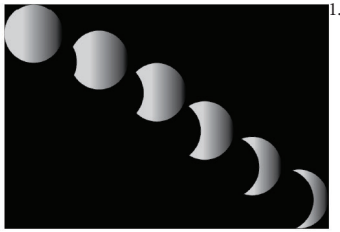
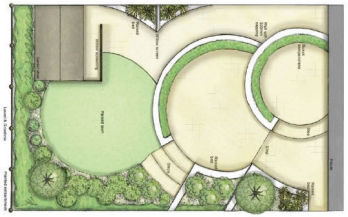
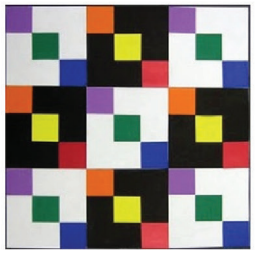
Pathways[18]

Patterns[19]

17. Source: Image from: "271 Foundry St," https://www.google.com/maps/.
18. Source: Image from: "Creme Blend Stepping Stone," https://www.trade-point.co.uk/departments/cream-blend-stepping-stone/1030271_TP.prd.
19. Source: Image from: " Basket Weave," https://www.royalbuildingproducts.com/liveabode/renovation-detail-4-popular-brick-patterns-patios/

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

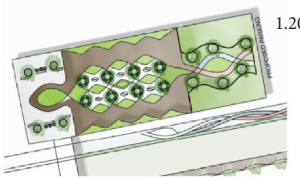
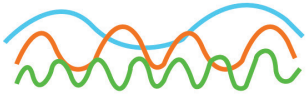
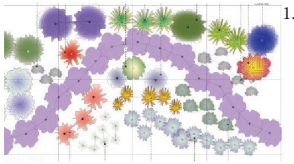
Rhythm Correlations Chart:

Terminology	Landscape Architecture Application		
	Pattern	Plan	Structural
Polyrhythm	 1.9	 1.10	 1.11
Progressive Rhythm	 1.12	 1.13	 1.14
Alternating Rhythm	 1.15	 1.16	 1.17

Polyrhythm, progressive rhythm, and alternation rhythm are three widely used musical rhythm concepts chosen for their relevance to site design concepts. Polyrhythm is the simultaneous use of two rhythms, resulting in a complex combination of beats. Progressive rhythm refers to a rhythm pattern that evolves or changes over time as a piece of music progresses. Alternating rhythm is the use of two or more rhythms that alternate throughout a piece of music. These rhythmic concepts can also be applied to site design, which involves arranging shapes and elements in a space to create patterns that mimic these musical rhythms.

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

Texture:

Terminology	Landscape Architecture Application		
	Pattern	Plan	Structural
Monophonic[20]		 1.18	 1.19
Polyphonic[21]		 1.20	 1.21
Heterophonic[22]		 1.22	 1.23
Homophonic[23]		 1.24	 1.25

Musical texture is the overall arrangement of musical elements such as harmony, melody, rhythm, and form. It refers to the range, quality, or density of a composition, such as the pitch range of voices or parts or the layering of instruments. Musical texture and harmony involves the less visible organization of integrating various elements to form a cohesive whole, whereas rhythmical concepts is represented by repeated patterns and motifs that create movement and visual interest. Additionally, texture refers to the layering of elements, whereas musical form refers to the sections and transitions. The Appendix section at the end of the thesis paper provides a more detailed explanation of each type of musical texture.

20. See Appendix, 80.
21. ibid
22. ibid
23. ibid

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

TIME

Another unique aspect in the relationship between music and landscape architecture is temporal design. According to Weaner [24], both music composition and landscape design can be seen as unfolding sequences of movements. The overarching theme of change, manifesting in transitions between different sections or areas with varying degrees of clarity, is a shared concept in both music and landscape architecture. As individuals traverse a space, elements such as plants and scenery undergo continuous transformations. Age serves as a key aspect of this evolution over time, whether it's a user's initial experience of the site or a return visit years later. The dynamic changes over time encompass not only the inventory of plants but also the understanding of ecological processes. Another aspect of this temporal change is compositional change, where plants mature, some decline, and new ones emerge. The overall goal is for the composition to remain the same, however, this is not the case in nature[25].

In relation to a site, a "daypart" design can be integrated. Much like the varied movements in music, the design can include spaces that undergo changes in character throughout the day. For instance, landscape features that are visible or accessible only at specific times can be incorporated to align with different atmospheres throughout the day. During the morning, the arrangement of site elements can create a "calming" musical atmosphere, fostering a relaxed environment. In contrast, in the evening, livelier atmospheres for social events can be achieved using site elements like lighting. Introducing technology for adaptive soundscapes, responding to factors like crowd size, time of day, or specific events, adds another layer to the day-part design. Another way to create a dynamic experience, like the tempo changes in music, is to consider designing and arranging site elements like pathways, lighting, and water features to follow rhythmic patterns. This approach not only adds a rhythmic flair to the environment but also aids in wayfinding, guiding users seamlessly through different spaces and facilitating easy navigation across the site.

24. Larry Weaner, "Larry Weaner: Music Composition & Landscape Design."New York Botanical Garden." May 12, 2021, https://www.youtube.com/watch?v=zbR rj3nR5iE&t=1969s14.
25. ibid

CORRELATIONS BETWEEN MUSIC, NATURE, AND SITE DESIGN CONCEPTS

EMOTION AND ATMOSPHERE

Music can express a wide range of emotions; the melodies, harmonies, and instrumentation used in a composition all contribute to its emotional impact. Emotions can be evoked by a piece over to the user, the performer's emotional interpretation, or the composer's emotional expression of their work. Similarly, landscape architecture focuses on creating a specific atmosphere within designed spaces. For example, the materials, lighting, and water features used can elicit specific emotions, and these elements, like music, contribute to the overall atmosphere or "feel" of a place. Design can evoke feelings such as tranquility, adventure, or contemplation, just as music evokes emotions.

However, the interpretation of emotions within these spaces can be as varied as those expressed in musical compositions and performances. Users and designers may have different emotional responses based on their individual life experiences, particularly in the context of specific landscape elements. This is especially evident in settings such as healing and therapeutic facilities, where emotional resonance is of great significance (patient vs. designer aesthetic).

ABSTRACTION AND INTERPRETATION

Both music and landscape architecture are open to interpretation and frequently rely on abstraction. A musical composition will be interpreted differently by listeners and performers, just as a designed landscape may evoke various perceptions and emotions in visitors. A visitor's or listener's diverse experiences can have a significant impact on their perception of the created space. For example, a park or garden may have personal significance to one person while another perceives it completely differently. The abstract and subjective nature of its forms, colors, and spatial arrangements allows for a wide range of interpretations.

3. History

HISTORY

Music and Landscapes serves multiple roles in shaping our lives. For example, both music and landscape architecture act as cultural identities and can bring groups of people together[1]. Landmarks, designed spaces, natural landscapes, and architecture all contribute to shaping community identities, just as musical genres are shaped by communities to create identity, such as jazz, country, classical, and more. Additionally, elements of music are mirrored in landscapes. One of the main elements is the perception of patterns, existing both in music and landscape architecture. This is evident in landscapes through the arrangement of elements and patterns of repetition. Rhythms are not only external but also intrinsic to the human body, governing various physiological functions such as heartbeats[2]. Form is also an element of pattern that exists in both music and landscape architecture. Throughout history, there are examples of landscapes influencing music and music-making, as well as music influencing landscapes.

1. Itay Porat, "Is Landscape Music?", *Landscape Journal* 42, no. 2 (July 2023): 1–24. doi:10.3368/lj.42.2.1.
2. Adhitya, "Types of Urban Rhythm," 6.

HISTORY

Landscape Influences on Music

The landscapes have served as a central source of musical inspiration for many composers. While the emotions and creative processes vary among musical artists, landscapes may act either as a subtle backdrop in the subconscious or a direct muse during composition[3]. As a medium, music offers direct and powerful methods to express human emotions and showcase experiences. Moreover, there has been a rise in experiential music-making that utilizes natural materials and sounds to create music. This section will focus on examples drawn from Western music across different time periods.

Throughout history, musical compositions have maintained a profound connection with nature. Composers such as Handel, Vivaldi, and Beethoven subtly hinted at natural landscapes in their works, and gardens found mention in fifteenth-century European religious music. For example, Handel's "Water Music" holds significant connections to nature due to its composition and historical context. Composed in the early 18th century, this musical masterpiece was initially performed on the River Thames in London, specifically at the request of King George I for a river outing. Played from a separate barge, the music created a floating concert as both boats navigated the waterway[4]. This deliberate choice of music demonstrated a seamless integration with the natural environment, transforming the river into an intrinsic part of the concert space. Moreover, the choice of music with water-themed elements, such as gentle melodies mimicking the flow of water or majestic fanfares evoking the grandeur of the occasion, enhanced the overall experience.

Another significant work includes "The Four Seasons" by Antonio Vivaldi. Published in 1725, the four violin concerti are a prominent example of program music from the Baroque period. Program music usually features themes related to poetry, myths, or worldly phenomena that can translate to compositional features like form, melody, and instrumentation, as well as in descriptive elements like the piece title[5]. Each concerto in "The Four Seasons" features thematic devices that announce the arrival of each season, drawing on specific landscape features to depict and narrate seasonal change [6]. For example, in the "Spring" concerto, Vivaldi employs the soloist to imitate bird song to represent new life[7]. In the "Summer" Concerto, Vivaldi depicts storms through fast arpeggios[8]. The fusion of human experience, emotion, and elements of nature within the piece contributes to the landscape's interpretation.

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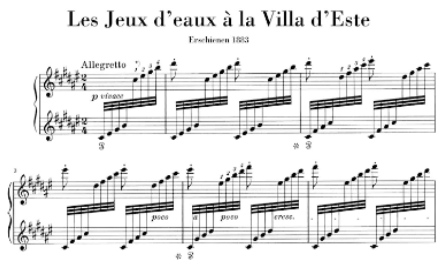
3. Itay Porat, "Is Landscape Music?", *Landscape Journal* 42, no. 2 (July 2023): 6. doi:10.3368/lj.42.2.1.
4. Maureen, Buja, A Close Look at Handel's Water Music!,"*Interlude*, (March 27, 2023).
5. Porat, "Is Landscape Music?," 6.
6. ibid
7. ibid
8. ibid
9. Source from: "Westminster Bridge," https://collections.britishart.yale.edu/catalog/tms:4994

HISTORY

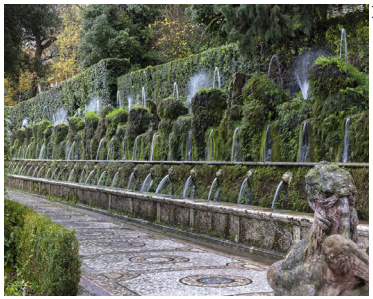
Explicit references to gardens within Western classical music gained prominence after 1825, coinciding with the rise of landscape-inspired tone-poems. Notably, Franz Liszt intertwined landscape elements into his compositions, drawing inspiration from personal encounters, particularly evident in his piano pieces from "Album d'un voyageur" and the third book of "Années de pelerinage," specifically linked to Villa d'Este[10]. Liszt's creations vividly capture the evocative presence of cypress trees and the flowing movement of water, foreshadowing later works by composers like Debussy and Ravel.

Delving deeper into Franz Liszt's piece "Les Jeux d'eau a la Villa d'Este" (The Fountains of the Villa d'Este), the composition illustrates the interplay between landscape architecture and musical expression, particularly in the emotional and visual realms. Liszt drew inspiration from the landscape elements of the Villa d'Este, where he sought comfort during a period of personal despair following a failed relationship[11]. Visiting the Villa near Rome regularly from 1869 onwards, Liszt found respite in the palace, its gardens, and the enchanting fountains[12].


Les Jeux d'eaux à la Villa d'Este

Erschienen 1883

Allegretto


13

The Villa d'Este stands as a remarkable testament to Renaissance culture, its gardens wielding considerable influence on European garden design. Notably, the grand cascade from the exedra creates a captivating spectacle, activating water jets in the arcades as people pass by[14]. To mimic these water effects musically, Liszt employed cascading arpeggios—a succession of ascending or descending notes in a chord—sustained throughout the composition at an allegretto tempo[15]. These rapidly moving notes mirror the sounds of water gushing from the hundreds of fountains in the gardens, creating a vivid auditory depiction of their movement. Moreover, the fortissimo segments within the composition imitate the thunderous bursts of water from the fountains, replicating the audible experience of traversing the garden's pathways. Performances of this piece offer users a spatial auditory experience, aligning the orchestration of sounds with the rhythmic water effects generated by the fountains. This connection between musical elements and the landscape evokes diverse emotional and imaginative responses, illustrating how various individuals perceive and interpret these elements in unique ways.

10. Brenda Brown, "Gardens and Music: An Initial Survey, Probing Potentials", *thecela.org*, 3
11. Eckhardt and Walker, "Liszt, Franz," Grove Music Online.
12. Centre, U. W. "Villa d'Este, Tivoli." UNESCO. https://whc.unesco.org/en/list/1025/.
13.Patricia Caron, "100 Fountains Villa d'Este," Pixel. https://pixels.com/featured/100-fountains-villa-deste-patricia-caron.html
14. Centre, U. W. "Villa d'Este, Tivoli."
15. Thomas Lee, "Evocations of Nature in the Piano Music of Franz Liszt and the Seeds of Impressionism," 101.

HISTORY

An example of music integrating with the urban environment is the composition 'Concerto for Buildings,' which premiered at the Make Music Festival in New York. Composed by Paula Matthusen, Scott Wollshleger, Daniel Goode, and Elijah Valongo[16], this event explores creative musical interactions by incorporating elements of the cityscape as instruments. The utilization of hollow façade from Soho's cast-iron buildings on Green Street as percussion instruments is one aspect of this composition. This creative project brought the street to life with a lively symphony, fusing music and the cityscape into an engaging and unique blend of sounds.


17

Michael Gandolfi's musical composition, "The Garden of Cosmic Speculation," draws inspiration from landscape architect Charles Jencks' creation, "The Garden of Cosmic Speculation." Jencks' garden, grounded in principles of physics, mathematics, and cosmology, serves as the main influence for Gandolfi's musical composition[18]. Within this musical composition, Gandolfi translates the intricate design elements of the physical garden into an auditory landscape. Just like the garden, which allows for a flexible selection of movements without a predetermined count, the musical piece offers a range of movements for performance[19]. The musical themes and motifs are interwoven, heavily influenced by the garden's intricate patterns, celestial references, and scientific conceptions. Through the rich orchestration and thematic variations, Gandolfi mirrors the garden's complexity, capturing its nature within the musical realm.


20

The ongoing modern festivals, installations and events continue to show collaborations between music and landscape architecture. Current musical sessions and events are frequently conducted in outdoor gardens, exploring innovative ways to merge sound, performance, and design elements in natural environments. Examples like the Musical Gardens of Versailles, the Garden of Cosmic Speculation, and numerous contemporary sound gardens across the United States underscore the ongoing fusion of musical instruments, technology, and artistic installations within natural settings. These instances highlight the continued intersection of music and landscape architecture, forming designs that captivate and stimulate individuals in unique ways.

16. "Make Music New York: Concerto for Buildings." Indiegogo,www.indiegogo.com/projects/make-music-new-york-concerto-for-buildings#/.
17. Source from: Kaufman Music Center, "Face the Music performs "Concerto for Buildings"," https://youtu.be/UNBxY1MRkPk?si=q5HUaKx3snFmLteH.
18. Katie Yurkewicz, "Charles Jencks: The Garden of Cosmic Speculation." (July 28, 2016).
19. Telarc, "Michael Gandolfi: Garden of Cosmic Speculation," (December 10, 2007). https://youtube/q_b1GT0q6HE?si=qT1ikxn0iCDn-AQl.
20. Source from: Katie Yurkewicz, "The Garden of Cosmic Speculation."

HISTORY

Musical Influences on the Landscape

The creation and performance of music requires physical spaces that unite performers, musicians, and audiences[21]. Performance venues represent how music influences landscapes and the growing trend in urban settings to integrate outdoor materials into music experiences. These venues are not only crucial for artistic expression but also hold cultural significance and contribute to community identity. Furthermore, there have been efforts to directly incorporate musical elements into the design of landscapes. This section will focus on examples drawn mostly on Western music and landscapes.

Throughout history, there has been a reciprocal relationship between music, nature, and landscape design. Dating back to the ancient Maya civilization, exemplified by the construction of the Temple of Kukulcán between the 8th and 12th centuries AD, a noticeable connection emerges between constructed elements and natural acoustics. The temple features a fascinating phenomenon where clapping near it produces an echo that mimics the distinctive chirping sound of the sacred Maya quetzal bird[22].


23

Further instances of ancient outdoor venues constructed for various forms of entertainment, music, sports, and performances can be found in the classical Greek and Roman amphitheaters. Characterized by their open-air design, these venues are typically on hillsides, featuring a distinctive semi-circular architectural layout. One noteworthy example of amplified acoustics within such structures is the theatre at Epidauros, renowned for its ability to enhance sound propagation. While debates persist regarding the efficacy of sound amplification throughout the amphitheater, it stands as one of the earliest instances highlighting the interconnected relationship between sound, music, nature, and architectural design.


24

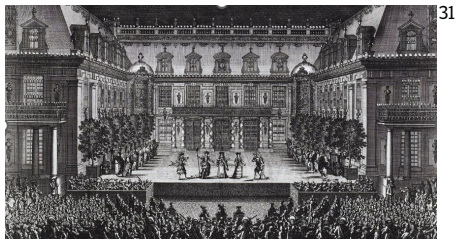
21. Porat, "Is Landscape Music?," 8.
22. Arevalo, Vizcaino, "Reproduction of the Acoustic Effect of the Kukulkan Pyramid by Delay Effect in DAW," (November 1, 2022), doi:10.1088/1361-6552/ac8519.
23. Source from: "Chichen Itza Pyramid ," https://www.chichenitza.com/chichen-itza-pyramid.
24. Source from: Lawrence Yule, "The Acoustics of the Epidaurus Theatre," (January 22, 2014), https://lawrenceyule.com/2014/01/22/the-acoustics-of-the-epidaurus-theatre/.

HISTORY

Music's presence in gardens holds a rich historical background. Since the Medieval ages, evidence from paintings and records suggests that purposefully designed outdoor spaces, such as gardens, were crafted as settings for musical performances, while music was composed within the context of these landscapes. Depictions of musicians in garden settings are almost archetypal, e.g., the image of Garden of Pleasure (*Le Roman de la Rose* by Guillaume de Lorris and Jean de Meun). References to musicians in gardens date back centuries; Manuscript illustrations from the 13th century and depictions in Renaissance Pleasure Gardens, like the British Library's Le Roman de la Rose around 1500, feature instrument-playing musicians[25]. Moreover, during the Middle Ages and later periods, troubadour art and theatrical events in European gardens frequently incorporated music as a significant element. For example, R. Murray Schaefer describes the flourishing troubadour art in European gardens during the later Middle Ages, where bird songs often became part of their songs[26].


27

In 16th and 17th-century European gardens, music frequently played a role in events held within their theatrical spaces. An example is Thomas Campion's composition of an "Entertainment" for Queen Anne's visit to Caversham House in 1613 during her Progress to Bath. This entertainment involved actors, including a gardener, engaged in dialogues, dance performances, playing cornets, and singing[28]. The progression of the entertainment through the Caversham Garden coincided with the queen's arrival, likely aimed at entertaining and honoring her. Campion detailed and situated actions in various garden areas, specifying songs to be sung at specific locations within the garden[29]. The event culminated with a reprise in the house hall and, the following day, a speech and song as the Queen departed, staged in the lower garden[30].


31

At Versailles, Louis XIV orchestrated elaborate events within the gardens during three grand fêtes, featuring prescribed movements for the king and guests, incorporating music and dance performances. The final fête culminated in the illumination of a palace at the end of a long canal, accompanied by glowing herms along the canal, as described by Sarah Cohen[32].

25. Brown, "Gardens and Music," 55.
26. ibid, 55.
27.ibid, 55.
28. ibid, 56.
29. ibid, 56.
30. ibid, 56.
31. Source from: "Court Music," https://cmbv.fr/en/introducing-baroque/court-music.
32. Brown, "Gardens and Music," 57.

HISTORY

Another prominent music presence in gardens is the integration of technology-assisted musical elements, dating back to European Renaissance gardens. These gardens often include space for live performances and events featuring automata. Examples include Villa d'Este's Water Organ, a large structure driven by water and air, producing diverse sounds through the interaction of water with organ pipes and a water wheel striking the organ keyboard. Additionally, the Fountain of the Owl (*Fontana della Civetta*) featured 20 lifelike bronze birds, each representing various species and singing distinct songs powered by water. These birds' singing ceased in the presence of an owl, resuming one by one as it departed[33]. This historical use of automata and water-driven mechanisms in gardens highlights early innovations in creating musical and atmospheric experiences.

Recent examples of musical elements directly translated into landscape elements include The Toronto Music Garden, a collaborative design of an urban public garden between Julie Moir Messervy and musician Yo-Yo Ma. The collaboration between the designer and musician gave rise to the structure and atmosphere of the space[34]. The garden mirrors the six movements of the Bach Suite, each section intricately crafted to reflect the distinct rhythmic, melodic, and harmonic qualities of the music.

In correspondence with the six movements—Prelude, Allemande, Courante, Sarabande, Minuet, and Gigue—the garden is partitioned

35

into six segments. For instance, the Prelude section, echoing the introductory nature of the musical Prelude, features curved paths enveloping Hackberry trees and granite boulders, mirroring the arpeggiated chord progression. Similarly, the Allemande section, mirroring the ceremonious and flowing dance, incorporates a forest of birch trees, inducing a solemn yet calming effect with its shade and grandeur. The Courante segment, capturing the liveliness of the movement, showcases a wildflower meadow interwoven with spiraling pathways. The Sarabande section portrays a poetic atmosphere with fragrant conifer trees along a winding path, where a centrally placed stone reflects the sky, creating a serene and semi-public grove. Meanwhile, the Minuet and Gigue, known for their social and lively nature respectively, are represented by a chamber within a pavilion and a large amphitheater-like space with tiered steps and a giant willow tree.

33. Brenda Brown, "Gardens and Music," 56.
34. David Moore, "Bach: Cello Suite 1," (November 1, 1998), https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=edsgao&AN=edsgcl.53273206&site=eds-live.
35. Source from: "The Toronto Music Garden," https://www.halvorsondesign.com/slideshow/civic/Toronto_Music_Garden/3.jpg.

HISTORY

The Toronto Music Garden, through its spatial design, interprets the essence of each movement, blending musical elements with landscape features. This integration allows visitors to emotionally and visually experience the distinct characteristics of Bach's Suite No. 1. Whether it's the vibrancy of wildflowers or the dynamic pathways, the garden effectively translates the expressive qualities of musical spaces into actual landscape elements, enabling a profound user experience.

Other instances of experimental landscape design and music include the Wave Organ in San Francisco, built in 1986 by Peter Richards and George Gonzalez for the Exploratorium[36]. This installation utilizes a concrete pipe and rocks, forming a sound sculpture that captures the rhythm of waves and tides, generating music. Visitors can appreciate this natural orchestration from nearby stone seats, enhancing the usually unnoticed sounds of the bay. Another illustration of the fusion of sound and sea is the Croatia Zadar Sea Organ, where organ pipes incorporated into the steps of the seafront promenade capture the sounds of waves entering and exiting the hollowed-out holes. The resulting melody, shaped by the movement of the waves, varies in tone and pitch due to the distinct lengths and sizes of the organ pipes.

The Wave Organ in San Francisco[37]

Croatia Zadar Sea Organ[38]

36. "The Wave Organ." Exploratorium, www.exploratorium.edu/visit/wave-organ.
37. Source from: "The Wave Organ." https://www.afar.com/places/the-wave-organ-san-francisco
38. Source from: James Tayler-Foster, "Hear This Croatian Seawall Sing as the Wind and Waves Lap the Shore," ArchDaily, (November 20, 2015), https://www.archdaily.com/777512/hear-this-croatian-seawall-sing-as-the-wind-and-waves-lap-the-shore

HISTORY

Installations are another element that enhances the musical qualities of the landscape. Landscape architects create immersive experiences for users by incorporating elements such as interactive sound installations, sculptures, and other art forms into the environment. Furthermore, these installations can function as focal points and landmarks within a landscape, drawing visitors' attention and inviting them to interact in new ways. There are various sizes and forms of installations that can be implemented on site, creating new ideas and adding layers of excitement to the landscape. Installations such as the giant Foot Piano in Smale Riverfront Park in Cincinnati and the Music Boxes, a musical playground in Salford, UK, demonstrate how installations can encourage music-making, social interactions, and community gatherings while also increasing cultural significance.

Foot Piano, Cincinnati[40]

Music Boxes, UK[39]

39. Source from: "Music Boxes," Architizer, https://architizer.com/projects/music-boxes/.
40. Source from: "Smale Park - Giant foot piano with cast bronze tubular chimes," https://www.verdin.com/smale-riverfront-park-cincinnati-oh/.

4. Project Site

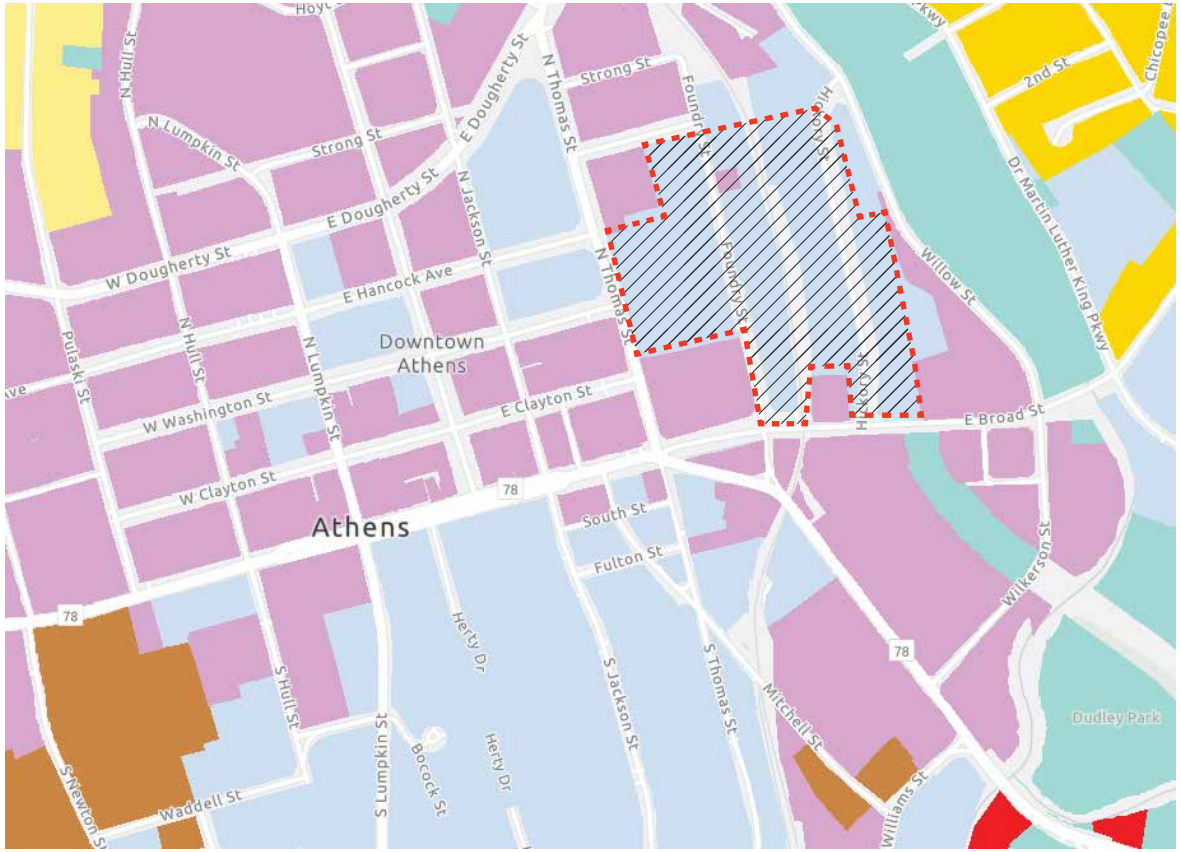
1. Source from: "The Classic Center," https://www.visitathensga.com/listing/the-classic-center/177/

LOCATION

The subject site is located in Athens, Georgia. It is adjacent to the North Oconee Greenway, Downtown Athens, and the Multi-Modal Transportation Center. The Classic Center (subject site) is a convention center and theatre opened in 1995. According to the Classic Center website, there are around 365,000 people attending events at the facilities annually.

ZONING

- C-G: COMMERCIAL GENERAL
- C-D: COMMERCIAL DOWNTOWN
- G: GOVERNMENT
- P: PARK
- RS-5: SINGLE FAMILY RESIDENTIAL
- RS-8: SINGLE FAMILY RESIDENTIAL
- RM-2: MIXED DENSITY RESIDENTIAL



The Classic Center is situated in the Government (G) Zone, surrounded primarily by the Commercial Downtown zone, and is in close proximity to the University of Georgia. Additionally, park zones are nearby. Being in the Downtown commercial area and near the university, the site is surrounded by various mixed-density residential buildings. However, most buildings in the Downtown area are 2-3 stories tall, with hotels being the exception, as they are taller and encircle the subject site.

DOWNTOWN ATHENS

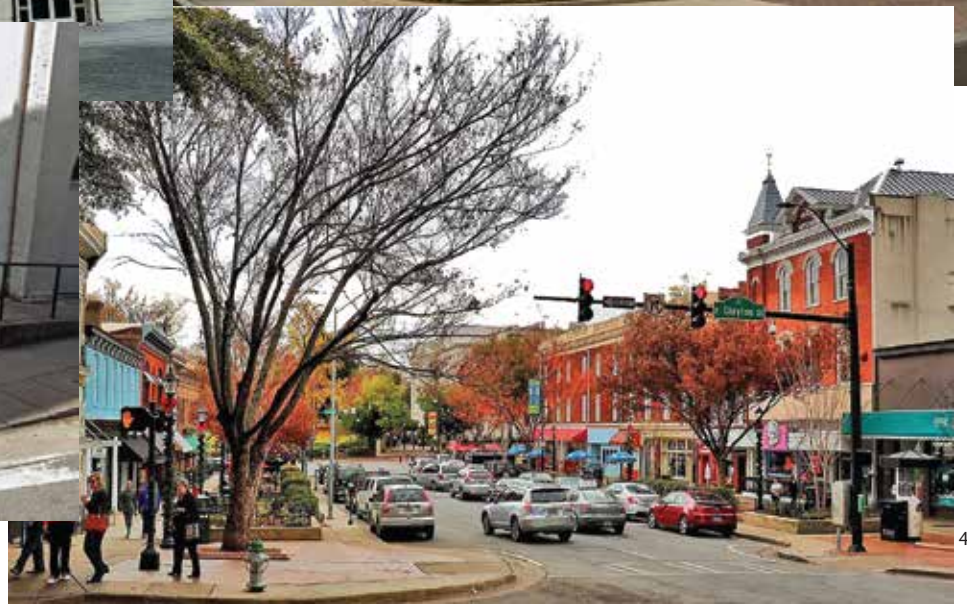
Old Firehall , Historical

3

Multi-Modal Transportation Center

2

Abandoned Railroad Tracks



4

Adjacent Street to Downtown

Vibrant Colors, Bricks

2. Source from: “Athens Multi-Modal Transportation Center,” https://www.nilesbolton.com/athens-multi-modal-transportation-center.
3. Source from: “ Classic Center Firehall,” https://amtathens.com/project/classic-center-firehall-athens-convention-visitors-bureau/.
4. Lindsay Ferrier, “Athens,” https://thelocalpalate.com/travel/athens-georgia-city-guide/.

DOWNTOWN ATHENS

LOCAL HISTORIC SITES:

- City Hall/Double Barrel Cannon
- Georgian Hotel
- Clarke County Courthouse
- Franklin House
- F. M. Coker Building

NATIONAL REGISTER HISTORIC DISTRICTS:

- US Post Office and Court House
- Parrott Insurance Building

NATIONAL REGISTER HISTORIC DISTRICTS:

- Athens Warehouse District
- Downtown Athens Historic District
- West Downtown Historic District

Designated in 2020 with 37 properties, this district features a mix of commercial architecture on the original Athens street grid. It transitioned early from residential to commercial uses, influenced by African-American businesses, shifting transportation, and the local music scene.

The Athens Warehouse District was later developed as a result of the Georgia Railroad's failure to bridge the Oconee River in 1841, which required freight to be hauled across the river by wagon from Carr's Hill. The railroad finally bridged the river in the 1880s, prompting the construction of a new depot. By 1893, the district had begun to take on its current character. In the early 1900s, the Seaboard Railroad added another depot, and other railroads extended service to warehouses on Foundry Street, accelerating the district's growth as a shipping, wholesale, and storage hub. This includes cotton and fertilizer warehousing, as well as small industry. By 1926, it was primarily a warehouse and wholesale center. The area has been revitalized, with the Hodgsons Oil Building renovated for various university departments and improvements made to the run-down warehouses along Foundry Street, which now includes a bus and train station as well as a high-rise building.

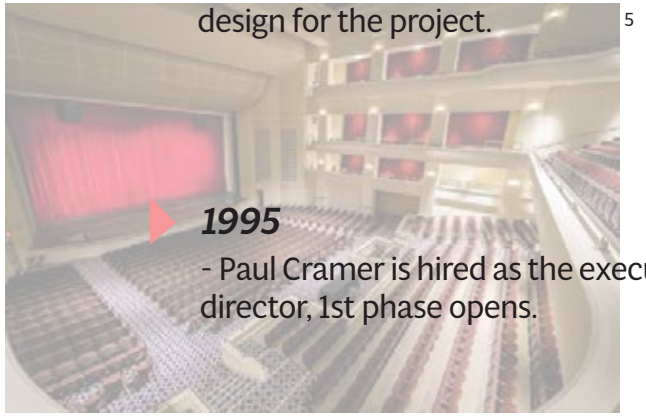
EVENTS AND PHYSICAL DEVELOPMENT

The timelines of the Classic Center emphasizes its development and key events throughout history. From the initial concept to its expansions, the timelines provide a detailed account of how the Classic Center has grown and adapted over time. Community engagement played a crucial role throughout the renovations and expansions of the Classic Center. The new logo, symbolizing the core values of teamwork, hospitality, and servant-style relationships, is reflected in the timelines.

EVENTS TIMELINE

1988

- The Georgia General Assembly creates The Classic Center Authority. Architect James Polsheck is hired to design for the project.


5

1990-1994

- Rabun Hatch & Associates, Inc. was hired to revise the drawings: saving the Fire Hall and adding a larger Theatre and exhibit space.


6

1995

- Paul Cramer is hired as the executive director, 1st phase opens.

1996

- The theatre debuts with the Broadway Musical *Cats*


7

2023

- Displayed in the Atrium, The Classic Center undergoes a visual identity redesign through a new logo inspired by Maureen Kelly's stainless-steel sculpture, "The Nest,"

5. Source from: "The Classic Center," https://classiccenter.com/DocumentCenter/View/3910/The-Classic-Center-Theatre-Technical-Packet_2022.
6. Source from: " History," https://classiccenter.com/168/History.
7. Richard Termine, "Memories of "Cats"." https://www.newyorker.com/culture/cultural-comment/memories-of-cats.

EVENTS AND PHYSICAL DEVELOPMENT

DEVELOPMENT TIMELINE


7

1912

- Fire Hall Number 1 is constructed: function as the city's main station and central meeting place


8

1990-1994

- Rabun Hatch & Associates, Inc. was hired to revise the drawings: saving the Fire Hall and adding a larger Theatre and exhibit space. Construction starts in 1994.

1999-2002

- Both the parking facility and the 130 Foundry building, approved by vote (SPLOST #5), were completed in 2002.

2004-2006

- Citizens approves for the construction of the lower level of 130 Foundry and a connection to 300 North Thomas Street (SPLOST #6). Both projects are completed in 2006.

9

2015

- The 440 Foundry Pavilion (22,000 sq ft) is completed.

2010-2013

- Voters approve SPLOST #7: expanding exhibit space to 56,000 sq ft and constructing an 8,000 sq ft Atrium, both completed in 2013.


10

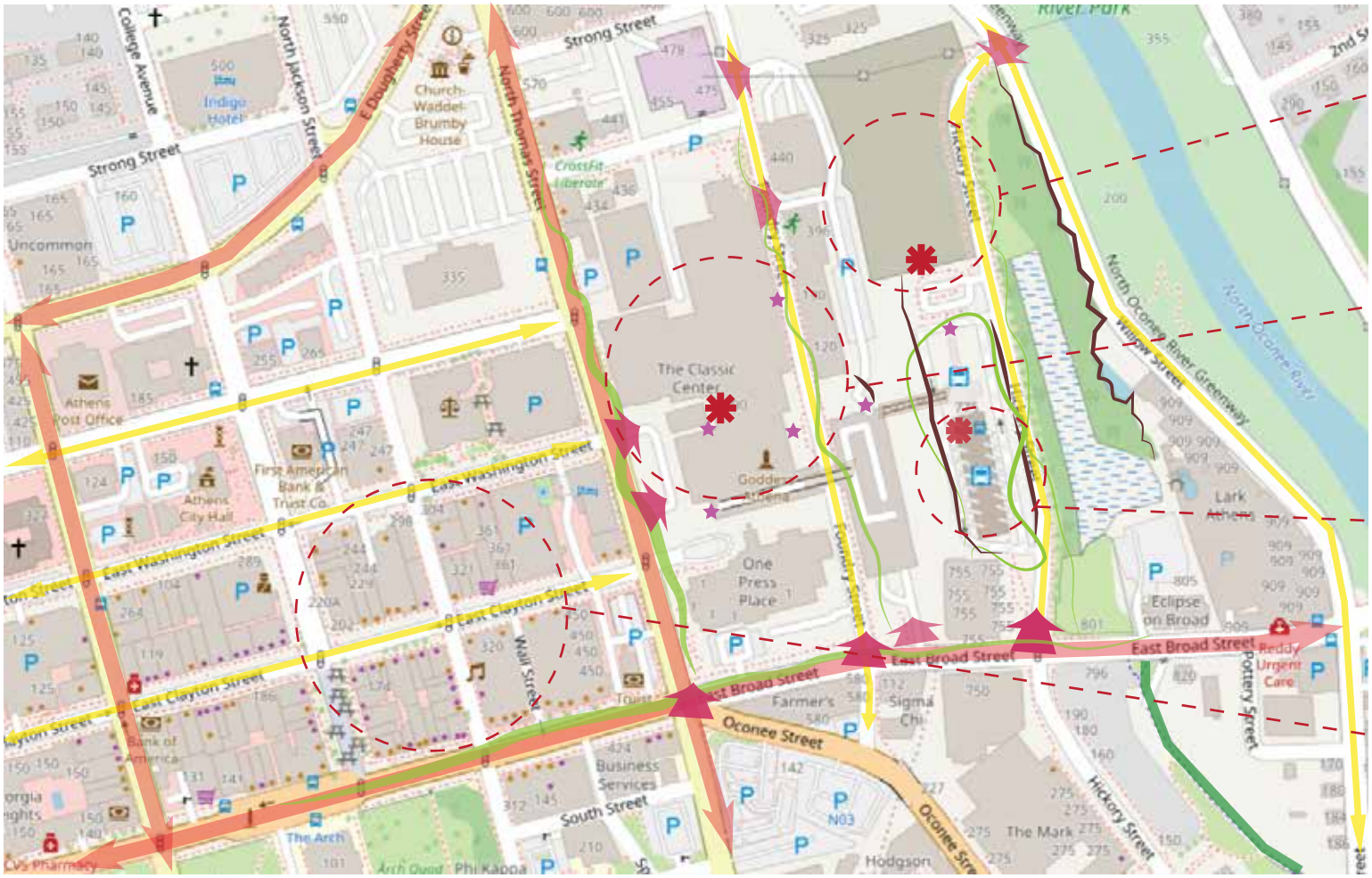
2020-2024

- Voters approve SPLOST #11: The Classic Center Arena expansion, expected to be completed in 2024.

7. Source from: " History," https://classiccenter.com/168/History.
8. Source from: "The Classic Center Theatre," https://classiccenter.com/DocumentCenter/View/182/Stage-and-House-Basic-Information-PDF.
9. "Venue Spaces," https://classiccenter.com/306/Venue-Spaces.
10. "The Classic Center," https://www.uniquevenues.com/venue/classiccenter/.

5. Site Analysis

SITE ANALYSIS DIAGRAM




The Classic Center Arena


The Classic Center


Multi-Modal Transportation Center


Downtown Athens

The Classic Center is positioned near the outskirts of Downtown Athens, situated along prominent thoroughfares. While numerous entry points provide access to the center, neighboring buildings near the major roads obstructs the view of the facilities (not owned by the Classic Center). Being nestled within the downtown vicinity, the structure's visibility is further impacted by the varied edges of nearby buildings, which also influence sunlight exposure. Additionally, abundant parking facilities surround the site. The noise emanates from the bustling streets, including the inherent noise generated by the convention center itself.

FIGURE-GROUND MAPS

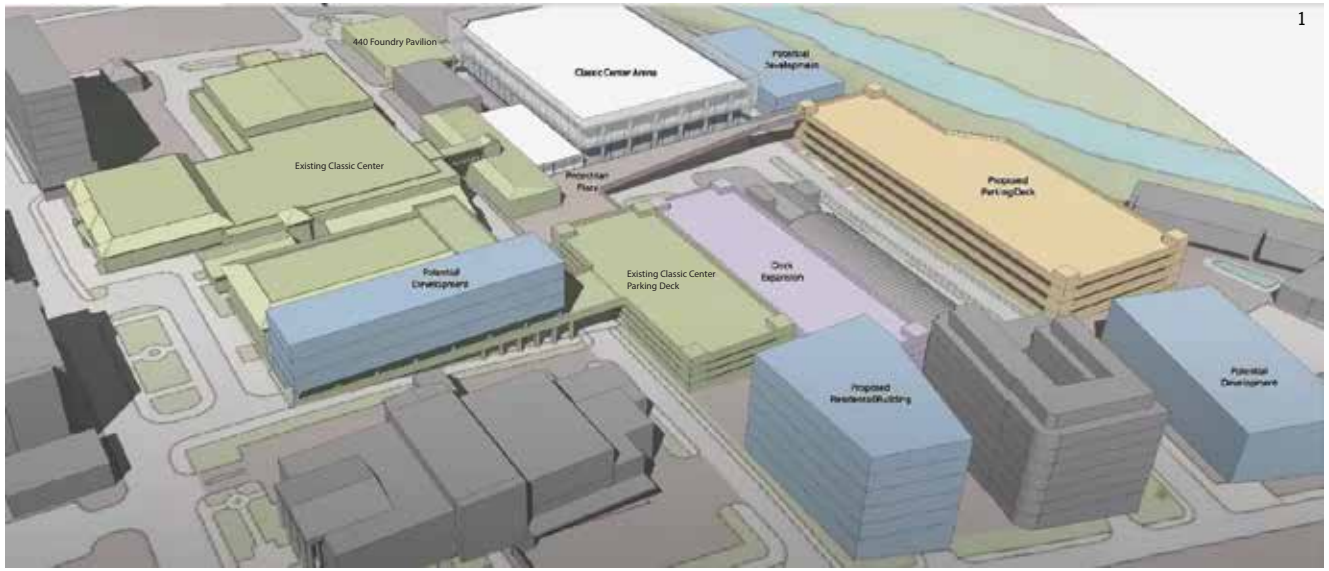
Figure-ground:

The buildings exhibits a predominantly irregular pattern, with the majority adopting rectangular or compound shapes. The streets follow a combination of irregular and grid patterns, particularly evident in the vicinity near the river.

In addition, there is a mix of building sizes and shapes. It is particularly clustered together at the Classic Center in the middle of the map. The irregularity may cause a sense of disharmony and affect the user experience between the downtown area and the classic center.

In this reverse figure-ground map, the major and minor pathways are highlighted. A prominent grid pattern is visible in the downtown area on the left side of the diagram, which transitions into an irregular pattern from the classic center and multi-modal transportation center in the middle to the North Oconee River on the right side.

EXISTING AND PROPOSED DIAGRAMS



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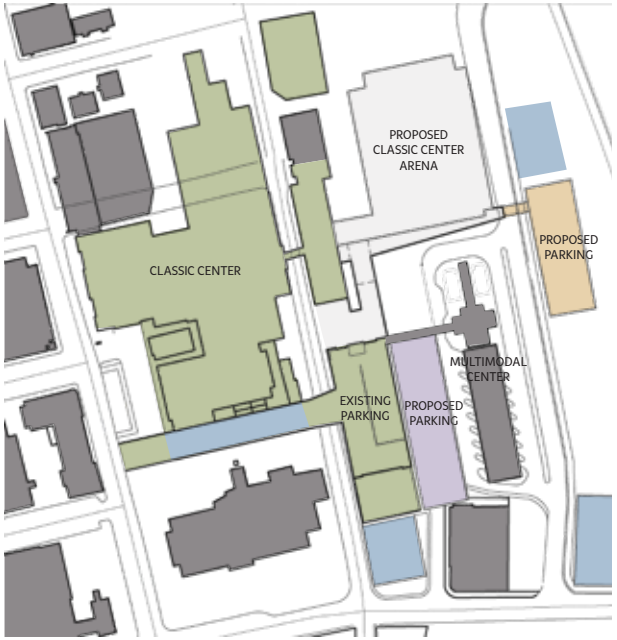


Existing Buildings | Potential Development Buildings | Proposed Parking Deck | Proposed Deck Expansion

The current proposal outlines a series of developments for and around the Classic Center, including the Classic Center Arena and Pedestrian Plaza, as well as expanded parking decks and additional buildings. Currently, the Classic Center Arena and the Pedestrian Plaza is in the construction phase.

Following the completion of the Classic Center Arena and the Pedestrian Plaza, the proposed parking deck (highlighted in orange) and Deck Expansion (highlighted in light purple) are planned for development. Beyond these immediate plans, potential future developments and residential buildings are depicted in blue.

This diagram suggests that the area is about to undergo significant changes, with some developments taking place in the near future and others remaining conceptual.

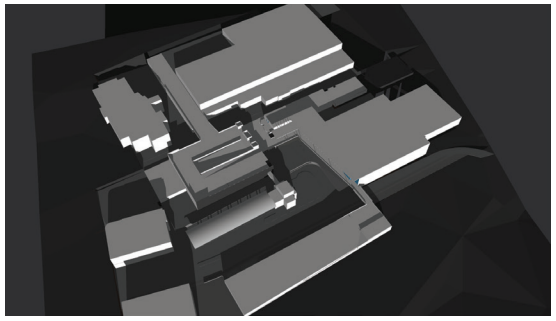
1. "Arena," Classic Center, https://classiccenter.com/440/Public-Engagement.

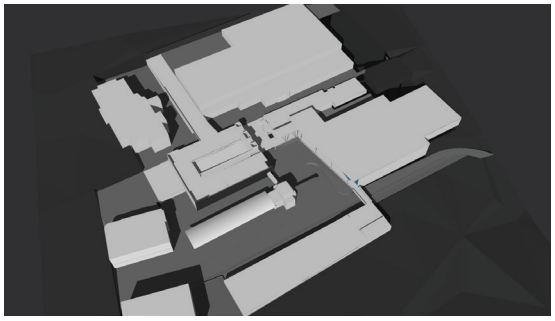
SUN AND SHADE DIAGRAMS

April Weather in Athens, GA (UTC-4)

Key Map


8:00 AM


10:00 AM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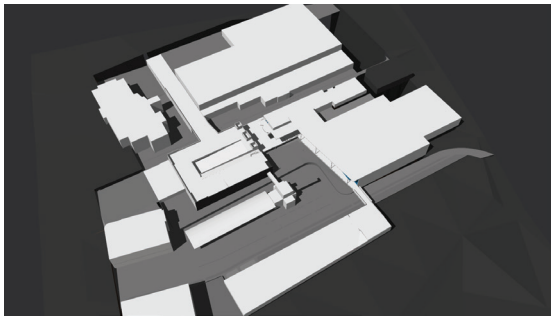
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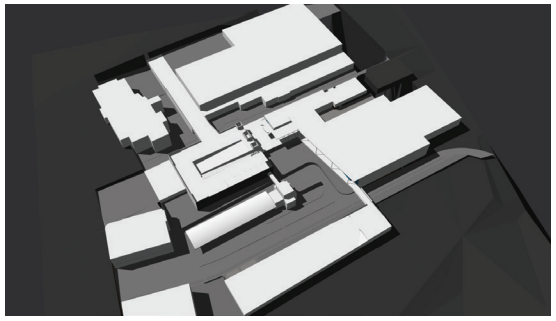
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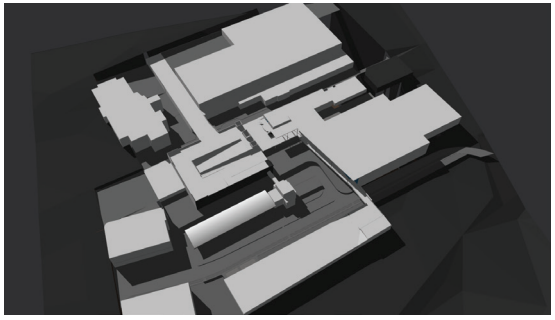
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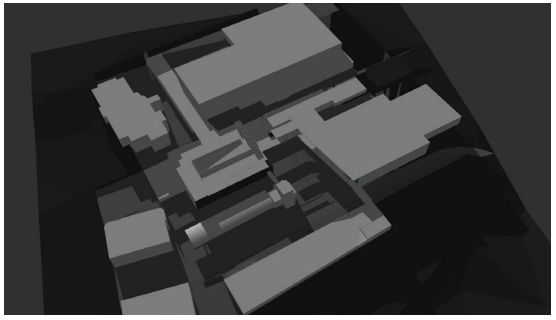
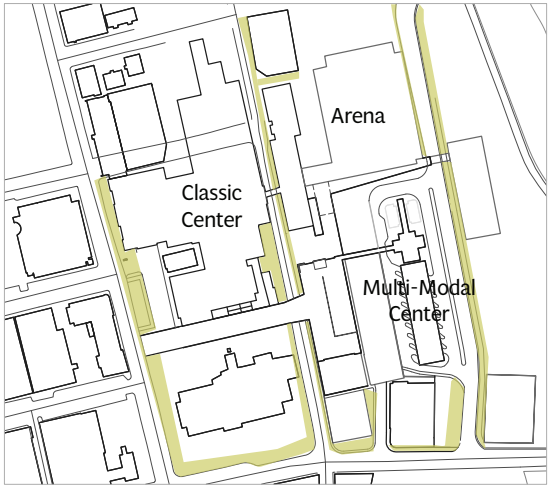

8:00 PM


10:00 PM

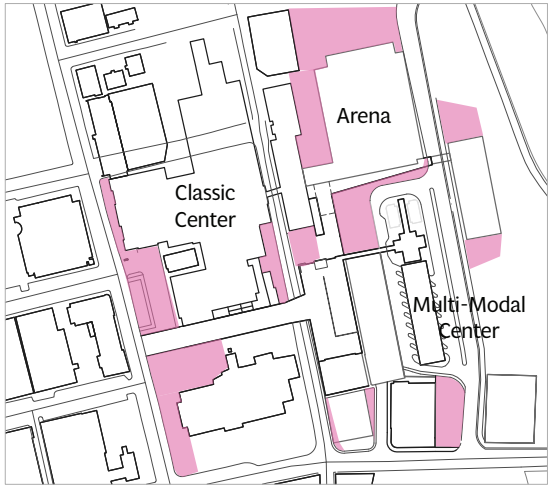
The sun-shade analysis diagrams indicate that between 12 pm and 6 pm, the areas between the buildings are predominantly sunny, except for regions near the building edges and areas with overhangs.

OTHER DIAGRAMS

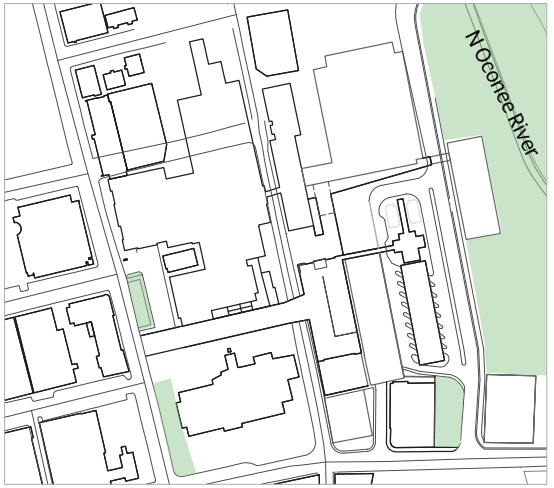
Streetscape (Spaces along streets)



Adjacent Spaces (to buildings)

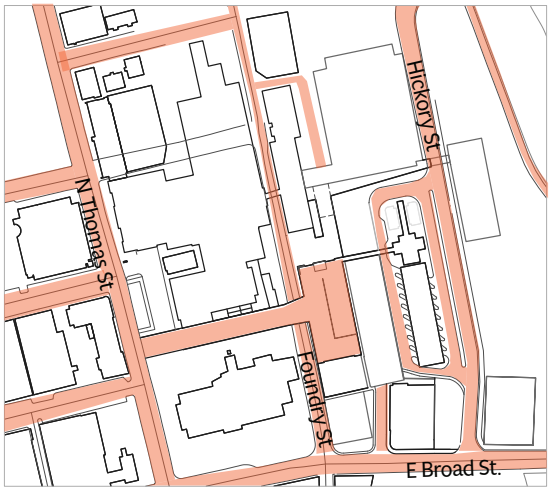


Natural/Greenspace



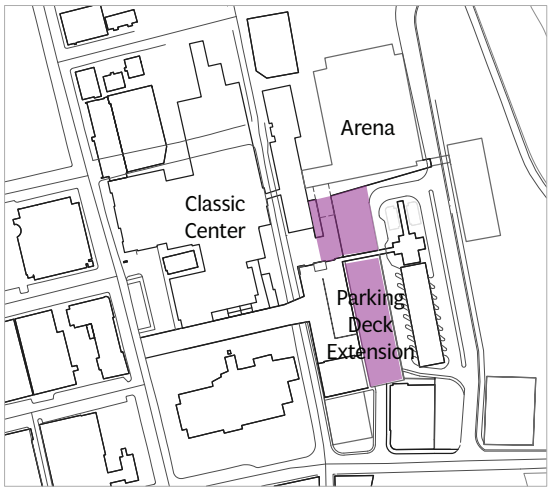
The Streetscape diagram shows the spaces along streets highlighted in yellow. The Adjacent Spaces diagram illustrates interactive spaces next to surrounding buildings (pink), while the Natural/Greenspace diagram highlights existing natural and designed greenspaces on the site (green).

Vehicular Pathways



Pedestrian Pathways

Leftover Spaces



The Vehicular Pathways diagram highlights all major and minor vehicular roads on the site (orange), while the Pedestrian Pathways diagram focuses on the pedestrian walkways (brown). The Leftover Spaces are identified as areas currently without specific meaning or use on the site (purple).

OTHER DIAGRAMS

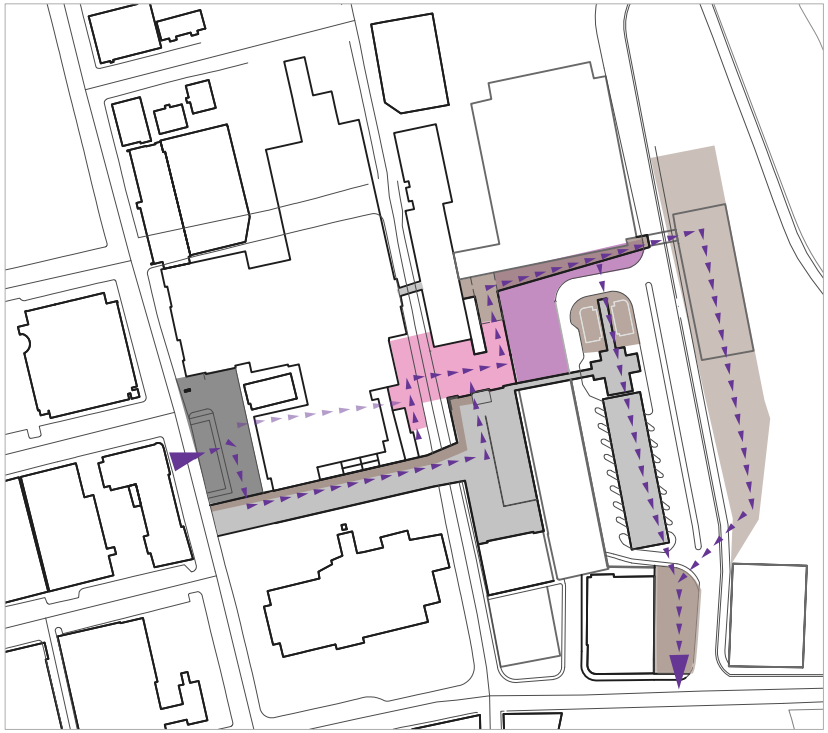
Combined/Layered Diagram

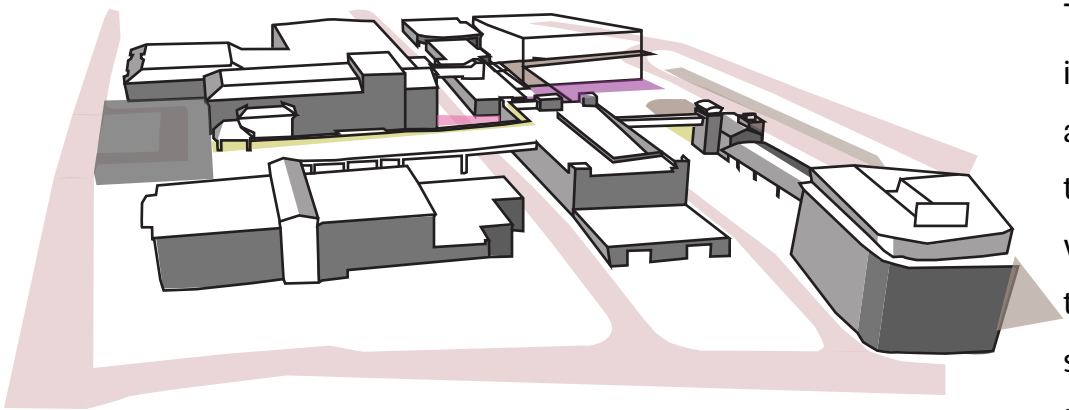
LEGEND

- Areas of Overlap (more than 3)
- Streetscape
- Adjacent Spaces
- Natural/Greenspace
- Vehicular Pathways
- Pedestrian Pathways
- Leftover Spaces

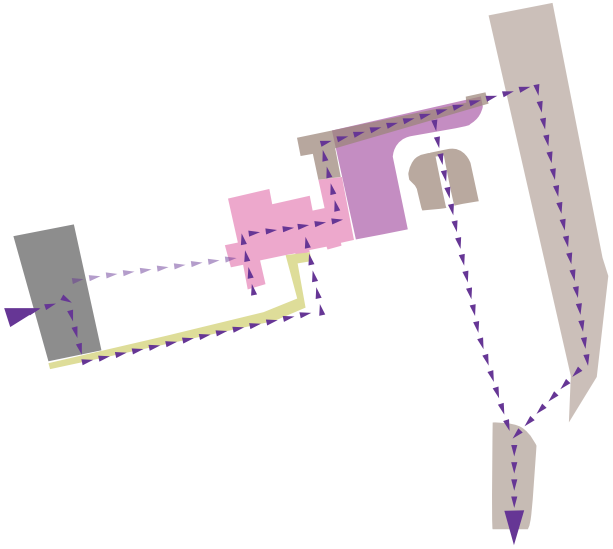
This diagram illustrates the overlapping areas identified in previous diagrams. These overlapping zones may exhibit heightened significance, potentially serving as nodes—points of intersection, increased activity, and heightened visual focus/noise. These areas are important zones with varying uses and potential such as gathering spaces and points of interest, influencing the overall design proposal and concept.

CONCEPT AREAS/SECTIONS





Areas and Routes



These areas are selected based on the analysis of paths, nodes, interests, and areas of overlap. They have the potential to convey a narrative and provide a route for enjoyment and navigation through the site. Users can explore various spaces that correlate with their uses and surroundings, with clear wayfinding throughout the site. While users will encounter different levels/ stories as they navigate through the site, the pathways available to them will be clear.

MATERIALS

Common Materials:

Grey Bricks

Asphalt

Red Bricks

Concrete

Materials commonly found on and around the site include red bricks, grey bricks, asphalt, and concrete. Additionally, concrete pavers in orange and yellow are found on site, though they are less common. These materials contribute significantly to the character and identity of downtown areas. The images below depict typical streetscapes in downtown Athens, highlighting these materials in their urban setting, and the other materials to consider include granite outcrop and Limestone, which are commonly found in Georgia.

Site Photos (Downtown Athens):

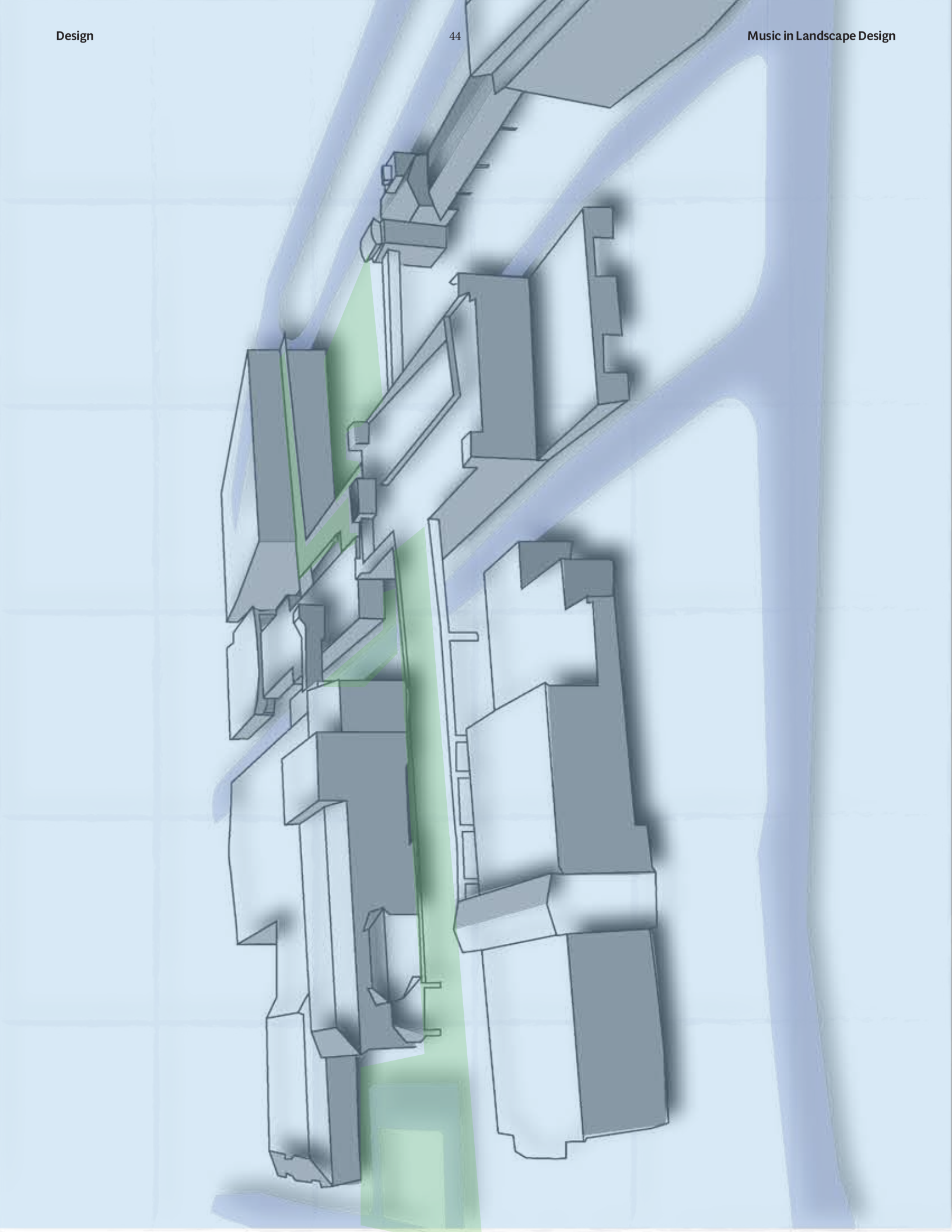
Other Materials to Consider (Commonly Found):

Granite Outcrop

Limestone

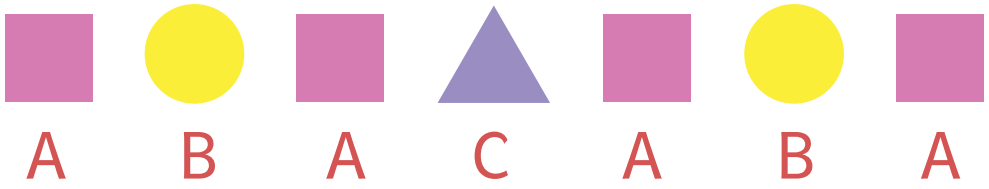
6. Design

The design proposal for the Classic Center integrates musical concepts and terminology, aligning the process of musical composition with the site design process. This approach aims to create a harmonious and engaging environment by selecting and arranging landscape elements, drawing parallels with the creative process of composing music. The goal is to evoke specific emotions and experiences for visitors, infusing the space with dynamics, rhythm, harmony, and form while encouraging exploration and interaction.



DESIGN CONCEPT

Rondo:

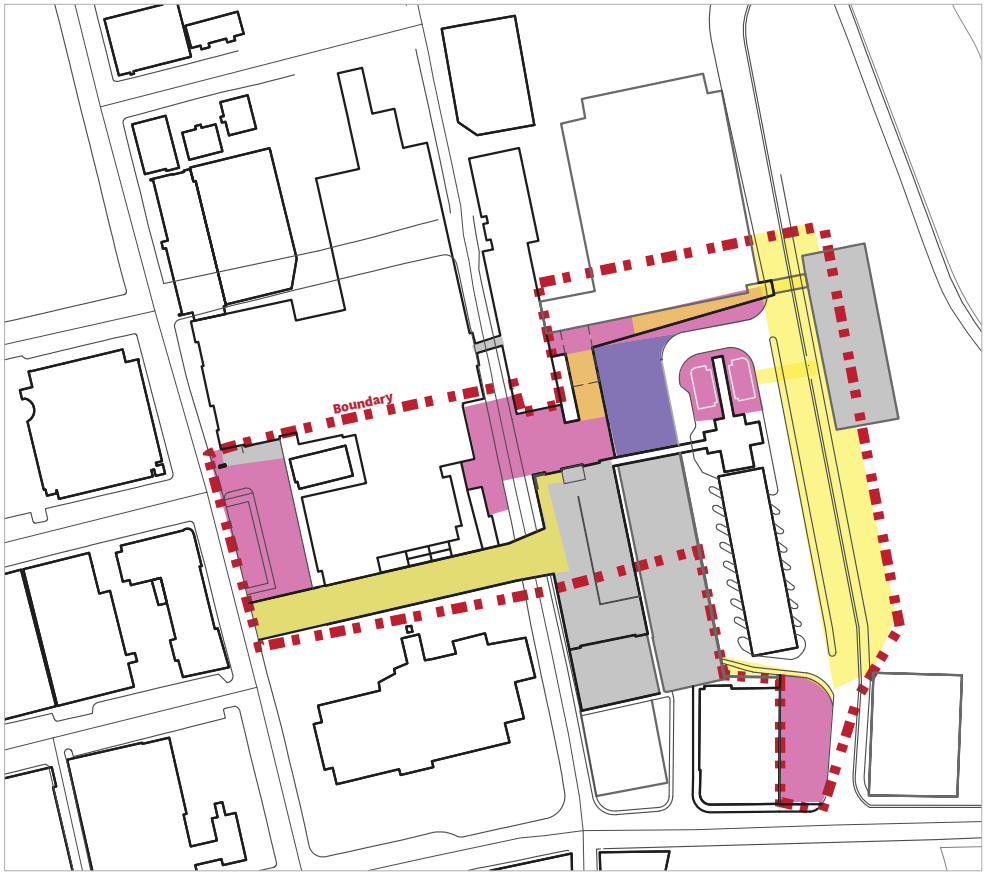


Why Rondo?

The design's overall framework is based on the Rondo Form, chosen after analyzing the site. These areas are divided into sections that align with the concept of the Rondo Form, with each area having unique goals and objectives based on its characteristics. The primary reason for choosing the Rondo form for the site's overall framework is its lack of a distinct beginning, middle, and end. The Rondo form's flexibility fits the complex characteristics and features of the identified areas. Unlike the other form's that have often have a linear narrative, the Rondo form allows for more freedom between the different sections and has fewer limitations on following a strict linear narrative structure. Additionally, Rondo typically has more sections than other musical forms.

There are different goals and objectives in each area, and there are elements that tie all of the areas together, similar to the concept of Rondo form in a composition. Rondo Form is one of the structure in music composition that contains a main theme in which alternates with one or more contrasting themes. Possible patterns include the common ABACA, ABACADA, ABACBA, and ABACAB. Some of the most well-known examples of the Rondo Form in music are Beethoven's "Für Elise" (ABACA), and Mozart's "Piano Sonata No. 11, Rondo Alla Turca" (ABCDECABC-Coda). In Rondo form, the main theme is brought back completely and in the same key ("A Section). Applying the framework on site, three sections have been identified with distinct characteristics and qualities.

DESIGN CONCEPT



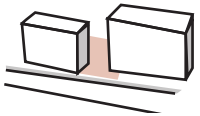
Legend:

- Section A
- Section B
- Section C
- Parking

Section A: Main Areas of Activity, gathering, and entrance to the facilities

Section B: Areas that connect section A and C, pathways and roads

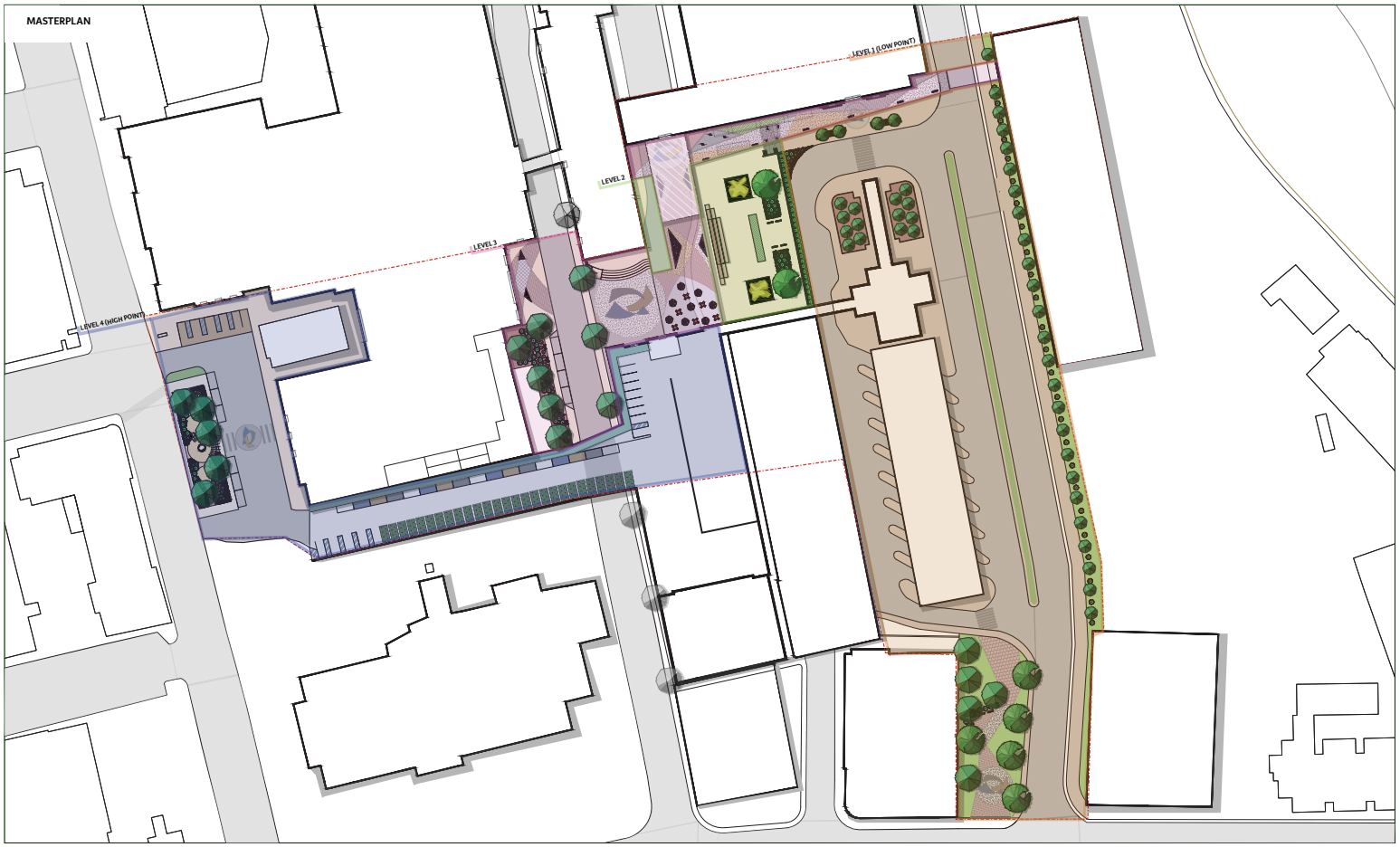
Section C: Leftover, undefined space



In the ABACABA pattern of Rondo form, the A theme represents the main theme, while the B and C themes provide contrast and variation. Similarly, in the site design, each area (or section) will have main characteristics and goals (like the A theme), with other areas providing contrast or serving as connecting elements (like the B and C themes).

The goal is to create a harmonious and cohesive overall design that balances unity and variety, much like a musical composition in Rondo form. This approach allows for flexibility and creativity in designing each area while ensuring that they all contribute to the overall coherence and identity of the site.

DESIGN

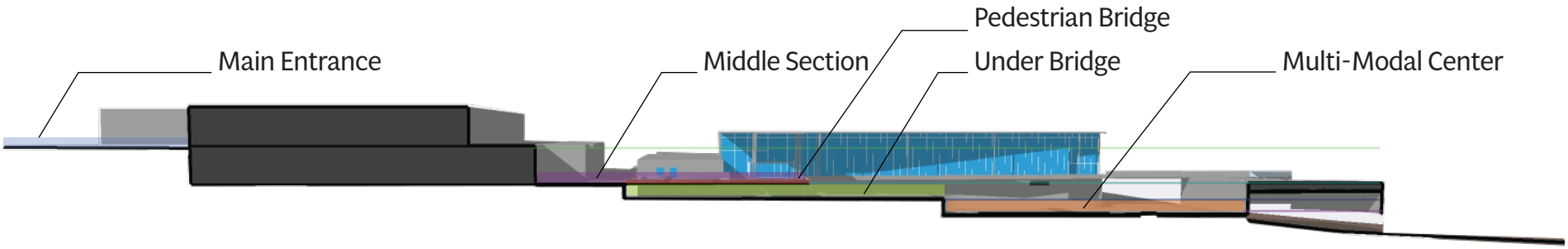


Site Challenges and Opportunities:

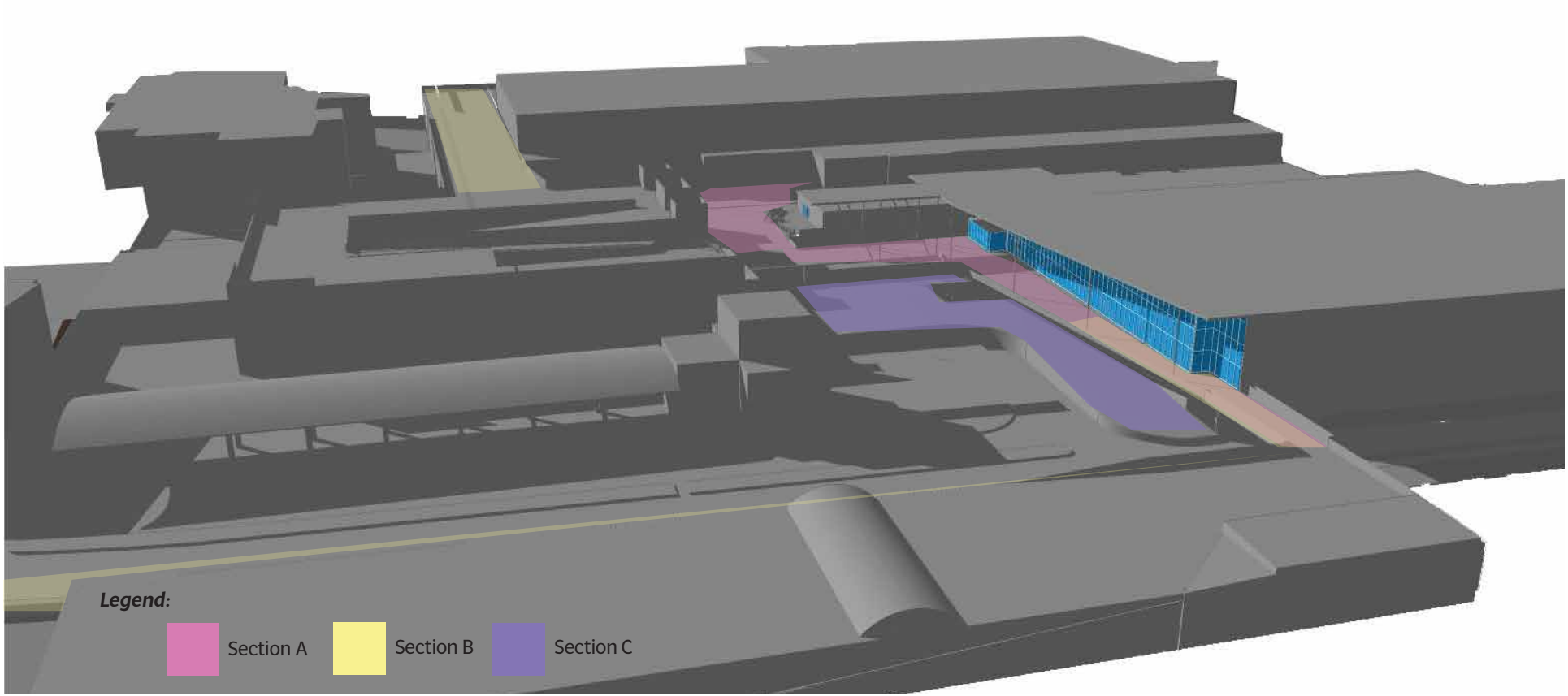
1. Many areas around the Classic Center, Parking Decks, and Arena lack interactive spaces, leading to a sense of isolation despite situating in downtown Athens. 2. While the multi-modal transportation center is regularly used, the surrounding spaces are underutilized. 3. Although some buildings provide shade, there are areas that lack shade, contributing to feelings of isolation and emptiness. 4. Navigating the space can be challenging for first-time visitors due to the site's topography, which can conceal the views of buildings on the lower level. Additionally there is a noticeable uphill gradient, which can be inconvenient for pedestrians who are unfamiliar with navigating the site.

DESIGN

Cross-Section:



The cross-section reveals four distinct levels of elevation across the site. The highest level corresponds to the main entrance of the Classic Center. Below this entrance lies the middle section (area surrounded by the buildings), followed by the area beneath the pedestrian bridge. The lowest level includes the multi-modal transportation center and its surrounding area.



MASTERPLAN

LEVEL 1 (LOW POINT)

LEVEL 2

LEVEL 3

LEVEL 4 (HIGH POINT)

A

A'

CROSS SECTION (A-A')

LEGEND

Existing Trees

Proposed Trees

Proposed Large Shrubs

Proposed Medium Shrubs

Proposed Small Shrubs

Proposed Perennials

NORTH

50 0 feet 50 100

“A” SECTION

Main Entrance of the Classic Center

Statue of Athena, located at main entrance

Platform to Arena

Arena (in-construction), in front of the Multi-modal Center

South Entrance Area

Common Characteristics:

- Entrances
- Activity areas
- Gathering Spaces

These areas are nodes created by buildings and access points, including the main convention building, arena, multi-modal center, existing and proposed parking decks, as well as a few surrounding buildings.

Common Goals:

- An area to potentially serve as a gathering space and center of activities.
- Establish focal points to promote user engagement even when events aren’t scheduled in the arena and Classic Center.
- Cultivate harmony and distinct character within the space to foster a sense of identity.
- Increase the usage of pocket spaces around the Classic Center by incorporating additional seating areas and amenities.
- Integrate more greenspaces to enrich the environment and promote well-being.
- Enhance user experience and accessibility of the spaces.

“A” SECTION

Description:

Similar to how the main theme in music shapes the composition, these areas serve as focal points or nodes that attract people in and organize the space. Just as various musical movements each have their themes and motifs that contribute to the composition, each of these design components enhances the functionality and aesthetic of the space. These spaces are dynamic and vital to the overall design, guiding visitors through the space and accommodating various activities and functions.

The character images below are examples of elements that could be implemented on-site. For instance, factors such as the logo shape, which embodies the focus on art in all forms, as well as hospitality, teamwork, and servant-style leadership, can be integrated to enhance the existing characteristics of the site. Additionally, interactive features and outdoor stages can promote user interest and the utilization of the site.

Character Images:

Trellises with seating

Small Amphitheaters

Interactive Installations

Water Features

Public Art Sculptures

Colorful Garden Beds

Patterns, Storytelling, Pathways

Logo Color, Meaning, and Shape

SECTION A: MAIN ENTRANCE - RENDERED PLAN

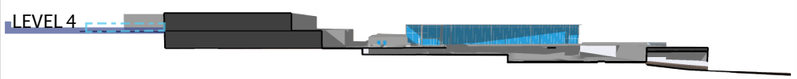
The design revolves around harmonious patterns of the proposed seating areas, complemented by varying heights of planting surrounding these spaces. The concept of *harmony* and *texture* play an important role in this design, primarily demonstrated through the use of vegetation of different sizes. For instance, taller plants are strategically placed next to the seating areas to serve the dual purpose of providing visual interest and minimizing traffic noises from the adjacent street. Another key element addressed in this section is creation of a focal point, represented by the pergola positioned behind the existing Statue of Athena. This feature acts as an accent within the design, drawing attention and guiding users to the space, while also marking the entrance to the Classic Center.

PERSPECTIVE 1:

View from the pathway leading to the central circular platforms.

PERSPECTIVE 2:

View from the Athena Statue (middle) with Pergola.

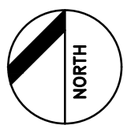


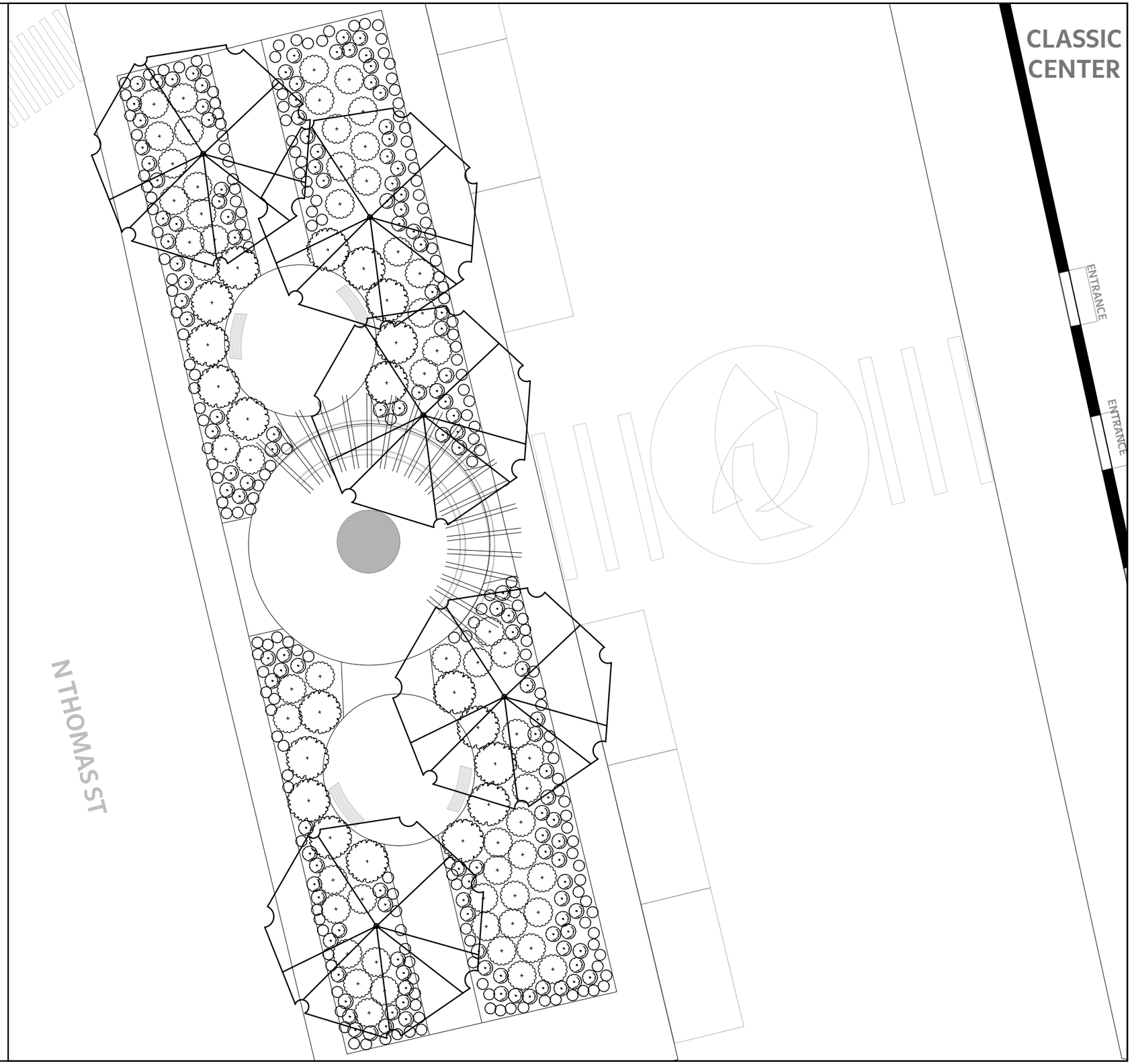
SECTION A: MAIN ENTRANCE - SOFTSCAPE

SYMBOL	TYPE	EXAMPLES
	LARGE SHRUBS	*Linnaea × grandiflora, viburnum dentatum, Calycanthus floridus*
	MEDIUM SHRUBS	*Spiraea betulifolia, Sambucus canadensis, Rhododendron arborescens*
	SMALL SHRUBS	*Fothergilla gardenii, Myrica cerifera, Gardenia jasminoides* 'Radicans'
	PERENNIALS	*Lavandula spp., Rudbeckia hirta, Phlox paniculata*
	EXISTING TREES	

The proposed vegetation for this section is composed of plants that thrive in full sun to partial shade, with a preference for full sunlight. The design follows a scheme with larger plants in the center, gradually increasing in height from small plants to larger shrubs. The larger shrubs are strategically placed around the seating areas to provide shade and block out noise from adjacent roads. The addition of the vegetation is intended to attract visitors to the space while also indicating the Classic Center's main entrance.

Height/Size



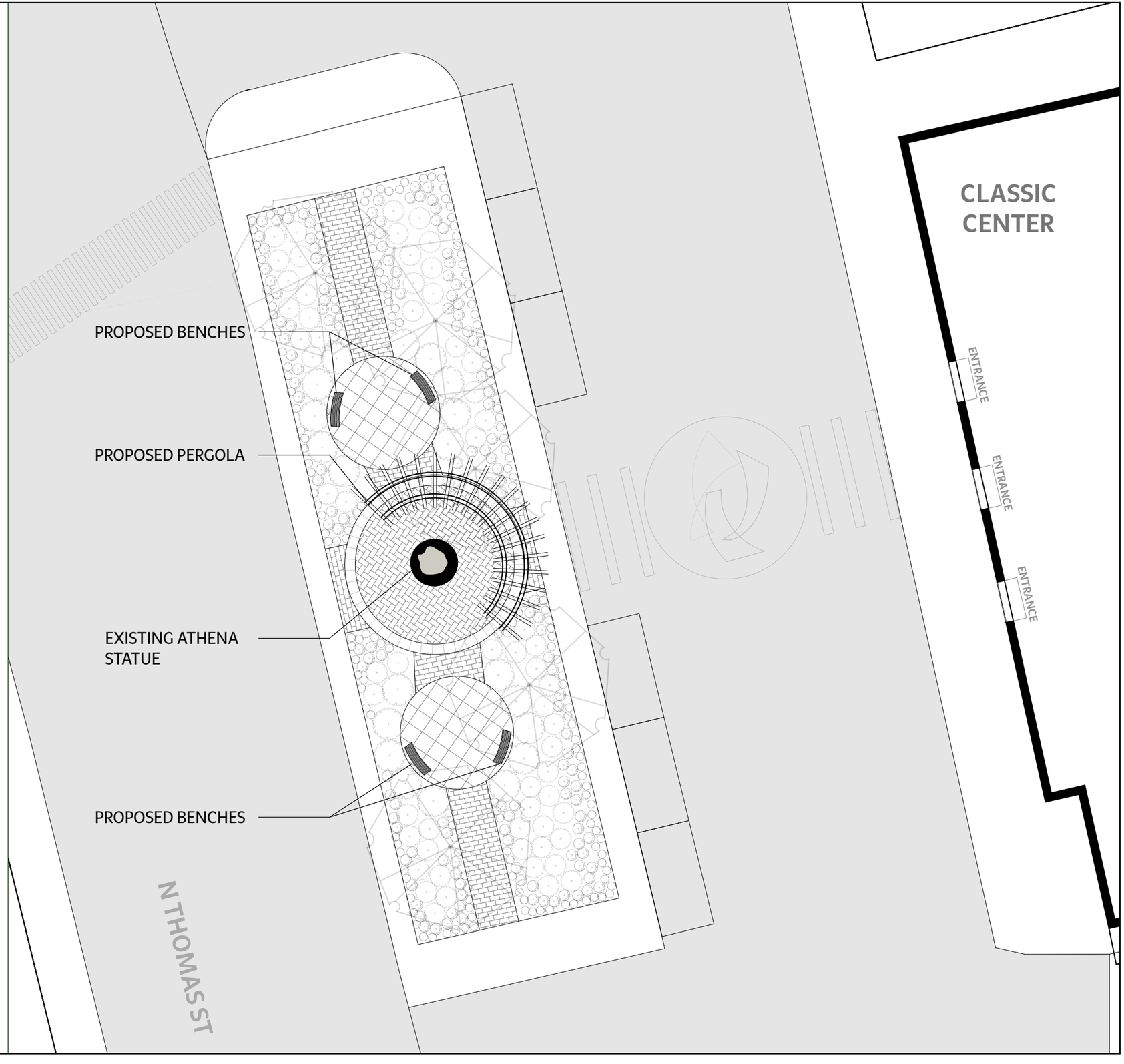


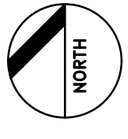
SECTION A: MAIN ENTRANCE - HARDSCAPE

MATERIALS:

- Grey Brick Pavers: Circular Pattern
- Red Brick Pavers: Running Bond
- Tan Brick Pavers: Herringbone
- Stone Pavers: Diagonal

This section's proposed elements include a pergola that will serve as a backdrop for the existing Athena statue, as well as platforms with benches. The pergola is intended to add interest and attract users to the site while also indicating the Classic Center's main entrance. In addition, four paver types are proposed. These paving materials and patterns are commonly found in downtown Athens, promoting identity and character while providing a seamless transition from downtown to the Classic Center.



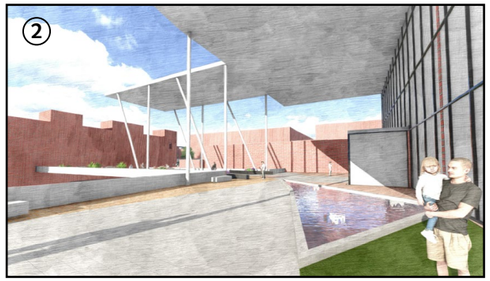


SECTION A: MIDDLE PLAZA - RENDERED PLAN

The design, like the entrance area, centers around the proposed seating areas' harmonious patterns, which are enhanced by varied heights of vegetation around these spaces. Additionally, the plants serve the purpose of screening the utility building (bottom left corner of the plan). The theme of *harmony* is central to this design, as seen by the implementation of various sizes of plants. Accent plants are strategically positioned to complement the seating areas, creating quiet and semi-private spaces for each table. This allows users to enjoy the plaza area or have a more private break in the shaded area beneath the parking deck.

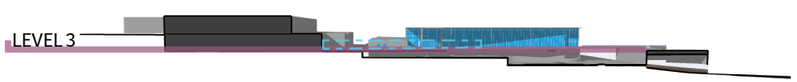
PERSPECTIVE 1:

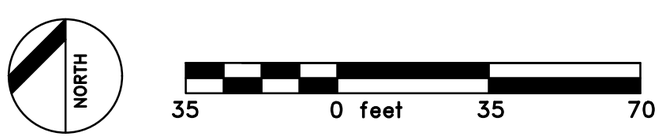
View into the middle plaza space from the corner of the proposed planters and seating area.

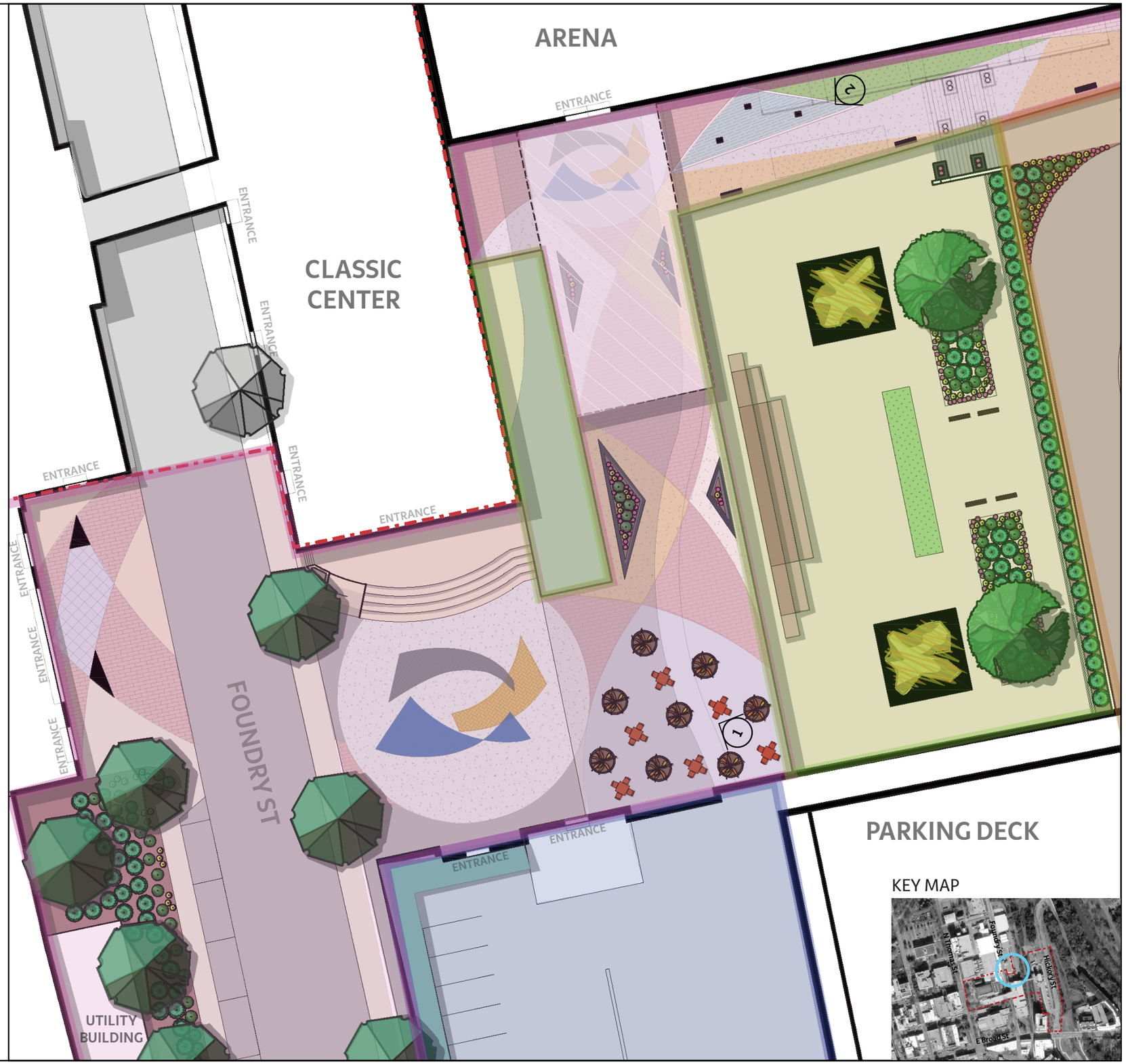


PERSPECTIVE 2:

View from atop the pedestrian bridge, adjacent to the Arena entrance.







SECTION A: MIDDLE PLAZA - SOFTSCAPE

SYMBOL	TYPE	EXAMPLES
	LARGE SHRUBS	*Hydrangea quercifolia, Panicum virgatum, Aesculus parviflora*
	MEDIUM SHRUBS	*Gaultheria procumbens, Myrica cerifera, Itea virginica*
	SMALL SHRUBS	*Abelia x grandiflora* 'Kaleidoscope', *Taxus cuspidata* 'Nana Aurescens'
	PERENNIALS	*Echinacea purpurea, Rudbeckia hirta*
	ORNAMENTAL PLANT	*Solenostemon scutellarioides, Muhlenbergia capillaris*
	EXISTING TREES	

The proposed vegetation for this section consists of ornamental plants, primarily medium and large shrubs bordering the utilities area on the southwest side of the plan. These large shrubs serve as a screen, concealing the utility building behind them.

Ornamental plants are also proposed for the seating area on the extended pedestrian bridge. They act as screening and spacing between the individual table and seat sets, while also providing views into the plaza space in the center. The placement of the plants leads users through the space, following the patterns of the paving material.

NORTH

50 0 feet 35 70

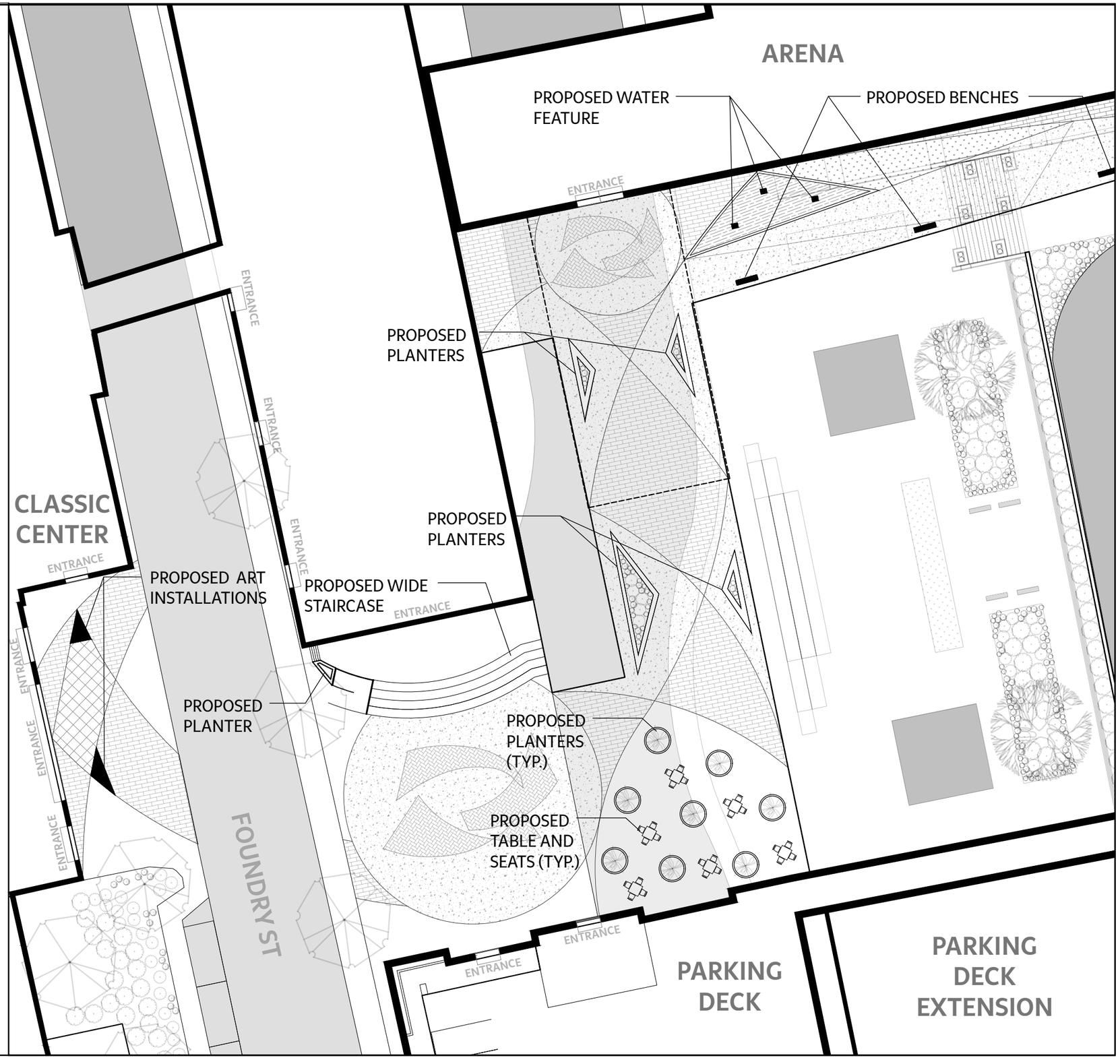
SECTION A: MIDDLE PLAZA - HARDSCAPE

MATERIALS:

- Grey Brick Pavers: Diagonal
- Red Brick Pavers: Running Bond
- Concrete (Orange, Grey)
- Brick Pavers: Herringbone (Orange, Grey, and Blue)

Four paving materials are used throughout the site, reflecting the materials found in downtown Athens and illustrating the area's overall character and identity. The pavers' colors are inspired by the Classic Center's logo, which incorporates the site' identity into its physical elements. These patterns not only improve navigation, but also add to the overall character of the site, emphasizing the main A section theme. The paving pattern is strategically designed to lead users through the site, directing them to building and street entrances. Furthermore, the proposed installations serves as accents to the Classic Center's back entrance, enhancing the site's overall aesthetic and functionality.

Other proposed features include a wide staircase that will serve as additional seating during events in the plaza space. This plaza is located behind the Classic Center, in front of the parking deck's entrance. The proposed planters, tables, and seats can be used as a resting area as well as audience seating during plaza events.



SECTION A: SOUTH ENTRANCE - RENDERED PLAN

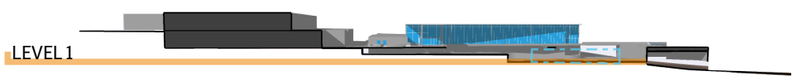
The design is centered around harmonious patterns created by implementing various iterations of a pattern, specifically inspired by the Classic Center Logo. Benches and vegetation around the seating areas are strategically placed to provide ample screening and a place for rest in this side entrance area. Additionally, elements from downtown Athens, such as paving patterns, materials, and the Arch, are incorporated to establish a sense of identity and ensure a seamless transition from the downtown area to the Classic Center.

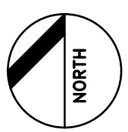
PERSPECTIVE 1:

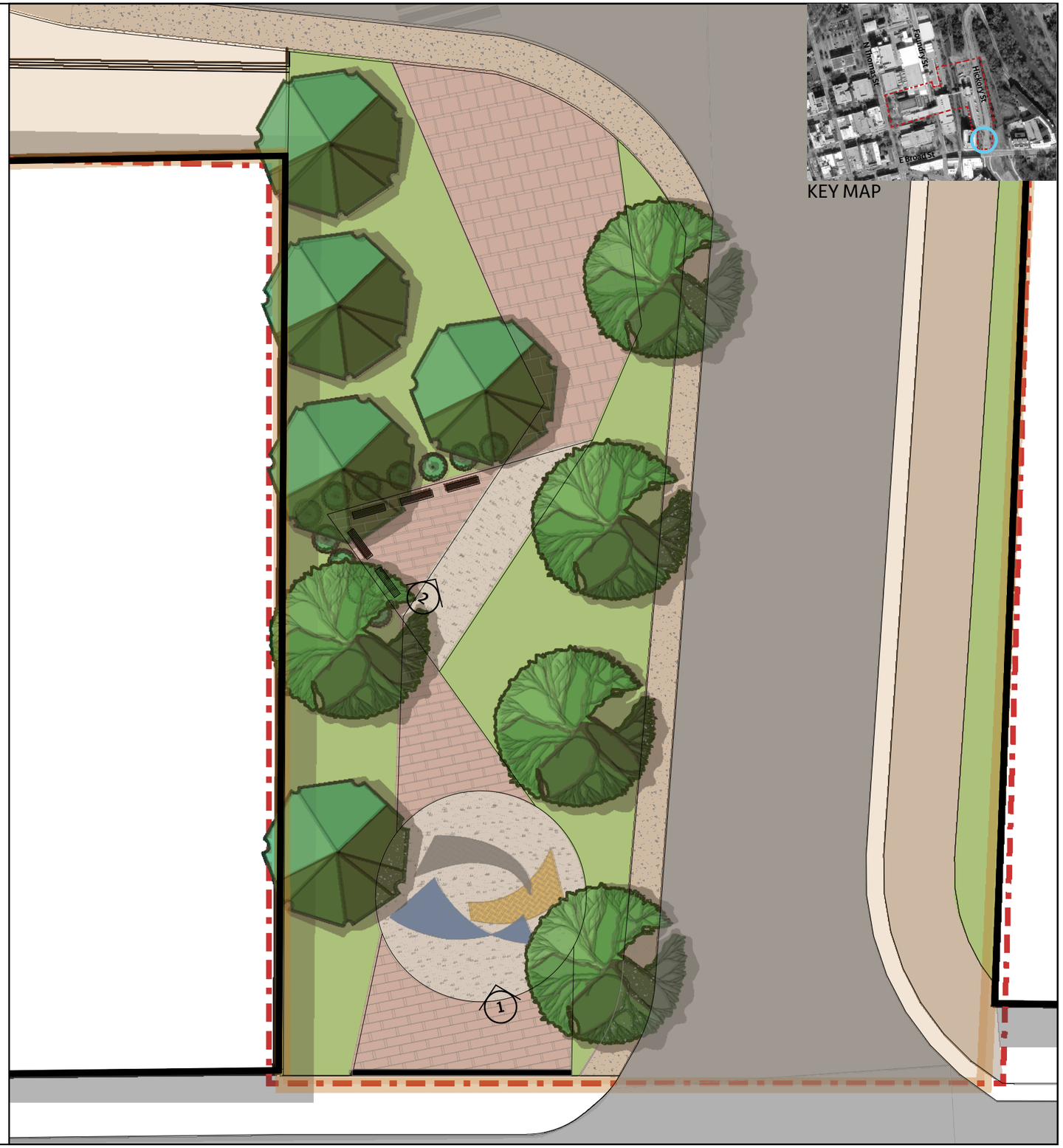
View from South entrance into the park space.

PERSPECTIVE 2:

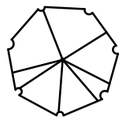
View from seating area.



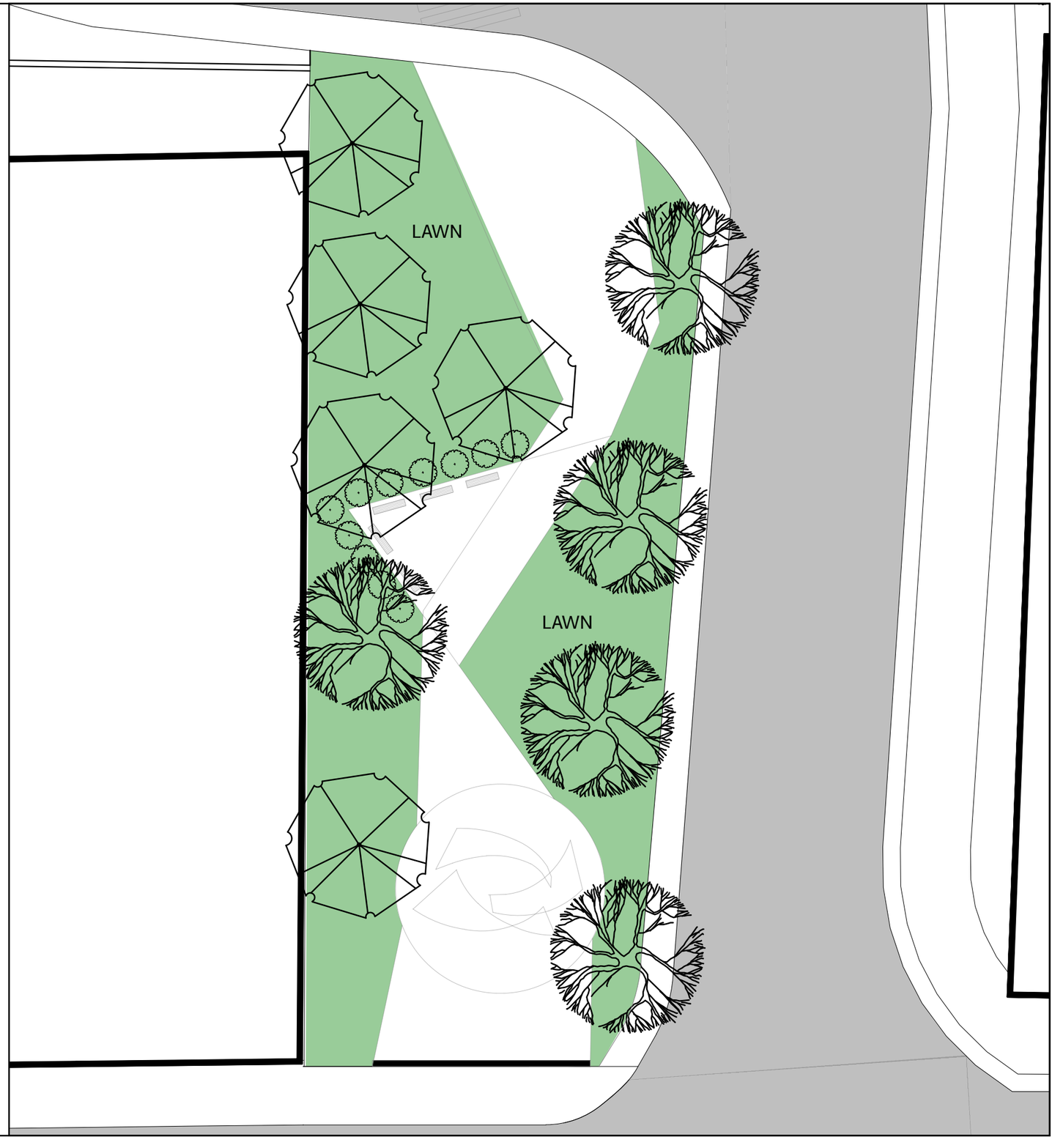




SECTION A: SOUTH ENTRANCE - SOFTSCAPE

SYMBOL	TYPE	EXAMPLES
	LARGE SHRUBS	*Hydrangea quercifolia, viburnum dentatum, Calycanthus floridus*
	PROPOSED TREES	*Acer rubrum, Betula nigra, Cornus florida*
	EXISTING TREES	

The proposed vegetation for this section consists of plants that thrive in full sun to partial shade, with a preference for shade-tolerant shrubs. Trees along the building's edge can grow because they receive the majority of the day's sunlight. The majority of proposed plants are native species, with trees and shrubs primarily located along the platforms' edges.



SECTION A: SOUTH ENTRANCE - HARDSCAPE

MATERIALS:

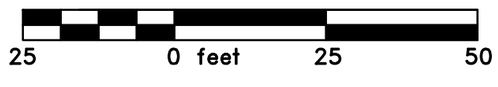
Grey Stone Pavers: Running Bond

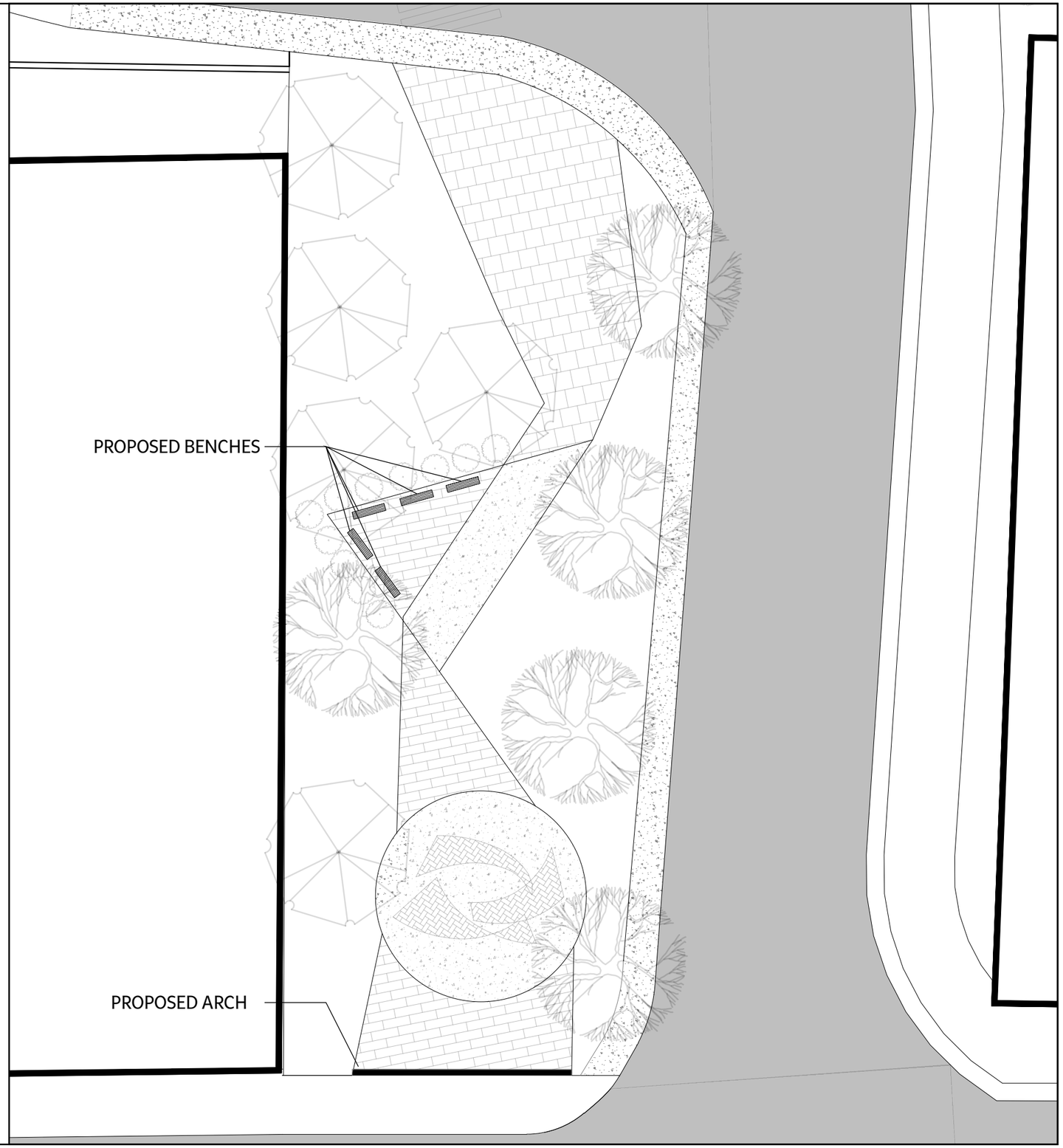
Red Brick Pavers: Running Bond

Concrete (Grey)

Brick Pavers: Herringbone (Dark Grey, Orange, and Blue)

This section features four different types of paving, all of which are common in downtown Athens. These paving choices are intended to complement downtown's character and identity, fostering cohesiveness and ensuring a smooth transition from downtown to the Classic Center Arena.

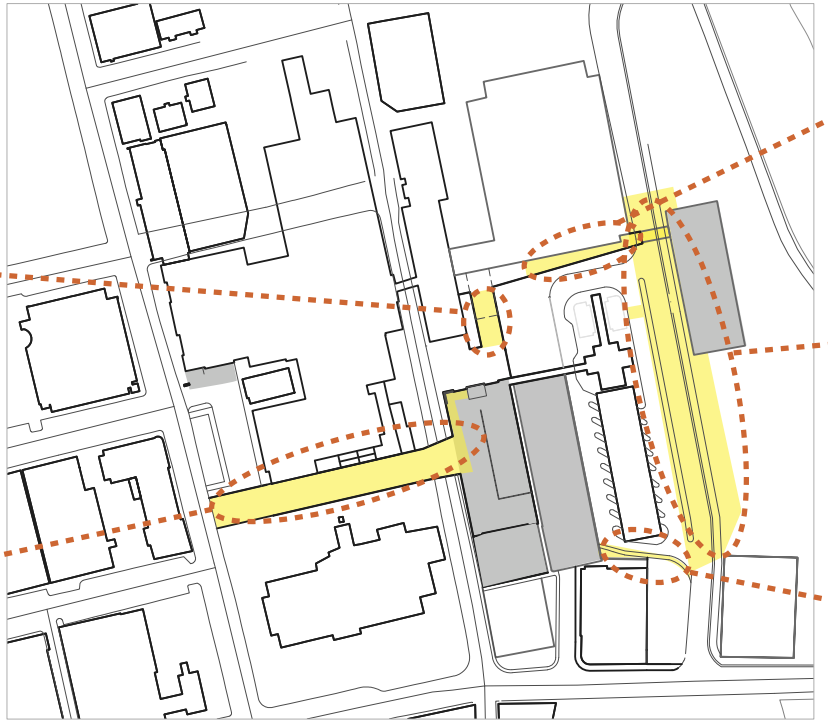




“B” SECTION

Platform to Arena

Vehicle and pedestrian pathway



Platform to proposed Parking Deck

Road in between Multi-modal Center and proposed parking deck

Area to proposed parking deck

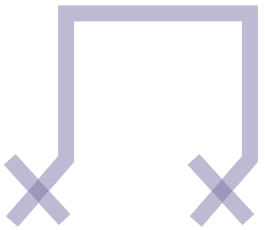
Common Characteristics:

- Pedestrian Pathways
- Vehicle Entrances
- Streets

There are multiple pedestrian and vehicular platforms and pathways, including those leading to the parking lot and connecting the spaces between the facilities. While these connections or pathways may not be very apparent, it is crucial for user experience to navigate through the nodes with the sections that connect them, and for effective wayfinding.

Common Goals:

- Enhance user experience and facilitate seamless navigation throughout the site.
- Enhance the rhythmic flow of the landscape and improve connectivity.
- Promote walkability and pedestrian accessibility.
- Cultivate harmony and distinct character within the space to foster a sense of identity.



“B” SECTION

Description:

The B section focuses on connectivity, navigation, and wayfinding. The primary element of these spaces are comparable to the rhythm or tempo in a musical composition. Just as rhythm and tempo provide the pace and movement framework for music, pathways provide the structure and flow for movement within a space. They guide the movement of people and vehicles, much like how rhythm and tempo guide the progression of a musical piece. Moreover, melodic lines or phrases, which are derived from the fundamentals of rhythm, are similar to the pathways that connect or navigate through buildings. For instance, melodic lines connect and interact with each other to create a musical piece, just as pathways connect buildings and entrances to facilitate the flow of people and vehicles, influencing spatial experience. Well-designed routes can enhance user experience and navigation within a built environment.

Character Images:

Raised Planting Beds

Wayfindng (Signage, ground, etc.)

Shade, Street Trees

Paving patterns and Colors

Public Art Sculptures

Seating

Accessibility

SECTION B: PEDESTRIAN AND VEHICULAR SPACES: RENDERED PLAN

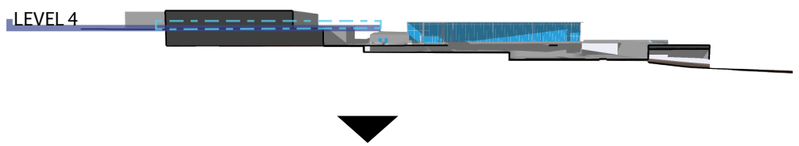
The design of section B is characterized by a rhythmic pattern that uses repetition to guide users through the site. These areas serve as transitions from one section to another, using repetitive elements to establish a specific tempo. This rhythmic approach will produce a cohesive and structured experience while also adding a dynamic and engaging quality to the space, ultimately enhancing the overall user experience.

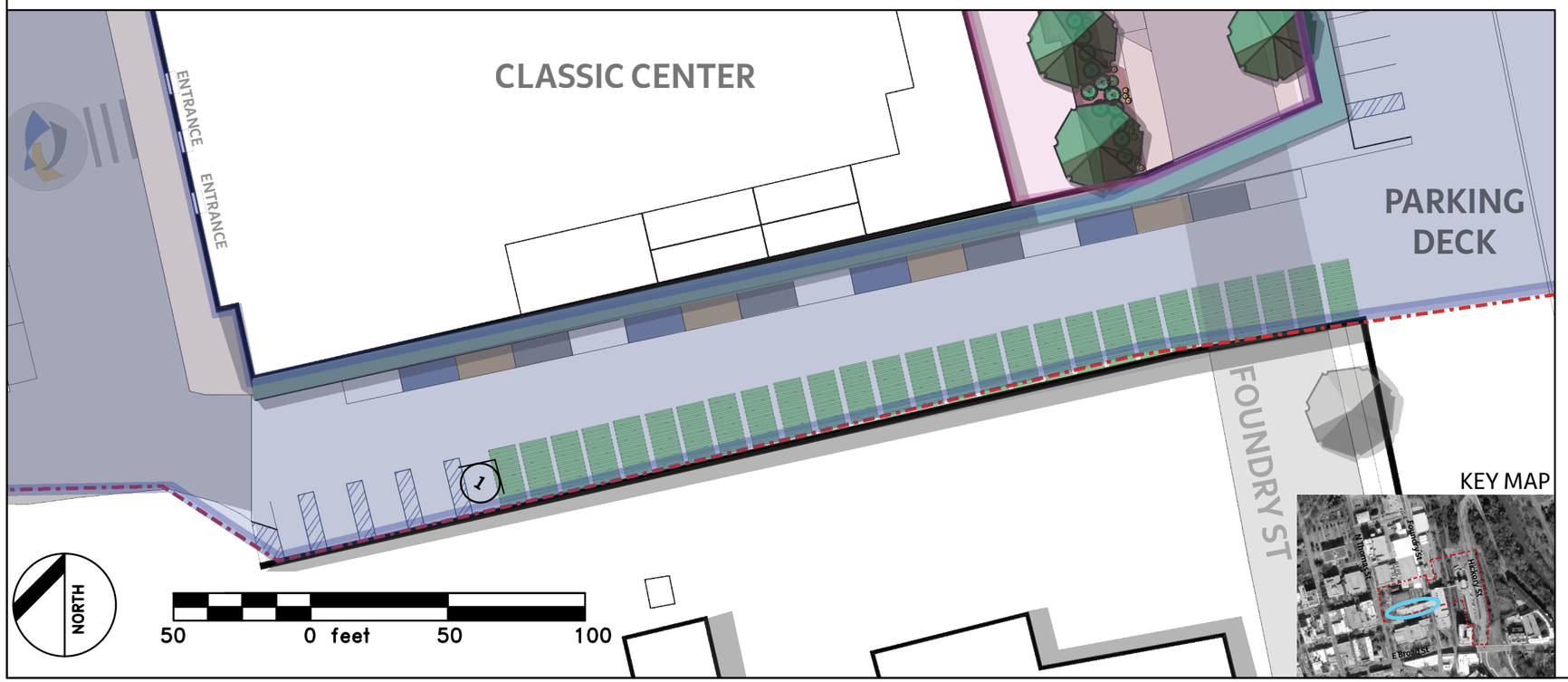
PERSPECTIVE 1:

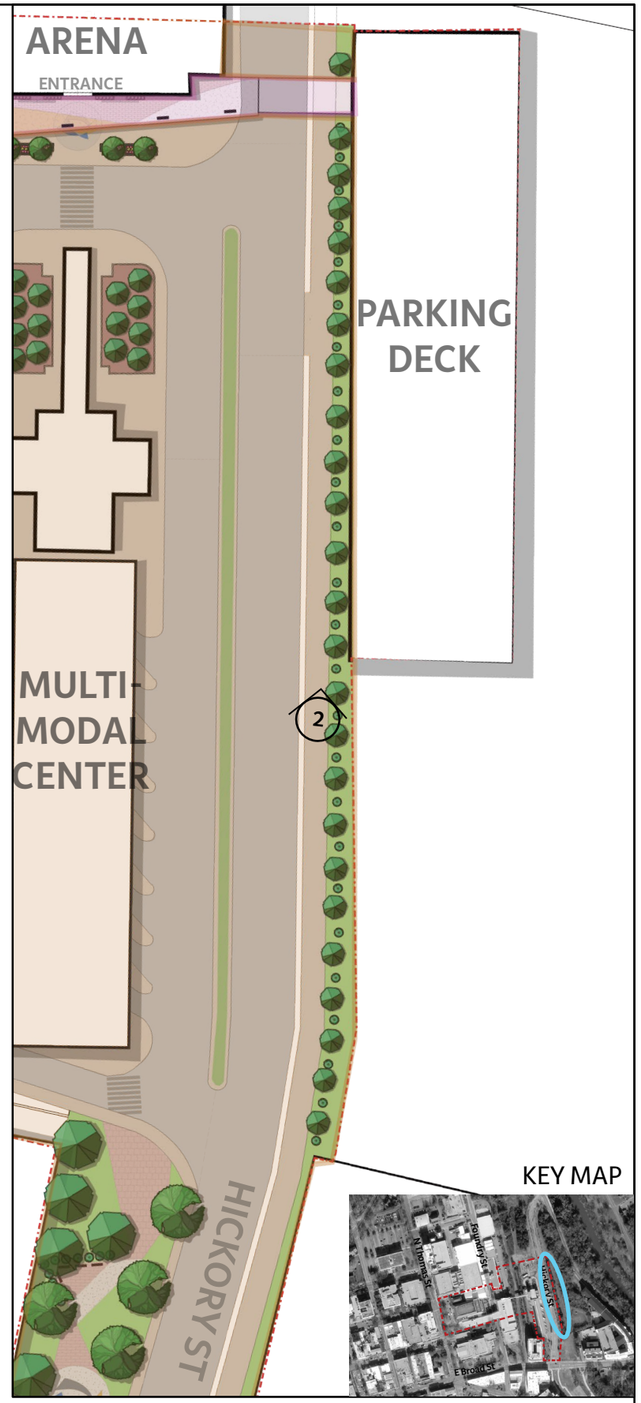
View of the Parking deck entrance

PERSPECTIVE 2:

View from the pedestrian side walk

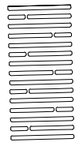
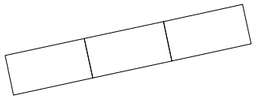




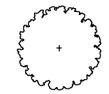
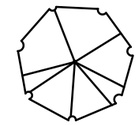


SECTION B: PEDESTRIAN AND VEHICULAR SPACES

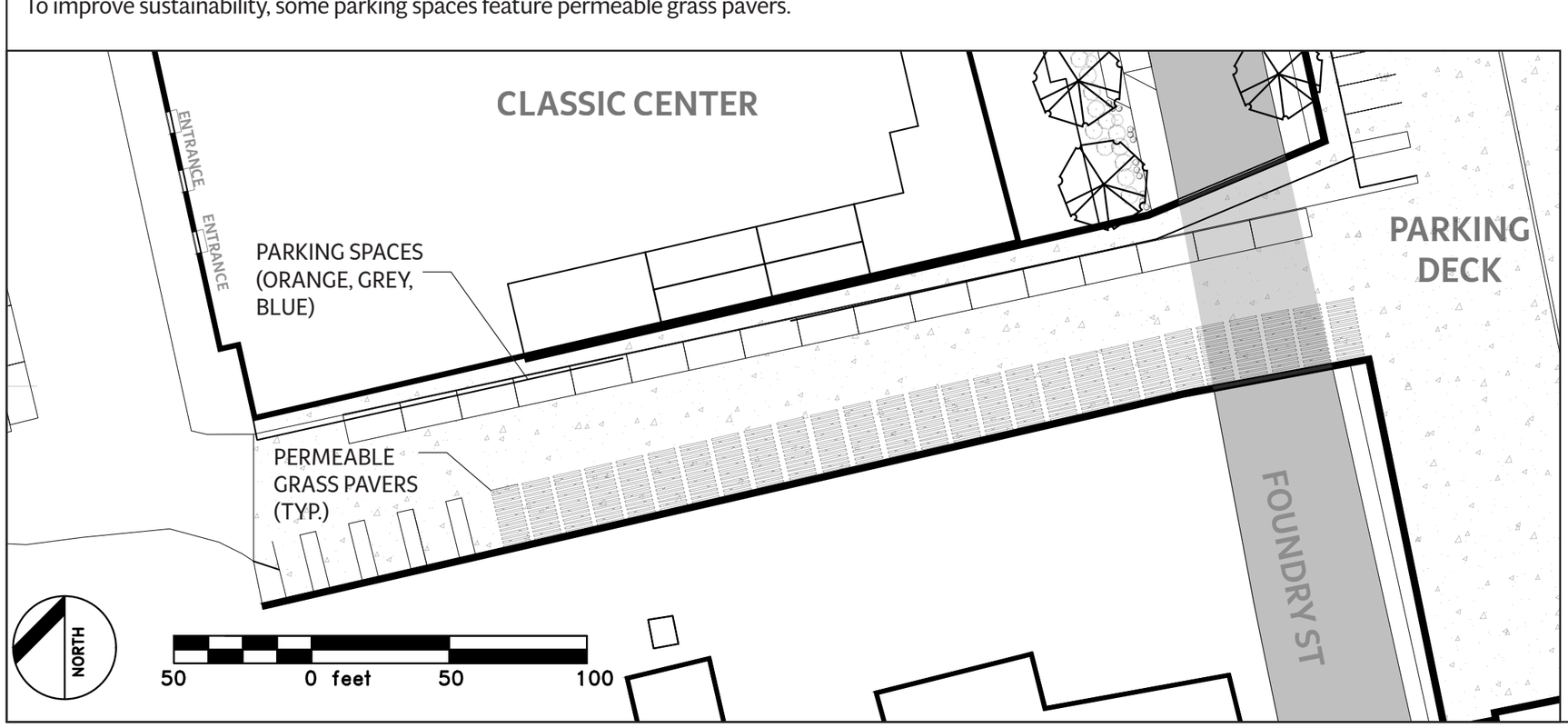
MATERIALS:

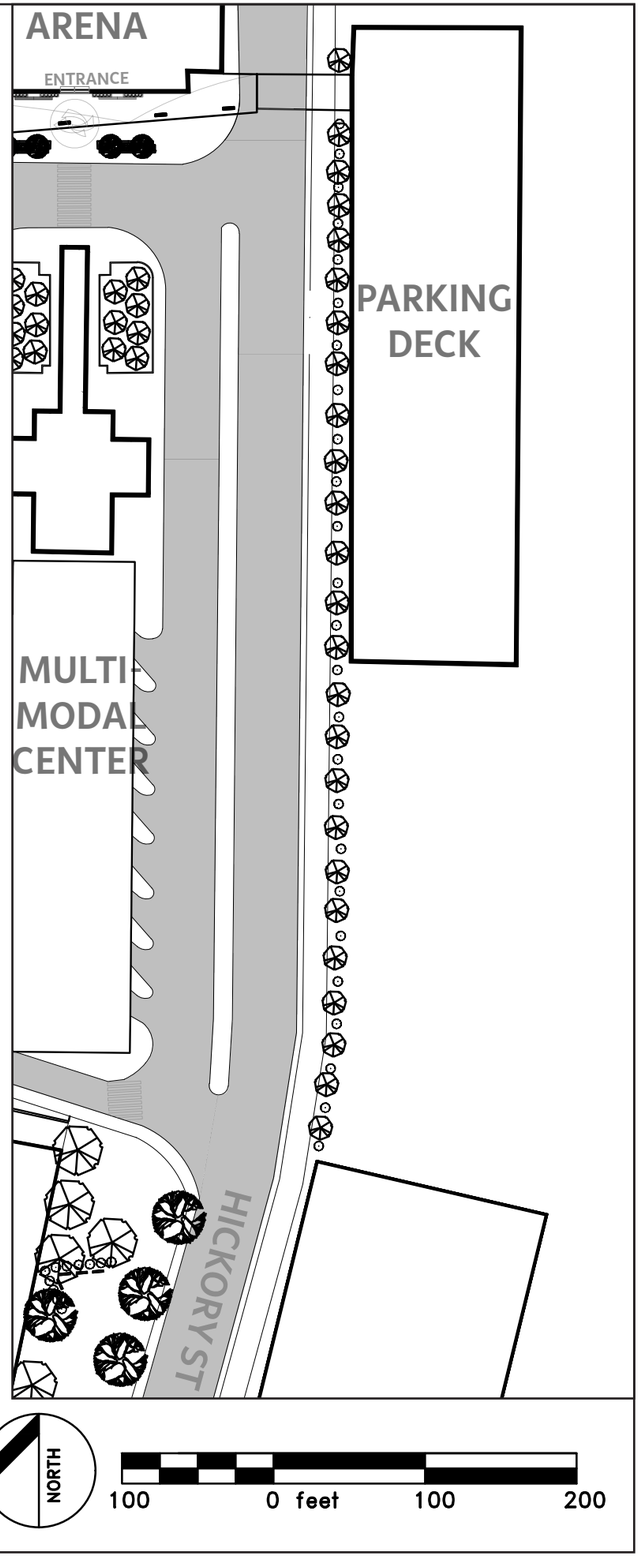
	Permeable grass pavers for parking spaces
	Concrete parking spaces (Orange, Blue, and Grey)
	Concrete

The proposed paving materials in this section include colored concrete for parking spaces, which reflect the Classic Center's identity through the use of the logo colors. These materials are intended to help pedestrians and vehicles navigate the space. To improve sustainability, some parking spaces feature permeable grass pavers.

SYMBOL	TYPE	EXAMPLES
	LARGE SHRUBS	*Aesculus parviflora, Syringa vulgaris, Amelanchier stolonifera*
	EXISTING TREES	

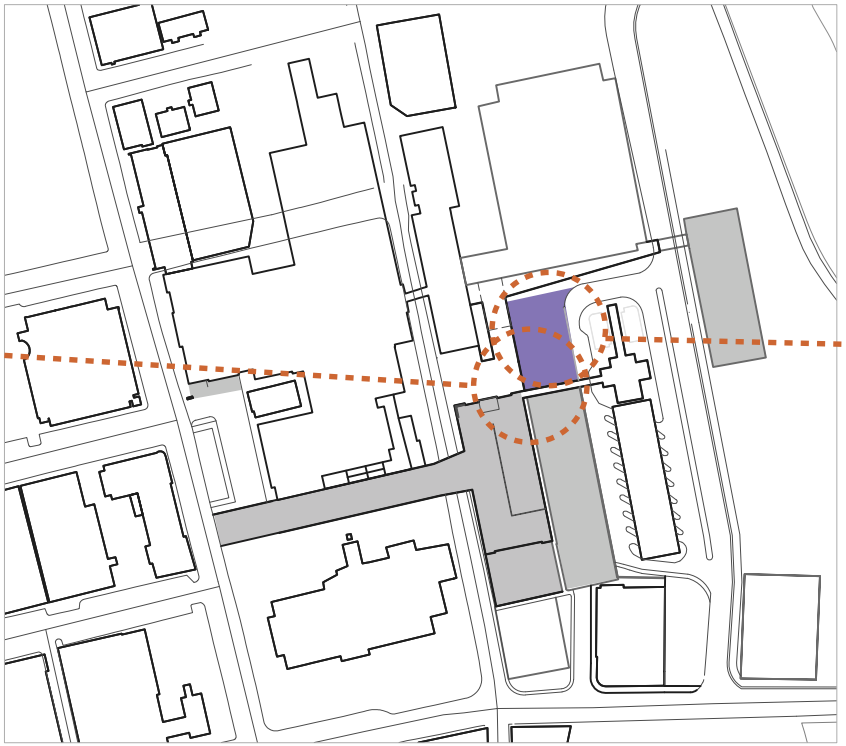
The proposed vegetation in this section consists of large shrubs equally spaced between existing trees to create a consistent rhythm and visual cue for visitors as they navigate around the space.





“C” SECTION

The pathway where the old railroad tracks once lay, now serving as temporary haul roads for construction



The area beneath the platform, situated in front of the Arena

Common Characteristics:

- Leftover Space
- Undefined Space

This area encompasses the spaces beneath the platform connecting to the Classic Center, once occupied by the old railroad. Half of this space is proposed for parking deck expansion, while the other half remains unused. There is potential to make this space more inviting, while also connecting or integrating it with the entrances of the arena and Classic Center to the proposed parking deck. Additionally, this area is located in the center, surrounded by three main facilities.

Common Goals:

- Cultivate harmony and distinct character within the space to foster a sense of identity.
- Provide a space of rest within the constructed environment.
- Integrate more greenspaces to enrich the environment and promote well-being.
- Enhance the user experience and accessibility of the spaces.
- Guide users to the site and promote a sense of safety.

“C” SECTION

Description:

The primary focus of the C Section is to provide a space of rest within the built environment. Leftover or undefined space in a musical composition is comparable to a break or pause in a musical composition. A rest is a notation in music noting a pause or inactivity in the piece. Leftover or undefined space in a design can be viewed as a purposeful pause or break in the constructed environment, just as a rest is a deliberate pause in the musical performance. This area allows for a feeling of rhythm and balance in the composition by serving as a place of reflection or rest within the larger piece.

The disused rail road tracks can be reused in the space to bring character and connectivity to the history and identity of the site. Moreover, the area can be transformed to reflect a pause within the overall constructed environment, including the addition of seating, connectivity, and promote well-being.

Character Images:

Railroad tracks

Seating

Lighting for Safety and visibility

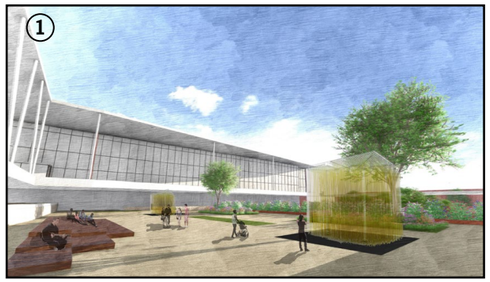
Pedestrian Pathway

“The Goods Line” Sydney, Australia

Park concept featuring a reimagined disused rail corridor in a densely populated setting

SECTION C - RENDERED PLAN

The design is centered on creating a harmonious and enjoyable space for people to experience. This area serves as an extension of the Arena, providing an inviting environment for visitors arriving from the multi-modal center. Situated between the Arena and the parking deck, as well as serving as the hidden entrance to the parking deck, this space has the potential to become a vibrant hub with the addition of interactive elements. Moreover, the area can function as a social gathering space, complemented by the large proposed seating structure on the west side, further enhancing the site's appeal as a destination for users of the site. Additionally, the proposed stairs with raised planters act as a rhythmic guide leading to the main entrance on the lower floor.

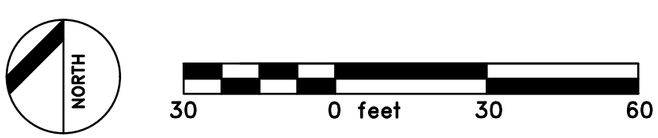


PERSPECTIVE 1:

View of installations and seating area in between Arena and Parking Deck.

PERSPECTIVE 2:

View of the stairs and ramp from the entrance of the Arena.

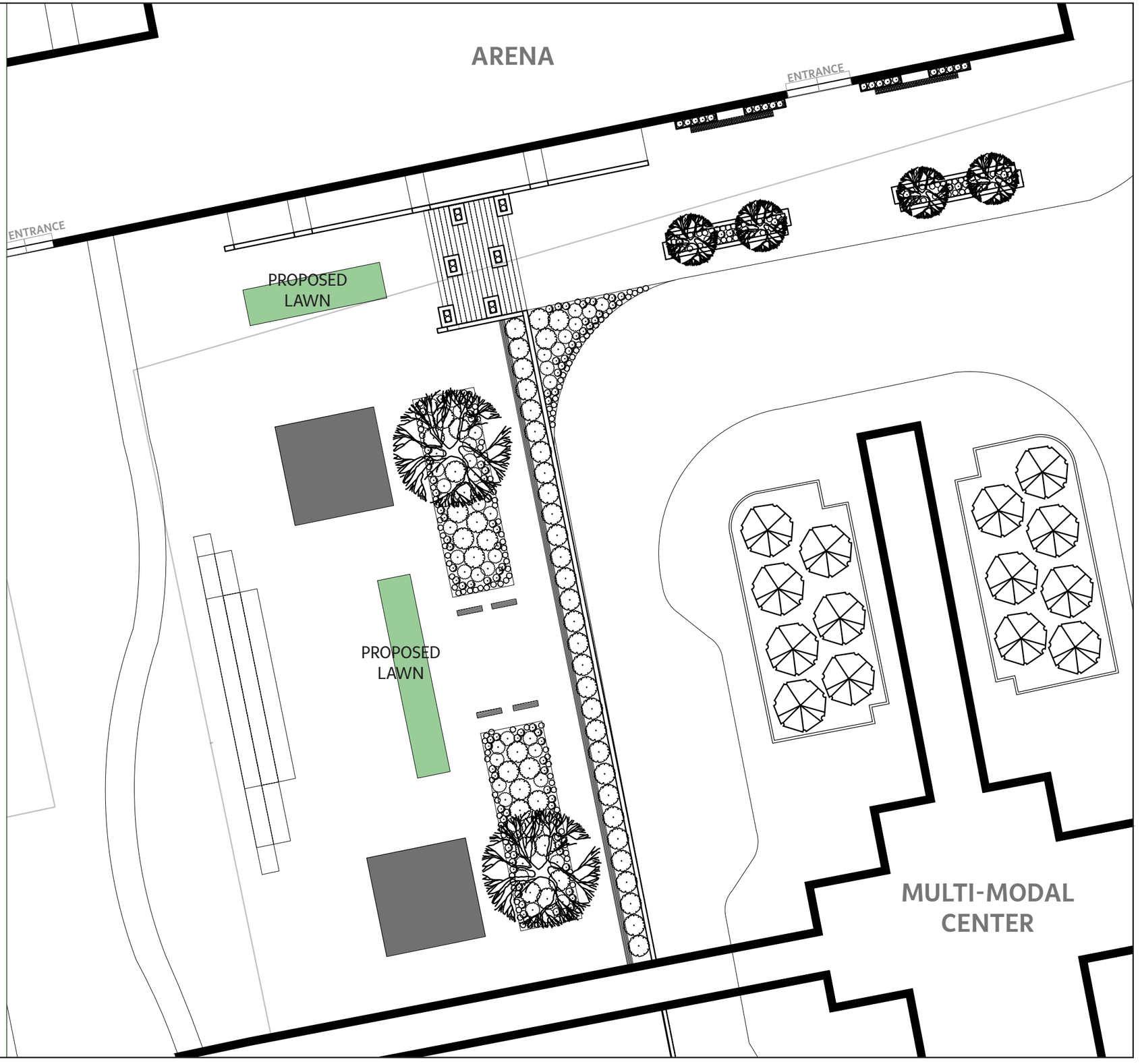


KEY MAP

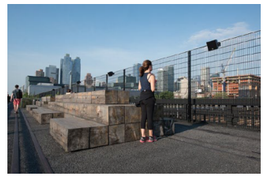
SECTION C - SOFTSCAPE

SYMBOL	TYPE	EXAMPLES
	LARGE SHRUBS	*Aesculus parviflora, Calycanthus floridus, Itea virginica*
	MEDIUM SHRUBS	*Clethra alnifolia, Hydrangea quercifolia, Viburnum acerifolium*
	SMALL SHRUBS	*Rhododendron atlanticum, Athyrium filix-femina*
	PERENNIALS	*Begonia grandis, Hosta spp, Chrysogonum virginianum*
	PROPOSED TREES	*Cercis candensis, Acer rubrum, Cornus florida,*
	EXISTING TREES	

The planting for this area mainly consists of native species, with perennials near the edge and larger shrubs in the middle. Additionally, shade-loving plants have been chosen for this area, as some parts of the site receive more shade during the day.

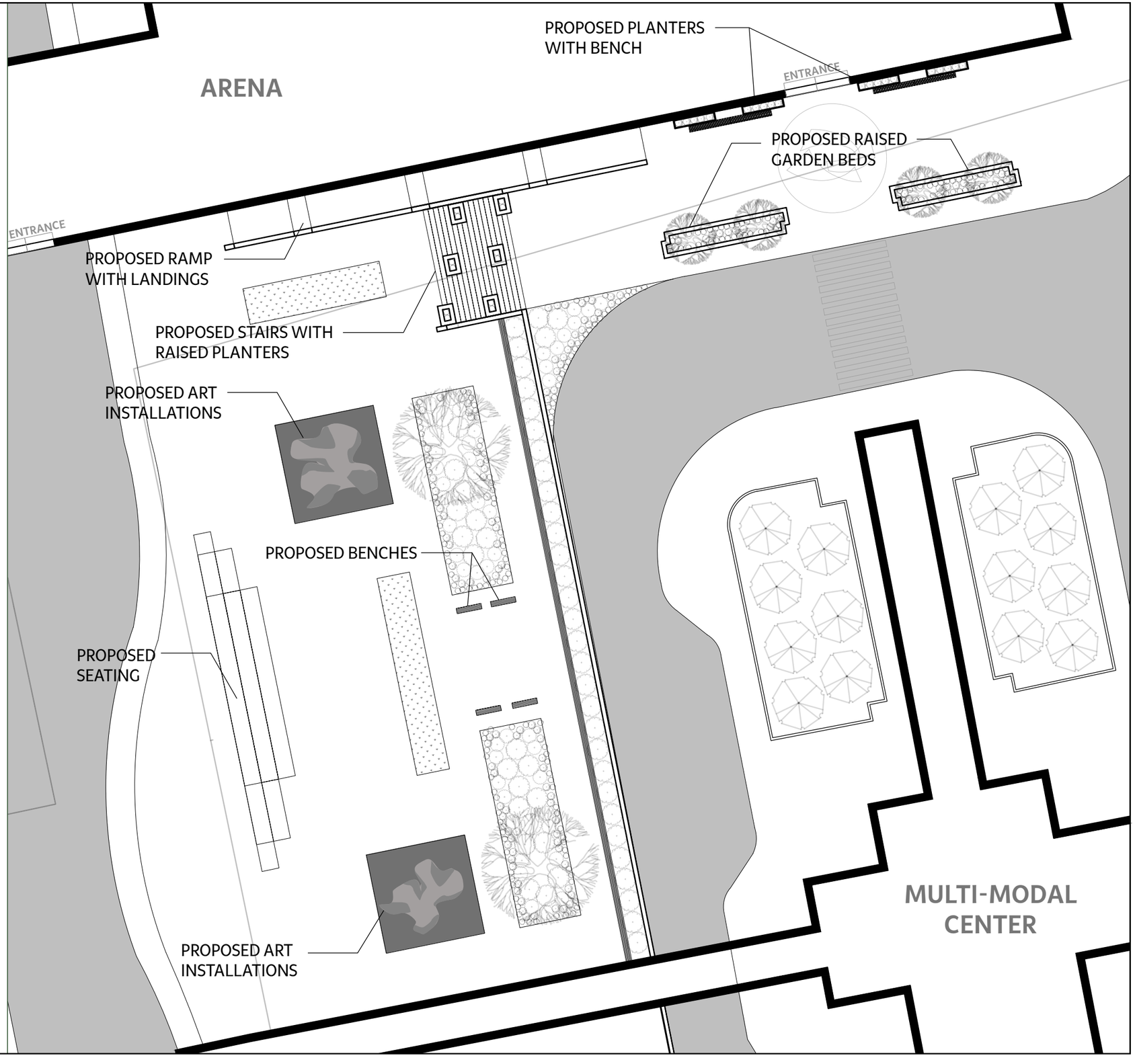


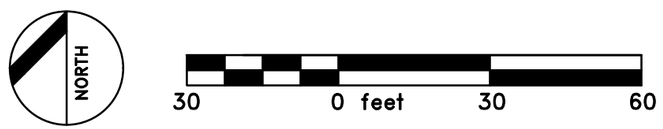
SECTION C - HARDSCAPE

SYMBOL	TYPE	EXAMPLES
	Proposed Installation	 1
	Proposed Seating	 2

The proposed installations are large interactive elements intended to draw visitors to the site. Additionally, creative seating is proposed along the site's edge, beneath the pedestrian bridge. This area can be ideal for events because it is directly visible from the pedestrian bridge and is surrounded by three major buildings (parking deck, arena, multi-modal center). Planters and raised garden beds are strategically placed to help users navigate the site.

1. Elaine Velie, "10 Outdoor Art Experiences in New York City,' Hyperallergic, August 17, 2023, https://hyperallergic.com/839635/10-outdoor-art-experiences-in-new-york-city-summer-2023/
2. High Line Art (@HighLineArtnyc), "Susan Philipsz's "Lachrimae"," X, October 5, 2023, https://twitter.com/HighLineArtnyc/status/783692072184348672





7. CONCLUSION

DISCUSSION

The implementation of musical concepts to a specific site reveals how musical forms can be used to accentuate transitions and apply cohesive themes and narratives, adding depth and significance to the site. This approach helps to enhance the user experience and wayfinding in a complex site. Several factors were considered and selected for implementation on the site.

One significant factor was the selection of a suitable musical form. Ternary, Theme and Variations, and Rondo were all possible choices for this site, so careful consideration and personal interpretation were required. The main theme identified for the site (section A) focused on entrances and potential social gathering spaces, which also recur throughout the site. The characteristic of recurrence (more than three) was closely related to the Rondo or Theme and Variations framework, making these two forms better suited for the site. Further site analysis revealed two contrasting themes, specifically sections B and C, which support the implementation of the Rondo form. Alternatively, a different design approach could be applied by utilizing the Theme and Variations framework, identifying a main theme, and then modifying it to meet the specific needs of each area on site.

Another factor was the specific application of musical harmonic and texture concepts to landscape elements on site. Given the site's complex topography, the unique layering contributes to the site's overall character. Harmony and texture were essential for ensuring a cohesive connection between the various sections of the site. These concepts can be applied in various ways, such as in the spatial organization of all forms and elements combined, or in specific groupings of landscape elements. An example of this implementation on the site is the proposed planting, where the various sizes and layouts of the plants are arranged harmonically to enhance the user experience and create visual interest.

Rhythm, another significant factor, was integrated throughout the design to enhance wayfinding and walkability. By using specific paving pattern and repetition in various landscape elements, user experience, movement, and visual interest were enhanced. This addition contributes to the characteristics, legibility, and cohesiveness of the site, further impacting the overall design.

CONCLUSION

In conclusion, the interactions between musical concepts, terminology, and historical interactions with site design can be implemented to create a cohesive/seamless framework of a set of spaces. From ancient Maya civilization to contemporary urban settings, music and the landscape have inspired and influenced one another in significant ways. Composers have drawn inspirations from the landscape, incorporating ideas through elements such as rhythm, form, and texture into their musical compositions. Similarly, landscape architects have implemented principles of harmony, balance, form, rhythm to design the physical environment.

Incorporating musical elements into site design can enhance the transition between distinct sections. Harmony and rhythm are effective concepts for guiding users through complex spaces, such as with multiple layers of topography. This method produces a cohesive landscape in which each section is distinguished by its opportunities, constraints, and characteristics. As a result, the landscape's legibility improves, allowing a better understanding of the type of space that is best suited to each section. For example, the application of musical concepts in the project site revealed patterns, recurring themes, and unique characteristics of identified areas. This approach greatly assists in the design process by creating a cohesive overall design, improving legibility and user experience, and enhancing the site's characteristics. This approach seeks to define patterns and placement of elements in the landscape through a musical lens, with rhythm, harmony, dynamics, and form serving as a guiding concept to improve pacing and flow. Most importantly, these principles are not restricted to only music-related locations. The overall goal was to create spaces that enhances the user experience and promotes engaging environments, which were shown through patterns and form in the final design. The paving materials, landscape elements, and intended uses for each section are selected to reflect the site's distinct themes and characteristics. Together, they form a composition that connects the entire project site.

Some limitations of this approach include the need for clearly defined terminology and correlations, which may result in the exclusion of other important factors. Furthermore, certain terminologies are dependent on individual background knowledge and interpretation, which can be both beneficial and limiting. For example, there are various interpretations of the musical form "Rondo," where the focus can be on the recurring principal theme rather than on the contrasting sections. Finally, users' perceptions of the same landscape can vary greatly depending on their individual backgrounds and perspectives. What one person finds intuitive may not be the same for another.

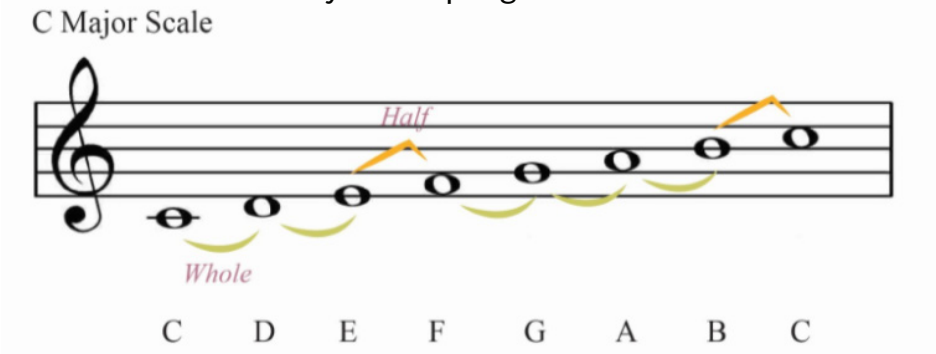
APPENDIX

Musical Concepts and Terminology:

SCALES: A sequential arrangement of musical notes, tones, or intervals ordered by fundamental frequency or pitch, collectively forming an octave.

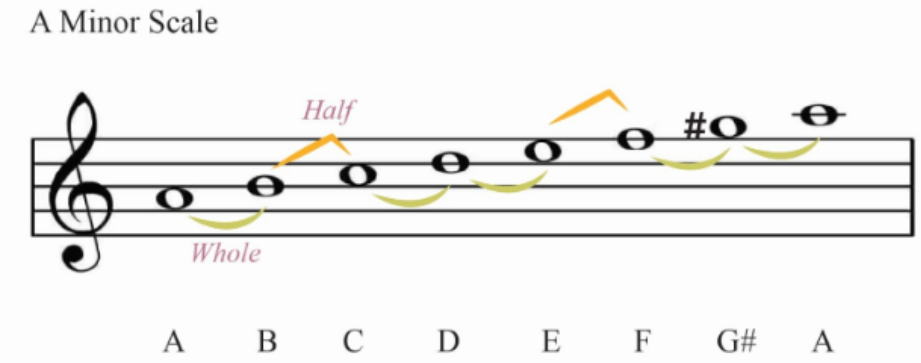
Major Scales: A scale characterized by consecutive whole steps, with exceptions at the third-to-fourth and seventh-to-eighth degrees (interval pattern: whole-whole-half-whole-whole-whole-half), typically imparts a "bright and cheerful" auditory quality. A major key is often associated with the adjectives "cheerful," "happy," "majestic," "innocence," and many more.

One example of the major key conveying a sense of happiness can be found in Vivaldi's "The Four Seasons," particularly in Concerto No. 1 in E major, Op. 8, RV 269, "Spring" (La primavera). The Spring section, set in the key of E major, captures imagery such as a spring storm, birdsongs, and a spirited spring dance. The overarching theme and mood describe the freshness and beauty of the spring season.



Typical Major Scale Pattern/Composition

Minor Scales: Alternatively known as the harmonic minor scale, this musical scale features half steps between the second and third, fifth and sixth, and seventh and eighth degrees (whole-half-whole-whole-half-whole-whole), while incorporating whole steps for the remaining intervals. A minor key is often associated with the adjectives "dark," "melancholy," "solemn," "ominous," and many more.

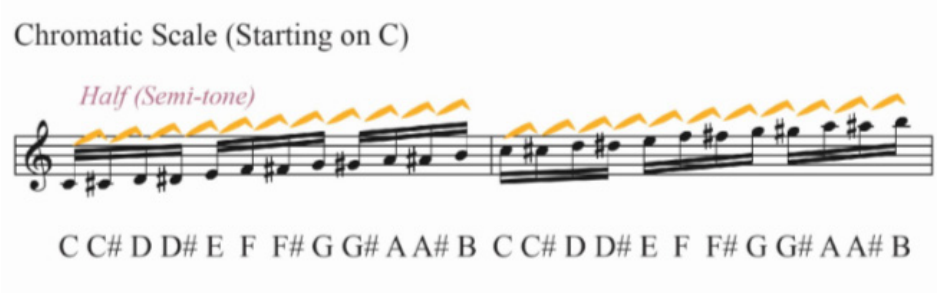


Typical Minor Scale Pattern/Composition

Using Vivaldi's "Four Seasons" as an example, the ominous and somber themes, such as "Storm" and "Winter," are composed in the minor key. These sections vividly depict intense storms and wintry scenes, portraying elements like violent tempests, falling snow, chilling winds, and the challenges of walking on slippery ice.

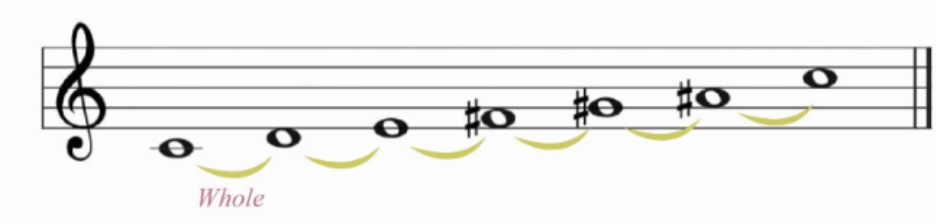
APPENDIX

Chromatic Scales: The chromatic scale consists of twelve pitches, each separated by a semitone (half-step), either above or below its adjacent pitches.



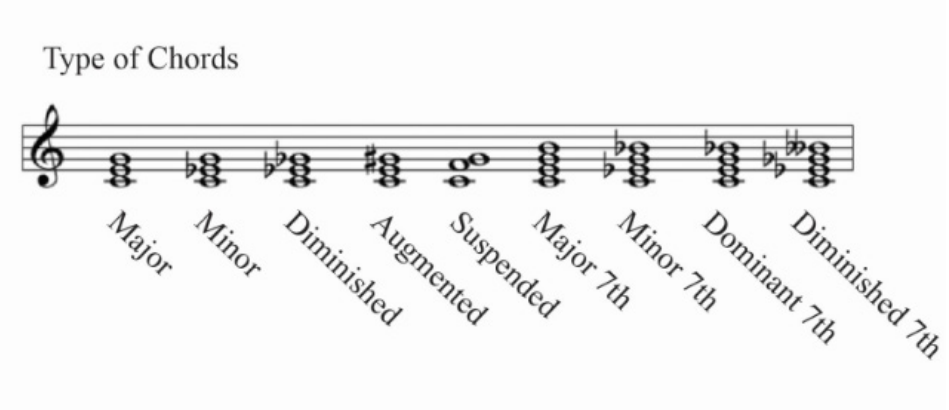
Typical Chromatic Scale Ascending Pattern/Composition

Whole Tone Scales: A scale comprised of whole-tone intervals, without any semitones.



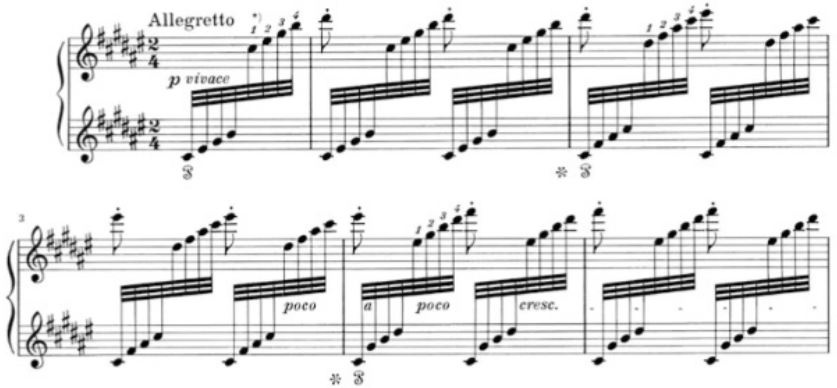
Typical Whole-Tone Scale Ascending Pattern/Composition

Chords: Any harmonic set of pitches comprising multiple notes, also called "tones," sounded simultaneously or close to form harmony. There are major, minor, 7th, dominant, diminished, augmented, and many more.



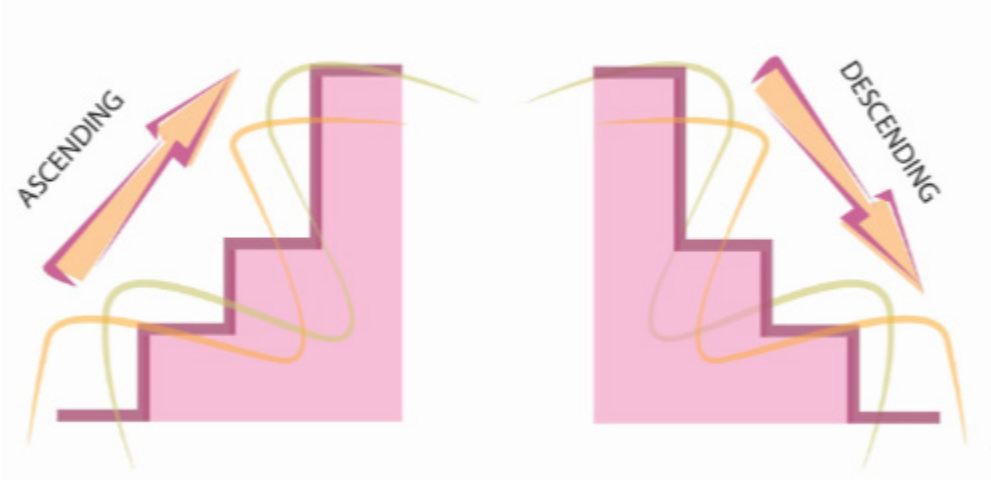
Common Chord Types

Arpeggio: a succession of ascending or descending notes in a chord; can be used to express elements such as trickling, flowing water.



Short excerpt from Franz Liszt's piece "Les Jeux d'eau a la Villa d'Este"

APPENDIX

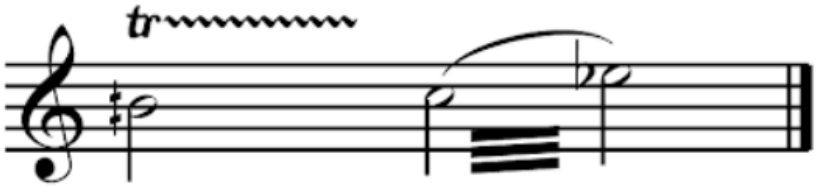


In musical context, the portrayal of Ascending and Descending notes signifies significant changes in directional movement, including both upward and downward trajectories. When integrated with varying rhythmic tempos and musical scales, these alterations can exhibit various characteristics – ranging from swift and forceful, gradual and expansive, or delicately incremental (step-by-step). Such representations parallel the transformative trajectory observed in the fluidity of water, where subdued trickles metamorphose into formidable occurrences reminiscent of thunderstorms and intense climactic events (e.g. Liszt's "Les Jeux d'eau a la Villa d'Este" vs. Beethoven's "Pastorale", 4th movement).

ORNAMENTATION:

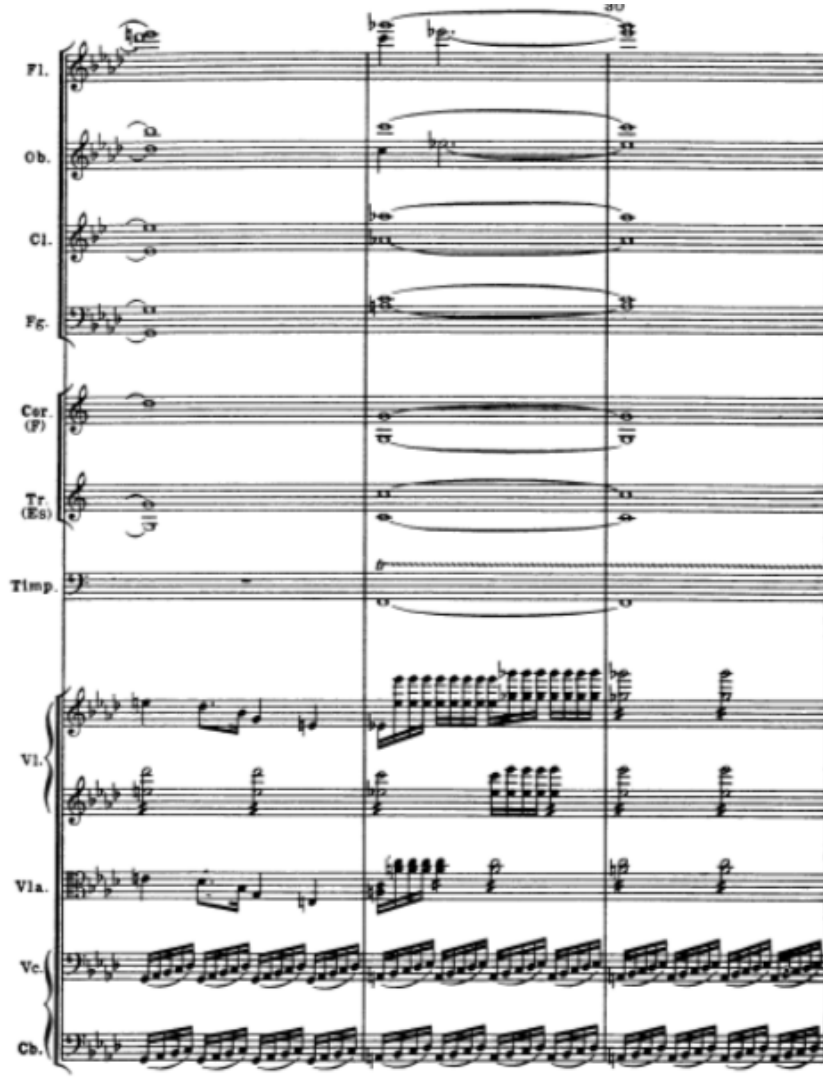
Tremolo: The swift repetition of a musical note or the alternation between tones to create a quick, wavering sound.

Trill: Similar to the concept of Tremolo, a trill involves the rapid alternation between two stepwise notes (half/whole step notes), as opposed to freely moving between any two notes. Commonly, trills find expression in themes that include imitations of bird calls, waves, and more.



Example of Trill and Tremolo in music notation: "Tr~" for Trill and the triple line between the two notes represents Tremolo

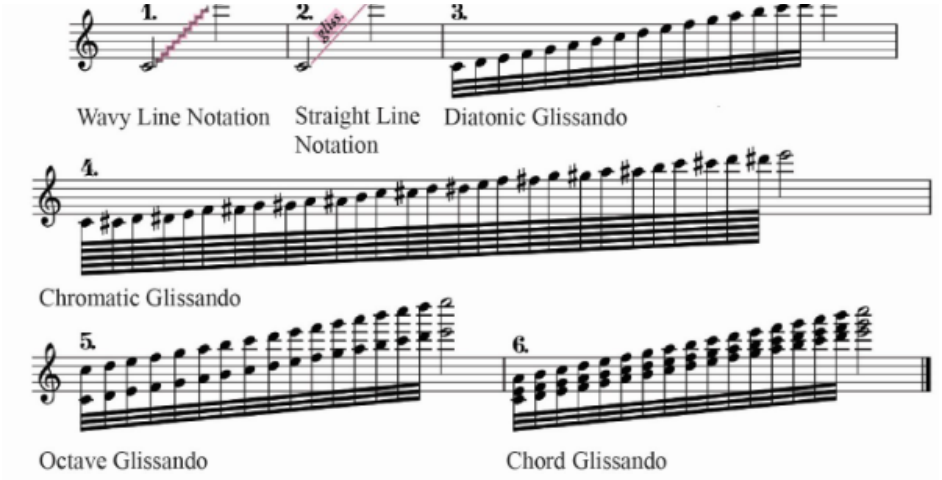
APPENDIX



Excerpt from Beethoven's "Pastorale," 4th movement: Gewitter, Sturm (Thunder, Storm).

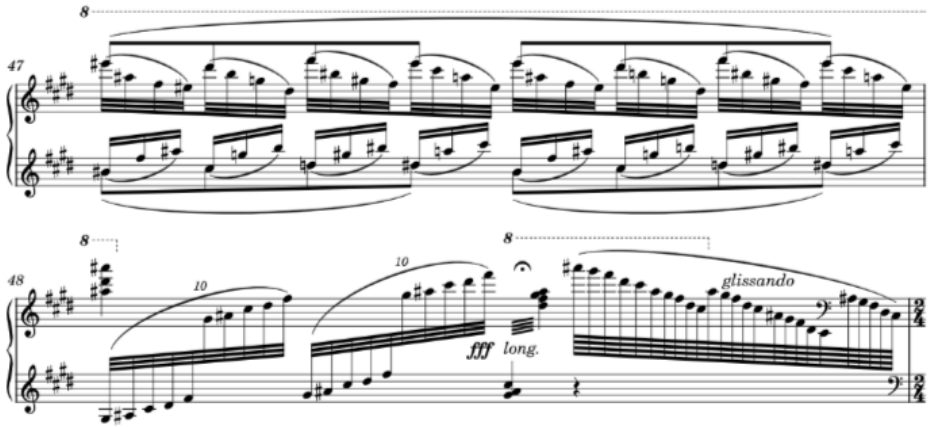
The atmosphere created in Beethoven's Pastorale is comprised of the following raw materials: tremolos, trills, deafening octaves set in the key of F minor, dynamic contrasts ranging from very soft to very loud (including rests), and intense surge.

Glissando: An uninterrupted upward or downward slide between two pitches. The utilization of glissando in music not only invokes imagery but also facilitates smooth melodic transitions and allows for dynamic artistic expression. This adds a layer of interest and captivation to the musical composition and performance. es of chromatic scales.



Different Notations/Types of Glissando

APPENDIX



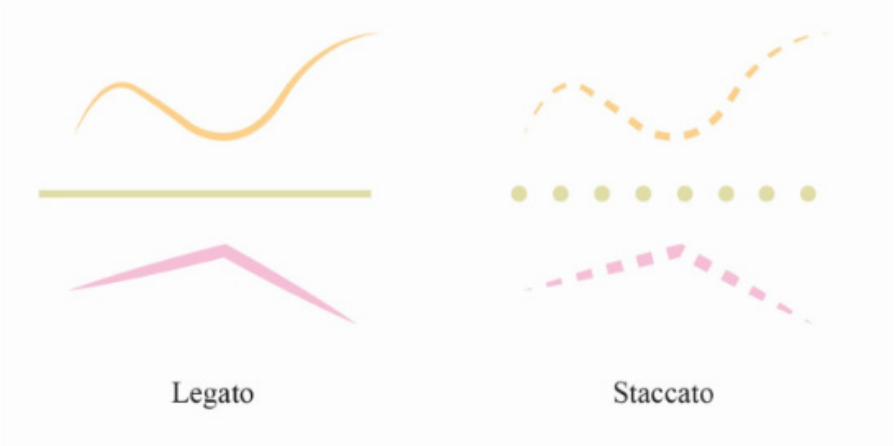
Excerpt from Maurice Ravel's "Jeux d'eau," musical materials include arpeggios, tremolos, and glissando to depict the theme of water

Glissando is utilized in musical compositions such as Ravel's "Jeux d'eau," once again capturing natural elements such as the flowing movement of water. It can also be used in piano music to imitate harp sounds.

ARTICULATION:

Staccato: Italian term meaning "detached," this term is used to describe a musical note with a shortened duration.

Legato: Italian term for "tied together," this term denotes the smooth and connected execution of musical notes, whether played or sung.

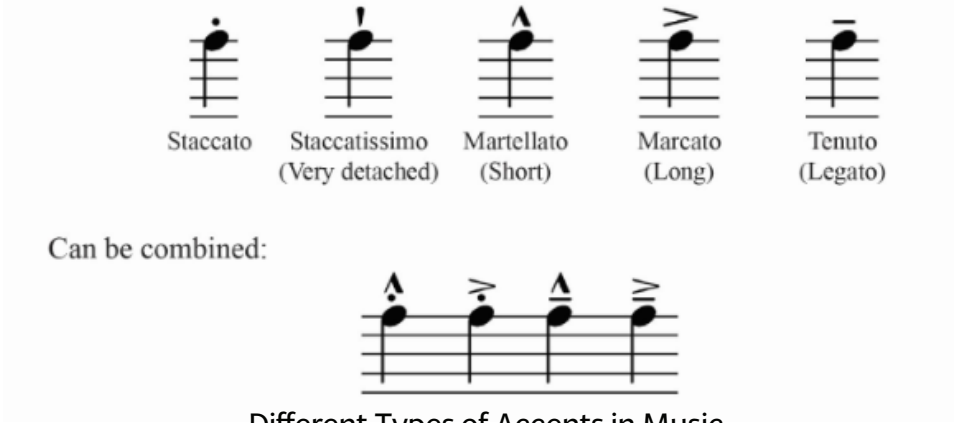


Legato vs. Staccato Melody

APPENDIX

Slurs: A curved line (slur) that connects two or more notes of different pitches, signifying that these notes should be played smoothly and connected, without any interruption.

Accent: An accent involves emphasizing, stressing, or applying a stronger attack to a specific note, set of notes, or chord. This emphasis may arise naturally from the musical context or be explicitly indicated by an accent mark. These stresses can serve as rhythmical foundation in music when occurring regularly and represent sudden changes in dynamics.

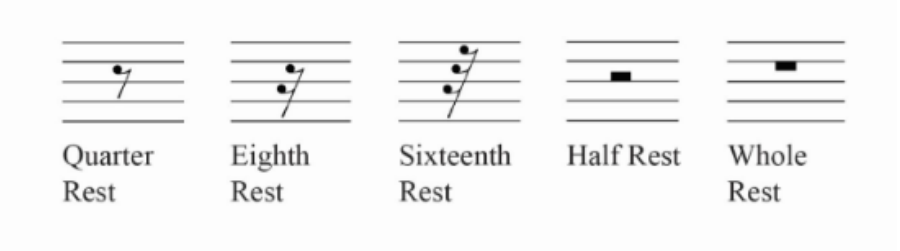


Different Types of Accents in Music

RHYTHM:

Tempo: The pace at which a musical passage is intended to be or performed. Common tempos include Adagio (slow), Andante (walking speed), Allegro (fast), and Presto (exceptionally fast).

Rests: Designated duration of silence in a musical passage or the notation symbol employed to denote such an interval. Rests are important elements of rhythmic patterns.



Different Types of Rests in Music

APPENDIX

DYNAMICS:

The dynamics of a musical piece involve the variation between soft and loud notes or phrases, essentially shaping and defining the volume levels.

Piano, Mezzo Piano, and Pianissimo: Piano stands for “soft,” mezzo piano stands for “moderately soft,” and pianissimo stands for “very soft.”

Forte, Mezzo Forte, and Fortissimo: Forte stands for “loud,” mezzo forte stands for “moderately loud,” and Fortissimo stands for “very loud.”

Subito: Latin term for “suddenly, unexpected, immediately.” Subito can be used to mark a sudden change in dynamics, such as subito piano (suddenly quiet) in a musical passage.

Sforzando: Sforzando stands for prominent accent or emphasis in musical markings. Examples in markings in a musical passage would be “sfz,” “sfffz,” and so forth. It is essentially the same as forte with an accent.

Crescendo: Represents a gradual increase of volume in music.

Decrescendo: Represents a gradual decrease of volume in music.

Dimuendo: Similar to decrescendo, dimuendo represents a gradual decrease of loudness in music. However, dimuendo can also represent slowing down in a musical passage.

APPENDIX

HARMONY:

Harmony is created when two or more notes or melodies are played simultaneously.

Dissonant: Occurs when an interval or two or more tones clash, resulting in unpleasant and unstable sounds that require resolution. Dissonance is frequently characterized as tense or undesired sounds.

Consonant: Consonance refers to intervals or tones that complement one other, resulting in pleasant sounds. It is commonly connected with stability, arrival, and resolution.

TEXTURE: Musical texture refers to the interplay and density of musical lines within a composition, which involves the combination of tempo, melody, and harmony.

Monophonic: Monophonic is a musical texture that typically consists of a single melody without accompaniment.

Polyphonic: Polyphonic is a musical texture that typically consists of two or more melodic lines or tones played simultaneously.

Heterophonic: Heterophonic is a musical texture characterized by simultaneously playing variations of the same melody.

Homophonic: Homophonic is a musical texture that typically consists of a single melody with accompaniment.

APPENDIX

FORM:

Form is the musical framework and structure of a musical composition. Like how different landscape elements influence the user experience through the landscape, form, are "the ways in which a composition is shaped to create a meaningful musical experience for the listener[1]." The following will be common forms found in western music.

Binary Form: Binary form in a musical composition consists of two sections, which can be repeated throughout the piece. It is commonly structured as "AB" or "AABB," where A and B represent the different sections.

Ternary Form: Ternary is a three-part form in which the main theme returns. It has three sections "ABA": A which is the main opening section, B section with contrasting materials, and a return to A with materials from the main opening section.

Rondo Form: Rondo form, like ternary form, is typically comprised of three or more sections. It features a main section that alternates with contrasting sections. Common structures of Rondo form include ABACA (five-part), ABACABA (seven part) and ABACAB, with possibility for further alternation, such as ABACAEA.

In the rondo form, a recurring theme (refrain) is introduced and reappears throughout the entire piece. Between these repetitions of the main theme are contrasting sections (episodes), usually in different keys. The main theme is designated as A, and the contrasting sections are labeled B, C, and so on.

1.Stefan Kostka, *Tonal Harmony*, (McGraw-Hill, 1995), 152.

APPENDIX

Sonata Form: The sonata form is usually comprised of three main sections: exposition, development, and recapitulation. Additionally, there may be an introduction and a Coda (concluding passage/section). The exposition includes the primary thematic materials, while the development explores the textural and harmonic possibilities of the primary thematic materials. The recapitulation revisits the primary thematic material in tonic key, and often ends with the Coda.

Theme and Variations (Form): One of the common musical structures, theme and variations is mainly based on a primary theme/idea. After the theme has been presented, the theme is then developed and altered in other sections, known as variations.

Ostinato: Ostinato is a short, repeated rhythmic pattern/melodic phrase throughout a musical composition. It is an idea in a musical composition that repeats, tying elements of the theme together.

BIBLIOGRAPHY

Adhitya, Sara. “Musical Cities: Listening to Urban Design and Planning.” *DGO-Digital original*. UCL Press, 2017. https://doi.org/10.2307/j.ctv550cz9.

“Ancient Greek Theatres.” *UNESCO World Heritage Centre*, https://whc.unesco.org/en/tentativelists/5869/.

Booth, N. K. “Foundations of landscape architecture: Integrating form and space using the language of site design,” *J. Wiley*, (2012).

Brown, Brenda J. “Gardens and Music: An Initial Survey, Probing Potentials.” *Thecela.Org*, thecela.org/wp-content/uploads/5-Brown-Paper-LRR-3.pdf.

Buck, D.N. (2017). “A Musicology for Landscape (1st ed.).” *Routledge*. https://doi.org/10.4324/9781315208879

Buja , Maureen. “A Close Look at Handel’s Water Music!” *Interlude,* 27 Mar. 2023, interlude.hk/outdoor-music-handel-water-music/.

Centre, U. W. “Villa d’Este, Tivoli.” *UNESCO*. https://whc.unesco.org/en/list/1025/.

Crossley-Holland, P. “Rhythm,” *Encyclopedia Britannica*, (12 November 2020). https://www.britannica.com/art/rhythm-music

Eckhardt, M., Mueller, R., & Walker, A. “Liszt, Franz.” *Grove Music Online*. (20 Jan. 2001). https://www-oxfordmusiconline-com.subzero.lib.uoguelph.ca/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000048265.

Kostka, Stefan and Payne, Dorothy. “Tonal Harmony,” p.152. *McGraw-Hill*. (1995). ISBN 0-07- 035874-5.

BIBLIOGRAPHY

Lee, H. Thomas. “Evocations of Nature in the Piano Music of Franz Liszt and the Seeds of Impressionism.” *University of Washington.* (2016). http://hdl.handle.net/1773/36781

“Make Music New York: Concerto for Buildings.” *Indiegogo*, www.indiegogo.com/projects/make-music-new-york-concerto-for-buildings#/.

Marshall, Em. “Music in the Landscape.” *Robert Hale Ltd.*, London, (2011).

Moore, David W. “Bach: Cello Suite 1 - The Music Garden.” *American Record Guide*, (1 November 1998). https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,shib&db=edsgao&AN=edsgcl.53273206&site=eds-live.

Morgan, R. P. “Musical Time/Musical Space.” *Critical Inquiry*, 6(3), 527–538. (1980). http://www.jstor.org/stable/1343107

Morrow R. Matthew. ““Complex Impressions”: Nature in the Music and Criticism of Claude Debussy.” *University of Rochester*, Rochester, New York, (2011). http://hdl.handle.net/1802/23567.

Porat, Itay G. “Is Landscape Music?” *Landscape Journal* 42, no. 2 (July 2023): 1–24. doi:10.3368/lj.42.2.1.

Rich, A. “harmony.” *Encyclopedia Britannica*. (9 May 2019). https://www.britannica.com/art/harmony-music

Stefano, N. “The spatiality of sounds. From sound-source localization to musical spaces.” (2022). *Aisthesis. Pratiche, Linguaggi E Saperi dell’estetico,* 15(1), 173–185. https://doi.org/10.36253/Aisthesis-13617

BIBLIOGRAPHY

Taylor, Benedict. “Seascape in the Mist: Lost in Mendelssohn’s Hebrides.” 19th-Century Music, vol. 39, no. 3, (2016), pp. 187–222. *JSTOR*, https://www.jstor.org/stable/26348862.

Telarc. “Michael Gandolfi - The Garden of Cosmic Speculation.” *YouTube*, (10 Dec. 2007), https://youtu.be/q_b1GT0q6HE?si=qT1ikxn0iCDn-AQl.

“The Wave Organ.” *Exploratorium*, www.exploratorium.edu/visit/wave-organ.

The Zoe Ball Listening Garden. “RHS Chelsea Flower Show 2017.” *RHS Gardening*, www.rhs.org.uk/shows-events/rhs-chelsea-flower-show/history/2017/gardens/the-zoe-ball-listening-garden.

Vizcaino Arevalo, Diego Fabian, and Olga Lucia Castiblanco Abril. “Reproduction of the Acoustic Effect of the Kukulkan Pyramid by Delay Effect in DAW.” *Physics Education* 57, no. 6 (1 November 2022). doi:10.1088/1361-6552/ac8519.

Weaner, Larry. “Larry Weaner: Music Composition & Landscape Design.” *New York Botanical Garden*. (12 May 2021). https://www.youtube.com/watch?v=zbR rj3nR5iE&t=1969s

Yurkewicz, Katie. “Charles Jencks: The Garden of Cosmic Speculation.” *Symmetry magazine*. (28 July 2016). https://www.symmetrymagazine.org/article/october-2010/charles-jencks-garden-cosmic-speculation?language_content_entity=und.

Zuckerkandl, V. “Sound and Symbol: Music and the External World”, *Pantheon Books*, NewYork. (1956).