

A Theater and Amphitheater for Chamber Music on a Mountain Meadow

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**A THEATER AND AMPHITHEATER FOR
CHAMBER MUSIC ON A MOUNTAIN MEADOW (ABSTRACT)**

The subject for this thesis is the design of a theater and amphitheater for chamber music, upon a beautiful site-- a mountain meadow.

The site, context and program which serve as a starting point for the new design are based on a *real* site and context: that of an existing center for chamber music, situated high in the mountains, housed in the buildings of an old estate. In creating the design for the new building, it was attempted to achieve and integrate several goals:

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- To create spaces (a theater and an amphitheater) which would enhance the experience of (listening to) chamber music-- both visually and acoustically.
 - To address the functional and practical requirements for a building which is to be used as a center for the performance of music.

This includes the resolution of a whole range of architectural concerns, including such issues as: structure; form; program and plan; the use of materials; public and private areas; entrance and circulation; the use of daylighting; the framing of views; an attention to human scale; and the design of a building with the consistency to 'read' as a whole, rather as than an assemblage of parts.

- To take advantage of the beautiful landscape and view from the new building site, and to attempt to integrate the form and character of the *new* building sensitively and gracefully onto the existing site.

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This book is dedicated to

With special thanks
to three very special friends--
, and

Intent / Overview

Introduction / Intent

What this thesis is about is the design of a center for the performance of chamber music-- a theater and an amphitheater to be (theoretically) built on a beautiful mountain meadow. The design takes as its starting point a real site and a real context: an already-established center for chamber music which is housed in the buildings of an old country estate, located high in the mountains.

In the design process, we embark from two aspects of beginning: the respect for a very beautiful site, and the intent to design a place which will enhance the experience of chamber music. It is hoped, then, that the design will grow and evolve equally from these two directions-- from the music and from the site. The intent is that the design create a building (for music) which will grow from and grace the site on which it is built.

An overview of the project/ organization of the book.

This study is about the design of a theater and amphitheater for chamber music. The site, context, and program for the new building are based upon a real site and a real (existing) center for chamber music-- the Garth Newel Music Center, near Hot Springs, Virginia.

The existing music center, located in the buildings of an old estate (situated high on a mountain meadow) presents professional chamber music concerts, open to the public; the performances are presented in the buildings of the estate (in the manor house, and in the former 'horse rink'), in rooms which can accommodate small audiences of 100-200 listeners. And both the music and the setting in which it is played are delightful.

The rooms (in the estate buildings) in which the concerts are performed are rustic and pastoral in atmosphere. Because of their small size and informal style, they are intimate in ambience. And they are also surprisingly good-sounding (acoustically). They are indeed delightful settings in which to attend concerts performances. But these rooms were not, in fact, originally designed and built for the performance of music. Although they are charming spaces, they cannot provide the members of their audiences with good lines of sight to the area of the stage (where the performances take place). And thus to about half the members of the audience (all of whom are seated on the same level), the performances are heard but not seen: so to these individuals, the visual aspect of the concert is virtually lost.

So for this thesis project (as an exercise in design) it was undertaken to design a *new* music center for this site, a theater and an amphitheater specifically designed for the performance of chamber music. The new design takes as its fundamental basis (defining its site and its program) the existing (real) site and program of the existing music center. But whereas the existing music center is housed (retrofitted) in the buildings of the old estate, the new design will create a building complex (theater and amphitheater) which is specifically designed for the performance of music.

To establish the place from which the new design *begins*, then, the following aspects of the *existing* music center must be studied and described: the site, the context, and the program. It is from the site and the context, organized along the requirements of the program, that the *partie*, the form, and the structure of the building will evolve.

So the history of the site, the site itself, and the buildings of the context will be described early on in this narrative, as a background for the design which is to follow. The design, itself, will then be illustrated in the *following* chapters of the book, in sections relating to different aspects of the building: site/ *partie*; organization of the building/ program; the structure; the auditorium; and (finally) the *form* of the building complex as a whole.

History/ Background/ Context

Garth Newel. (introduction and overview)

The site and program for the *new* design (of a center for chamber music) are based upon the site and activities of a existing center for chamber music, located high in the mountains-- the Garth Newel Music Center, near Hot Springs, Virginia.

Garth Newel is situated in a beautiful mountainous region of west central Virginia, the Alleghany Highlands-- in the buildings of an old estate, perched high on a mountain meadow. Its setting is rural, pastoral; and from its mountain meadow, the music center enjoys a spectacular view (down the clearing) of the valley and the mountains beyond. Here, in the buildings of the estate, Garth Newel presents professional chamber music concerts which are open to the public. In the wintertime, concerts are performed in the living room of the manor house; and summer concerts are presented in an (unheated) wooden building which was once the 'horse rink'-- a sort of barn-like structure with a wooden trussed roof-- with its doors and windows wide open, to the chirping sounds of crickets, and to the fragrant freshness of the mountain air.

It is important that the design for a *new* theater and amphitheater for this special site take its *beginning* by carefully studying the nature of the *existing* site and existing context-- for the site and its existing buildings exist in a graceful yet fragile harmony. So while the new building has the advantage of a very beautiful site, its design must be extremely sensitive to the existing site and context-- such that the new building not spoil the very harmony and beauty that it wishes to celebrate, but *rather* that it might respect and reinforce the 'essence' of the site's simplicity and natural beauty.

To better understand this special site and its context-- and because of the importance of the site to the new design-- it will help, first, to better understand a little bit about the geography and history of the *region* in which the site is located: the Alleghany Highlands of Virginia. Then, resting upon the foundation of that larger view, we will return to describe in greater detail the estate at Garth Newel: its history, its buildings, and the music center's activities.

The region. (introduction and description)

The site of the music center is located in the beautiful Alleghany Highlands of western central Virginia. The area is a lovely and majestic part of the Appalachian range, mostly wooded, and almost entirely undeveloped industrially. Within this area of the mountains, there exist a number of naturally-occurring hot springs, which have long been sought out for the healing benefits of soaking in their hot mineral water pools.

To take advantage of the springs, there developed (as early as the late 17th century) health spas in the area, a few of which became huge elegant resorts frequented by the wealthy. And because of the beauty of the mountains, as well as the springs, many estates are also located in the area near Garth Newel. The names of many of the local towns reflect the importance of the springs to the

region: Hot Springs, Warm Springs, Millboro Springs, Falling Springs, Healing Springs. And so the name of the county where these towns are located is, appropriately enough, Bath County.

Bath County is a spectacularly beautiful area of steep mountains and valleys, covered with forest. Elevations within the county range from 1140 to 4477 feet. The rugged landscape is a stunning combination of mountain and valley, forest and meadow, stream and sky. The scenery along the drive which leads you *into* Bath County, from the direction of Roanoke, is a delight in itself, and an excellent introduction to the land.

Winding along the steep, narrow mountain roads, up you climb-- winding higher and higher, up into the mountains. The winding road leads you through lush green forests; past rushing mountain streams. The mountain air, as you drive, is clean and fresh, fragrant sometimes with the smell of honeysuckle. As the road emerges, intermittently, from the shelter of the forest, the view will suddenly break wide open-- revealing spectacular scenic overlooks, distant vistas of the mountains far beyond. Continuing on, the road now leads you through grassy green meadows, dotted with occasional farm houses, country churches and barns. Then back into the forest again, emerald green. The road is constantly curving. The scenery seems constantly to be changing. And the entire scene is one of pristine and nearly breathtaking natural beauty.

The land in Bath County has indeed been left remarkably natural and undisturbed from commercial development. Eighty-nine per cent of the county is forest, and of that acreage, half lies within the George Washington National Forest. There are no incorporated towns and no traffic lights in the county. And the population of the entire county (sprinkled about a dozen small towns) is less than six thousand.

A small amount of development to the county has, of course, occurred over the years-- much of which centers around the springs and the scenery. The hot springs still exist, and people still come to seek their comforts. And so there are resorts, spas, inns along the scenic back roads. But it has been a gentle development. And through it all, the splendor of the spectacular mountain scenery remains mostly unchanged, timeless in its beauty.

History of the region.

Because of the beauty of the land-- and of course because of the springs-- the primary development of Bath County, historically, has been as a resort area. Visitors seeking the healing waters of the hot mineral springs began coming to Bath County as early as 1750. Thomas Jefferson 'took the waters' here, as did the frail wife of Robert E. Lee.

While the springs were originally sought out for the medicinal and therapeutic value of soaking in their warm water pools, they became, as time went on, more and more sought after as centers of pleasure and social activity. By the late 1700s, the fashionable aristocracy of Virginia would go to the springs for several

months a year-- arriving in early summer, 'disporting in pleasant company' for several months, and then returning once again, as the cooler weather came on, to the lowlands.

It was fashionable, in those days, for people to move (in groups) from one spring to another-- from the Warm Springs to the Hot Springs, from the Hot to the Sweet, from the Sweet to the White. Bathers would thus progress from one spring to the next (driven in horse-drawn coaches over the steep mountain roads) virtually *en masse*, in a group composed of the highest society of the times.

By the early 1800s, records show that six thousand persons were coming to the springs annually. And so the area naturally developed a number of resorts and health spas, a few of which became huge, elegant resorts frequented by the wealthy. The most prominent such spa and resort, built around the mineral springs, is The Homestead-- located in the town of Hot Springs. The Homestead dates back to 1766; although the elegant hotel and resort which *now* exist were built in the early 1900s (after a fire destroyed the original resort in 1901).

The Homestead is a sprawling impressive old hotel with an air of luxury and 'old money' opulence. The hotel boasts elegant lobbies and lounges, ballrooms and dining rooms, spa facilities, and landscaped grounds which extend for miles. It is probably the single most prominent feature of the county.

But besides the resorts and spas-- drawn by the beauty of the mountains, the hot springs, and the temperate summer climate-- many elegant estates and summer homes of wealthy families were also built in the Bath County area. One such estate, built in the 1920s, was a place called 'Garth Newel', now a music center. It is upon this site (of the estate at Garth Newel) that the design in this thesis study is based.

Garth Newel (History of the estate)

Garth Newel is located about half way between the towns of Hot Springs and Warm Springs, Virginia-- towns which owe their names to the fact that there is a three degree difference in the temperatures of their respective thermal springs. Garth Newel was built as a country estate in the 1920s, for a couple who came from the Northeast to live there-- to make the estate their new home. In celebration of the event, they named the estate 'Garth Newel', which means 'new home' in Welsh.

The land on which the estate was built lies on the northwest slope of Warm Springs Mountain, and faces the next ridge, which is called Little Mountain. Much of the land is wooded; but the estate's buildings are located along the edges of a large, open meadow, a clearing in the forest. And from this meadow, there is a long, lovely view (down the clearing, which winds down the hillside) of the valley and of the mountains beyond. The estate buildings were built mostly of wood-- native American chestnut, cut from the site-- with local stone used here and there to build small retaining walls and stone steps. The buildings of the estate included the manor house (the main residence); a 'horse rink' (a building

used to exercise horses); a barn (which was used as a 'stable'), and several small cottages.

The people for whom the estate at Garth Newel was built were William Kendall, and his bride, Christine Herter Kendall. Both members of the couple were fine artists, both painters. Mr. Kendall had been Dean of the Yale Art School. And it was at Yale, in fact, that Kendall and Miss Herter first met-- he was a professor there, and she was one his students of art.

When Kendall became married to Christine Herter, it was his wife's influence that led the couple to make their home at Garth Newel. Christine Herter had, as a girl, grown up in New York City. But her family came every summer to the Hot Springs area (to the Homestead) to vacation; and there they stayed all summer. And she had fallen in love with the area. So, upon Christine's marriage to William Kendall, they decided to make the Alleghany Highlands their home, the place they would begin their new life together.

They bought the land on which to build their estate, 114 acres, located between Hot Springs and Warm Springs. The land, when purchased, had no existing buildings on it. So the manor house (built as a wedding gift from the bride's mother) was to become the first building of the new estate; its construction was completed in 1924.

Because both members of the couple were artists, the manor house contained two large, separate studio spaces, where husband and wife could each work on their (respective) paintings. The couple also raised fine Arabian horses. So, for the horses they so loved, two more buildings were built: one a stable, where the horses would live; the other a large, truss-roofed indoor riding rink, where the horses could be exercised. Three small cottages were eventually added to the estate as well.

During their life together, Mr. and Mrs. Kendall were both devoted to art. But they also shared a deep love of music. Both were musicians, violinists; and they would sometimes invite guests out to the estate to play chamber music with them, string quartets.

But because William Kendall was much older than his wife, she survived him by many years after his death in 1939. And in the later part of her life, Mrs. Kendall began to give thought to the future of her estate, her beloved home at Garth Newel. She had no children, and as such no natural heirs. But she wished that her beloved home, the estate which held such deep value for her, might somehow live on and give joy to others-- perhaps as a center for the arts.

In seeking to find a *form* in which to realize this vision, Mrs. Kendall first considered that the estate might become a center for the fine arts. In this regard, she met with several groups of artists, painters, to discuss possibilities. But somehow, these meetings did not take wing; something about their dynamics was not quite right. It was around this period of time (1972) that Mrs. Kendall was introduced by a mutual friend to Luca and Arlene Di Cecco, chamber musicians who were both then members of a string quartet.

Still seeking a form in which her vision of Garth Newel as a center for the arts might be realized, Mrs. Kendall invited the Di Cecco's to visit Garth Newel-- to play some music, to explore some possibilities. Mrs. Kendall was interested in knowing 'what they might do with the manor house'-- in terms of using it as a center for the performance of music, or for teaching.

Di Cecco s accepted Mrs. Kendall's invitation. They came to Garth Newel; and they brought with them some of their students, who performed a concert for Mrs. Kendall during that first visit. After that time, the Di Cecco's were invited back, not once but many times. They would come to Garth Newel on holidays-- in the summertime; at Christmas and Thanksgiving; and they would play music for Mrs. Kendall and her friends. And over this time, a strong bond of friendship and trust developed, together with a growing clarity of vision of the center for chamber music which could someday be created at Garth Newel.

For many years, the Di Ceccos and Christine Kendall together planned the future of Garth Newel. And they shared a 'natural vitality and chemistry which slowly turned the dream into reality'. 'More than one idea,' according to a historical note in a concert brochure by Garth Newel, 'was given birth over an afternoon tea, an intimate dinner or a fireside chat in Mrs. Kendall's painting studio.'

And in time the dream did indeed become reality. Upon Mrs. Kendall's death, she willed that her estate become the Garth Newel Music Center. Her bequest included land; buildings to provide concert halls, residences for students and visiting artists, and practice facilities; personal property; and a small endowment for the physical maintenance of Garth Newel. And it was Mrs. Kendall's wish that her friends Luca and Arlene Di Cecco should serve as the directors of the Garth Newel Music Center, and 'share in the trusteeship of her dream'.

The Di Ceccos represent a direct link between the vision and dream of Christine Herter Kendall-- the creation of a center for chamber music from her estate at Garth Newel-- and the reality of the music center today. Together with Mrs. Kendall, they shared, masterminded, brainstormed the vision; and by the force of their vitality and industry, slowly they turned the vision into reality.

Today, Mr. and Mrs. Di Cecco serve as the directors of the music center. They are also members of the center's resident performing ensemble, the Garth Newel Chamber players-- Luca plays cello, Arlene violin. As the music center's directors, the Di Ceccos, besides performing, also serve to coordinate a wide range of other activities-- from arranging the details of the concert performances; to coordinating the summer student program at Garth Newel; to arranging publicity for the music center; to overseeing fundraising for Garth Newel's continuing support. They are extremely talented and dedicated people; and their energy and devotion to Garth Newel is elemental to the quality which characterizes the entire music center.

The Garth Newel Music Center today is set up as a not-for-profit organization. It is supported by endowments and private donations; and its operation is overseen by the Board of Directors of the Garth Newel Foundation, which was formed in 1975. The center presents professional chamber music concerts, which are

open to the public, as well as offering a summer teaching program for the training of promising young chamber musicians. Christine Herter and William Kendall both loved fine music. And today, thanks to Mrs. Kendall's generosity and her vision toward the future, the estate that was once her home lives on, now as a center for chamber music.

The buildings of the estate.

The buildings of the old estate, in which the music center is now housed, have been given only minor modification in their conversion to the service of chamber music. Very much, the buildings-- and the estate in general-- retain their original character: that of a rustic and pastoral country estate.

There are three main buildings on the meadow: the manor house; the former 'horse rink' (once used to exercise Arabian horses); and a large barn, which was the stable. Of these three buildings, two are currently being used for performances of chamber music: the manor house, where concerts are presented during cold weather; and the 'horse rink', now called Herter Hall (which is not heated), where summer performances are given.

The manor house (as seen from the *exterior*) is a large, plain-looking, three-story frame house with a rather severe looking facade; topped by a Mansard-style roof. However, behind this somewhat harsh exterior, the interior of the building is completely different in character: once inside, the the manor house has all the charm of a rambling, rustic, country manor.

On the first floor of the manor house, there is a large, rectangular 'great room' (50' X 30'), complete with grand piano, fireplace, and exposed ceiling beams which are made of chestnut wood. It is in this room that the wintertime chamber music concerts at Garth Newel are presented: chamber chamber music performed in a 'chamber'-- as the music was originally intended. And adjoining the living room of the manor house (with a second grand piano) is a lovely library and music room, which looks out onto a stone patio, and garden.

Private areas of the house are located on the upper floors. Here, besides several cozy private guest rooms (with fireplaces), there are also two separate 'apartments' which were maintained as separate living quarters for the two members of the couple who originally lived there, both of whom apparently liked their privacy. Each apartment included a large, two-story studio space for painting, as both members of the couple were artists. The studio spaces are large, spacious, well-lighted rooms, whose high gabled ceilings are supported by wooden scissors trusses.

The 'horse rink' (now called Herter Hall) is a sort of barn-like building that was once used for exercising horses in wintertime and in inclement weather; it is in this building that the summertime chamber concerts at Garth Newel are given.

The form of this building is different from that of a barn in that it has a simple, low-pitched gable roof, which is supported by wooden trusses. The use of

trusses for the roof structure of this building allowed there to be a large, open floor area in which the horses could be run, without intervening columns to get in the way.

The remaining buildings of the old estate-- besides the manor house and Herter Hall-- include the barn (which was originally used as a stable), and several small cottages. These are simple and typical frame buildings, with wooden siding. And they are, (like all the buildings of the old estate), painted white.

The current music center's activities.

Currently, the music center at Garth Newel serves two functions. Its primary role, and the one most apparent to the general public, is of course the performance of chamber music: the presentation of concerts. But the music center also presents a summer program of *studies*, for the teaching of promising young chamber musicians-- the 'Summer Chamber Music Fellowship at Garth Newel'.

Each summer, a few talented young musicians come to Garth Newel to study the art of classical musicianship. About twenty students, between the ages of fifteen and twenty-three, are accepted to participate in the program, which lasts about a month. During that time, the students and faculty live together, eat together, study together, and even share the chores-- like a big family with its consciousness centered on music. They study music, both on their individual instruments, and in the art of ensemble playing. They exchange ideas. They present concert of the works they have studied and prepared. And so the total experience of the program, a constant interaction between faculty and students living and working together, presents 'a unique opportunity for all participants to exchange a broad range of musical ideas, concepts and experience'.

So with this unique summer program, the music center-- besides its presentation of professional performances-- also serves the important role of *training* the promising young musicians who may, (partly from the benefit of this exceptional experience) go on to become the great performing artists of the future.

But the *primary* role of Garth Newel is its presentation of concerts. The chamber music performances at Garth Newel are mostly presented in the summertime, in Sunday afternoon concert series. These concerts are usually presented in the rustic, truss-roofed building called Herter Hall. As well, sometimes a fall concert series is offered, for which, if the weather has turned cool, performances are presented in the manor house. And occasionally, evening concerts are offered-- sometimes in combination with gourmet dinners-- presented in the great room of the manor house.

The combination of the beautiful site at Garth Newel; the rustic simplicity of the buildings of the estate; and the great depth and beauty of the music performed; seem to work together synergistically to create quite an exceptional ambience which-- at the same time induces a feeling of serenity and also seems to heighten the awareness of one's senses. The site's beauty is powerful. And because of its relative remoteness, the site also enjoys a near absence of the 'extraneous sounds of contemporary life.'

It is somehow surprising to be able to hear so much quiet, with only the sounds of the wind, the crickets, the birds.

Many concertgoers drive several hours to attend concerts at Garth Newel. And once arrived, they pause (before or after concerts) to enjoy the beauty and tranquility of the setting-- to stroll about the grounds, to climb to the top of the grassy meadow, to gaze at the view of the mountains, or perhaps to venture for a short exploration into the forest. It is into this setting, then, that the music is played-- spilling out of the rustic buildings, to waft across the meadow on the mountain breeze.

The performing chamber ensembles vary in format, according to the compositions to be performed-- trios, string quartets, quintets; an occasional sextet. And the performing ensembles feature various combinations of instruments-- again according to the compositions-- which may include violin, viola, cello, piano, harpsichord, clarinet, bass, and flute. The music is performed by the members of the resident ensemble, 'The Garth Newel Chamber Players', as well as by an impressive array of visiting artists. And the works included on concert programs are chosen from a rich and varied musical heritage, from a wide range of composers, styles and periods-- from Corelli and Telemann to Ravel and Fauré; from Beethoven and Brahms to Stravinsky and Shostakovich; from Boccherini to Bach; from Mendelssohn to Mozart. Always, the music is well done, performed with energy and sensitivity.

When the concert ends, the audience is once again treated-- this time, to partake of tea and homemade cookies, while they have a chance to chat informally with the members of the performing ensemble. It is this rare combination of mountain scenery, musical excellence, and down-home hospitality which distinguishes Garth Newel, and makes it such an exceptional center for the arts.

Garth Newel is special and unique as a center for the performance of chamber music, in several ways. It is special because of its setting-- in the buildings of the estate, on a lovely mountain meadow. Garth Newel is also special not only for the fine music it offers, but also because it is such a surprise to discover the every *existence* of this center for chamber music, located high in the Alleghany mountains, so far from major urban population centers. And because its location *is* remote, the presence of Garth Newel plays an important role in making available live performances of musical excellence to the people who live in the entire region surrounding it-- serving people from a multitude of small cities and rural areas who, were it not for Garth Newel, would have little opportunity to experience first hand the high quality of musical performance (and learning) which Garth Newel provides so well.

It is based on the study of the site and the estate at Garth Newel that the design for a (new) center for chamber music, the subject of this thesis, must begin.

In order to relate the new design to that of quality which is part of the existing estate, it is necessary to understand the new building's site, as well as the architectural context provided by the existing buildings *on* the site. These existing buildings, which define the context, are buildings of the music center-- the buildings of the old estate.

The architectural context.

The architectural context for the new building is defined by two considerations: the site, and the buildings which already exist on the site. The buildings existing on the site are shown in the photographs at right. These include the manor house of the estate (center); an old barn (top and bottom photos, left); and a trussed-roof building now called Herter Hall, formerly a horse rink (top and bottom photos, right).

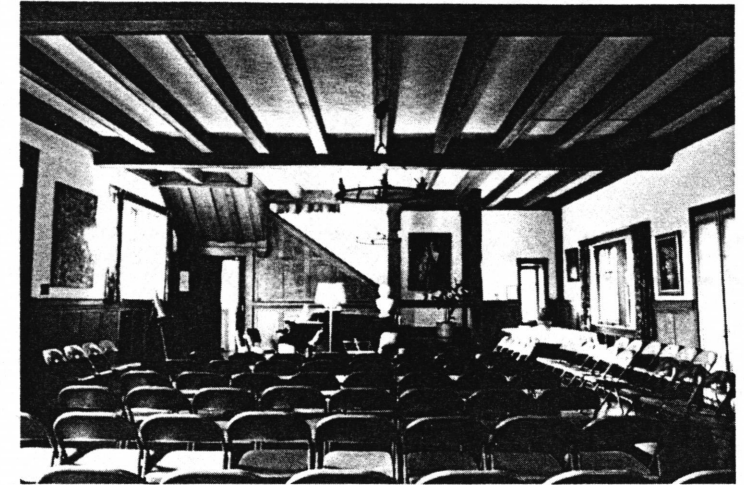
The existing buildings are simple wood-framed structures, built of native American chestnut wood (originally cut from the grounds of the estate). They are 'country' buildings: a house, and its so-called 'out-buildings' (the barn, the horse rink, and several small cottages). These buildings 'belong' to the estate, in character as well as by legal deed. Built of natural materials (wood and stone), they are simple, unpretentious structures, friendly to human scale; wrought of the hand-craftsmanship of an earlier time. So these buildings fit comfortably into their rustic and pastoral setting, the context of their rural mountain meadow. They are at home here. There is harmony between these simple structures and their surroundings.

But the harmony between the site and the existing context exists in a delicate balance. And so, to maintain this fragile balance, it is critical that the design for the new building relate with the site and the existing buildings in a graceful and sensitive way-- such that the new design not disrupt but attempt to *preserve* the harmony of the site. Thus, in designing a new building for this site, the question now arises: *how* exactly shall the design for the new building relate to the buildings of the existing context.

It would be inappropriate, certainly, simply to design the new building in imitation of the style of the older buildings; as the new building is in many respects different from the old. It is to be a building for music, a building specifically created to house performances. It is thus to be a public building, larger than those which heretofore exist on the site. And it is to be built (theoretically, at least) in our time, and is thus decades younger than its closest neighbors, the buildings now existing on the site.

Rather than to imitate the style of the existing buildings, then, the new building must find an alternative, and more fundamental way in which to relate to the context. To accomplish this, the new building will form a relationship not with the style of the existing buildings but rather with their basic structural 'fabric'-- relating to *elements* of material and structure taken *from* the context of the old, and then transforming these elements, to use in a *new* form in the new building.





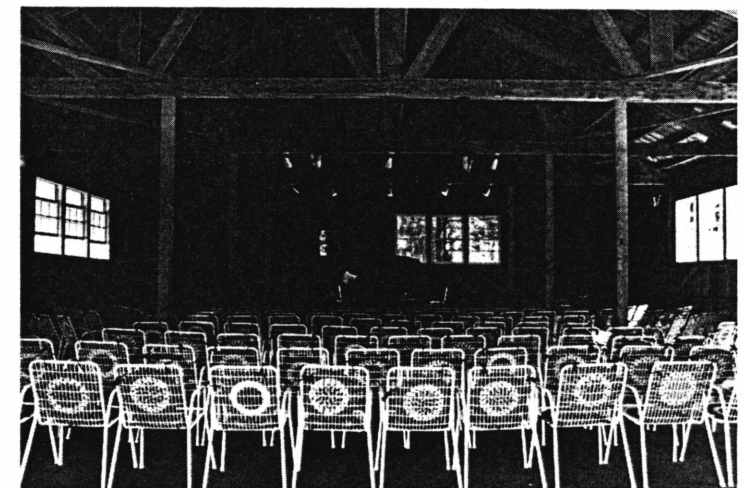
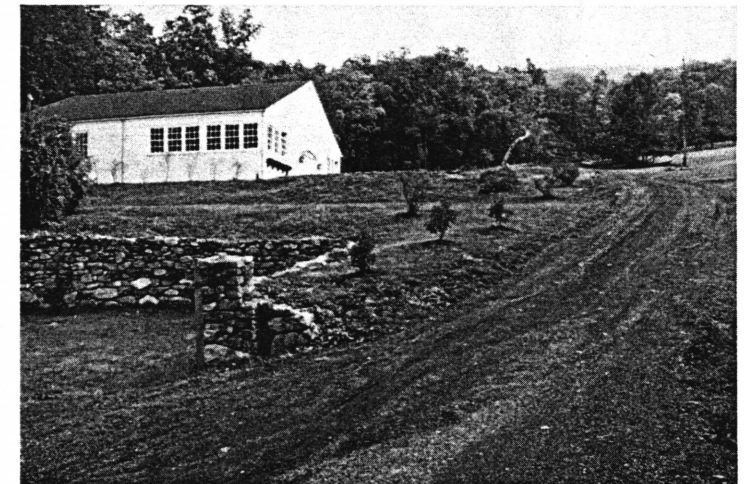
Elements from the context-- post-and-beam/ trusswork/ and stone.

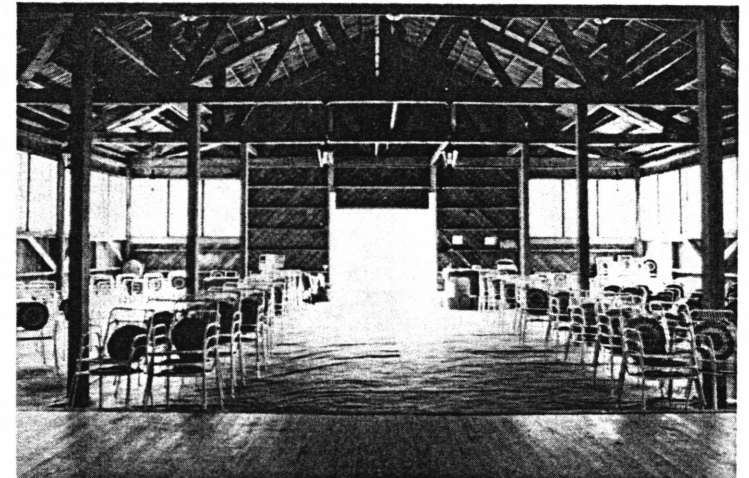
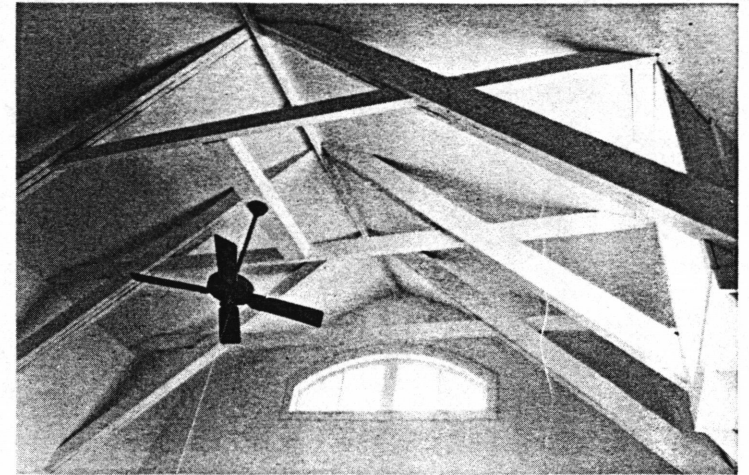
The warm, rustic quality of the existing buildings is largely due to their simplicity and to their use of natural materials, wood and stone. The photographs on this page show how these materials, wood and stone, have been used as elements of structure in the buildings of the context-- wood has been used in post-and beam-framing, and in wooden trusswork; and stone has been used in the form of stone retaining walls.

The structure of the wooden buildings of the context is primarily post-and-beam, with wooden trusses used to form the roof structures. The structure of the post-and-beam system used in the context, can be seen in the exposed timbers which have been used for ceiling joists in the living room of the manor house (photograph at top). Wooden trusswork has been used, meanwhile, for the roof structures. Exposed wooden trusses form the roof structure over the wide-open interior space inside Herter Hall (photo at bottom); and wooden trusses are also used on the upper level of the manor house-- where exposed wooden scissors trusses support the roof over the lofty two-story studio spaces (see photographs next page).

Besides these elements made of wood, another natural material-- rough cut stone-- has also been used in and around the buildings of the context. The use of stonework on the site can be found, for example, in the form of the shallow stone retaining wall just outside the barn (photo at center); this rough stone (retaining) wall has been used to terrace off a portion of the slope which lies between the barn, and Herter Hall (which lies further up the hill).

These materials and these elements of structure, then, form the basic structural 'fabric' from which the existing buildings have been made. Thus, the use of these materials (wood and stone) and of these elements of structure (post-and beam framing, the truss, the stone retaining wall) in the design of the *new* building, forms a strong bond relating the new building to those of the existing context-- without directly imitating the existing buildings in style. The materials and *elements of structure* 'taken' (conceptually) from the old buildings to use in the new are shown in the photographs on the pages which follow.



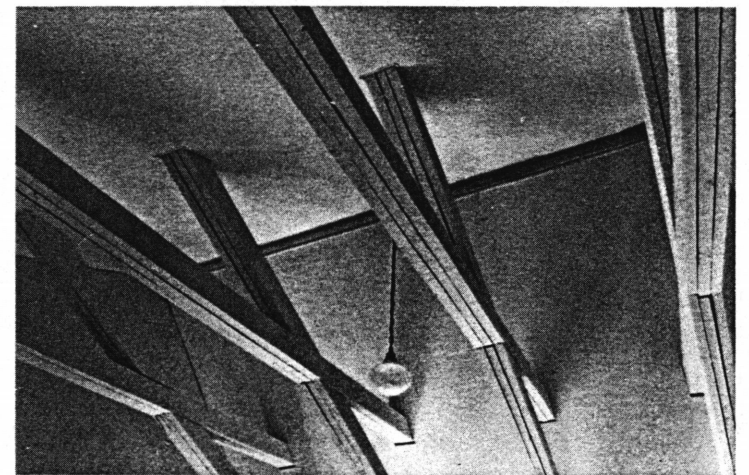


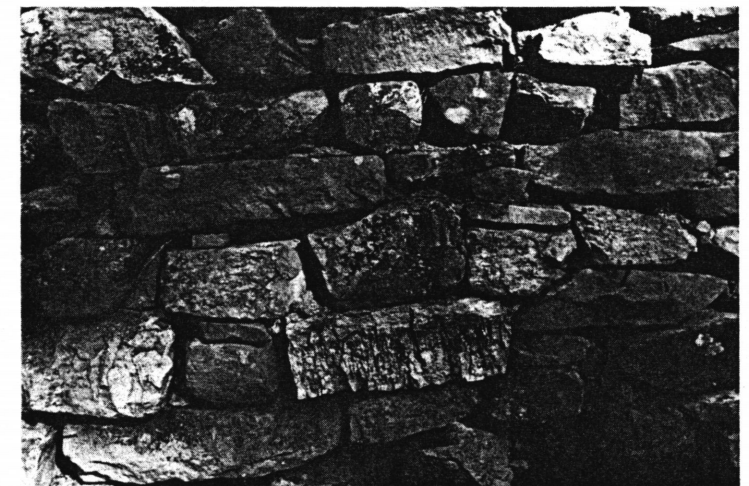
Wooden elements.

The wooden elements gleaned from the existing context (to build upon in the design for the new building) are the system of post-and-beam framing, and the element of the wood truss. Wooden trusses, as used in the buildings of the context, are shown in the photographs at right: the scissors trusses shown (photos at top and bottom) are taken from the upper level (two-story) studio spaces in the manor house; and the center photo shows the wood trusses which form the roof over Herter Hall.

The language of the truss, taken from these origins in the context, has also been adopted to use in the design of the *new* building, but in a modified, 'transformed' form. In the new building, a truss-like structure with a large clear span and a curvilinear form was needed as the roof structure for the new auditorium. To design such a structure, the language of the truss (which is a form of two dimensions) was translated into the language of the space frame (a truss-like spanning system which has been expanded into three dimensions). The use of this wooden space frame (instead of using trusses) also made it possible to articulate the *form* of the (space frame) structure along a curved grid, to reinforce and complement the curved plan of the theater's seating arrangement.

The language of post-and-beam framing, which forms the main structure of both the manor house and Herter Hall in the context, has also been used in the new design, where it comprises the primary structural system used to enclose the space of the new theater building.





Elements of stone.

Natural, rough cut stone has been used on the site (in the context) in the form of shallow stone retaining walls (photos at right).

The material of stone and the language of the stone wall are to be used in the design for the *new* building complex in several different ways, in several places. The amphitheater, first of all, will be built of stone-- its form composed of shallow, curved landings (paved with cut stone), which are set into a hollow in the hillside. Secondly, there is the element of *the wall*. Starting from the amphitheater (in the new design), begins a shallow stone garden wall which runs up the hillside (eventually becoming a massive stone bearing wall, a major part of building's structure). The wall is extremely important in the new building, where it forms the central axis around which the entire building complex is organized.

And lastly, there are three grassy terraces (in the new design), which lie between the amphitheater, and the new theater building (uphill); the edges of these grassy terraces are bounded by shallow retaining walls which are built of stone-- terracing off these areas of the hillside (making them a part of the building complex), and separating the terraces from the remainder of the meadow.

The site / The partie

The site-- (an introduction).

The site is a beautiful mountain meadow-- situated high on the mountain slope, commanding a spectacular view of the valley and the mountains beyond. The meadow is nearly surrounded by forest, which frames the meadow, defines the meadow's boundaries. But along the *lower* edge of the meadow, the clearing narrows but remains open-- and from here, the clearing winds and cascades its way down the mountainside, all the way to the valley floor.

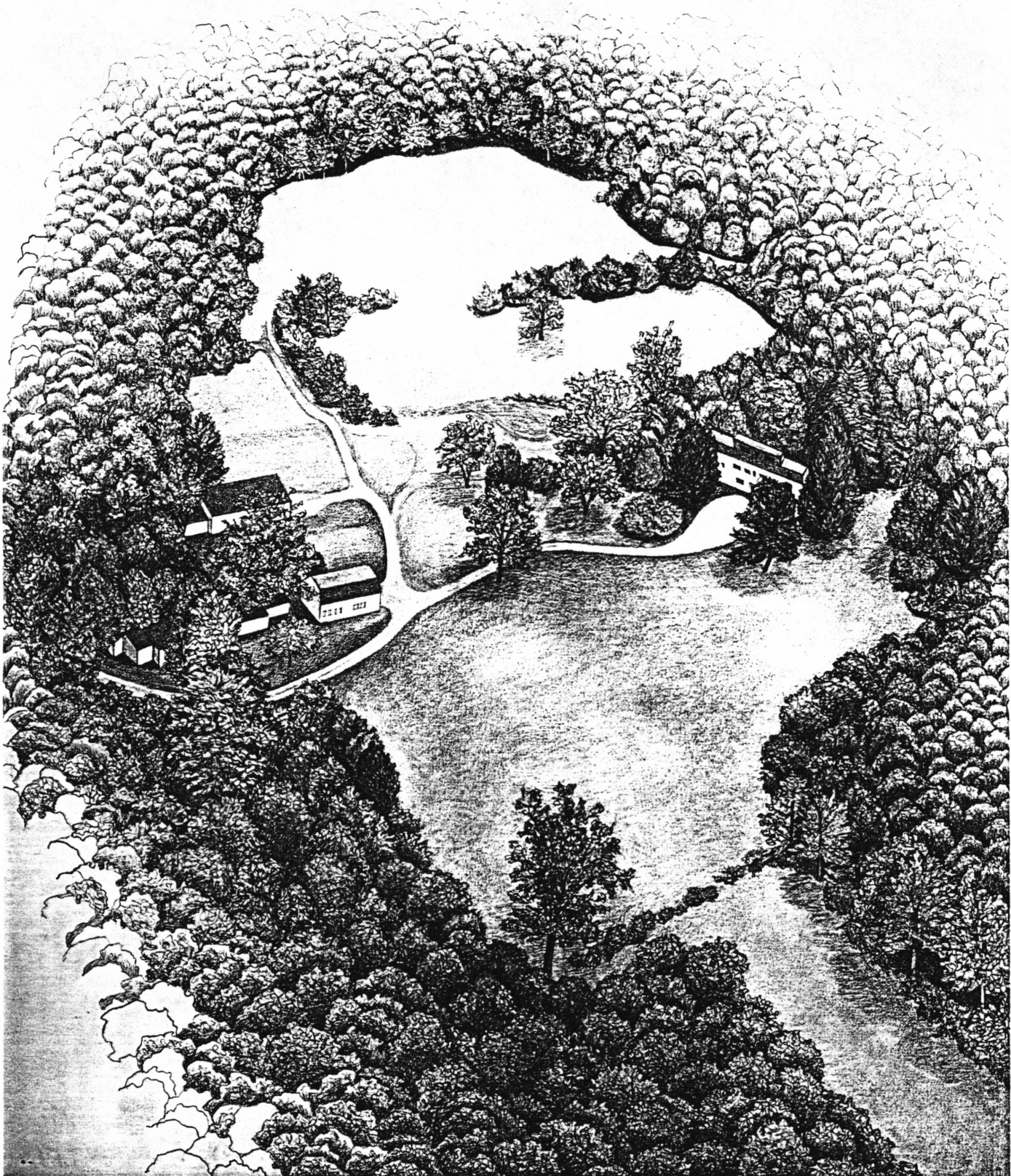
The forest meanwhile, also runs down the mountainside, (defining the clearing's edge). But it is the clearing in the forest-- winding down the mountain slope-- which serves to open up the forest to reveal the *view* (of the valley and the mountains beyond), which is so lovely from the upper meadow. So while it is the clearing in the forest which *opens up* the view, the forest in turn, (which limits the clearing) serves to 'frame' the view which has been created.

The two parts of the site, forest and meadow, (both of great importance to the richness of the site as a whole), are quite different in character. They are, in fact, almost opposites in several respects. The meadow is light, breezy, wide-open in character. From the openness of the meadow, your gaze is drawn far away-- to the sky, to the valley, to the distant mountains. The ambience inside the forest, on the other hand, is more one of closure. Inside the forest, the ambience is quiet, sheltered; the quality of light here is muted, filtered, indirect. Here, your view is limited in distance, so your attention is drawn to study things closer at hand.

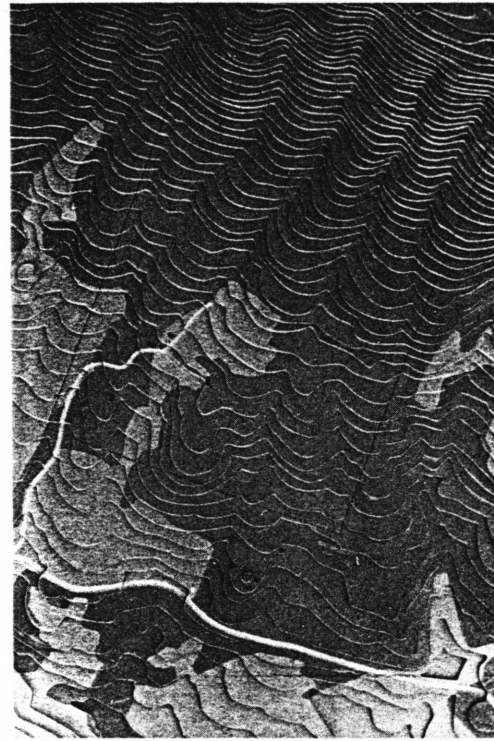
Because of the contrast in their characters, the juxtaposition of the forest beside the meadow seems to actually intensify the quality of 'openness' which gives the meadow space such a powerful presence. The 'open' nature of the meadow, together with the impact of its long, lovely view, somehow seems to give the meadow an aura of infiniteness, a quality of limitlessness. And it is this quality of 'openness' of this lovely, unspoiled meadow (and its view) which makes the site such an exceptional place.

Because of the exceptional beauty of the site and its view, it was considered of primary importance and concern that the design for the new theater and amphitheater be very carefully and sensitively integrated into the existing site-- to enable the new building to take *advantage* of the beauty of the site and the view, without diminishing the quality of the site by its addition. Thus, it was determined early on to attempt to preserve as much as possible the wide-open quality of the site, and to leave the meadow (as much as possible) undisturbed by the new building. Moreover, the new design was to grow from the contours of the existing site; to take advantage of the view; and to be placed on the site in such a way that it might relate to (and draw from) both the meadow portion of the site and the forest as well.

The site, the view, and the parties for the design of the new building, are described and illustrated on the pages to follow.



The site:
a clearing, surrounded by forest.



Site model/ Site overview.

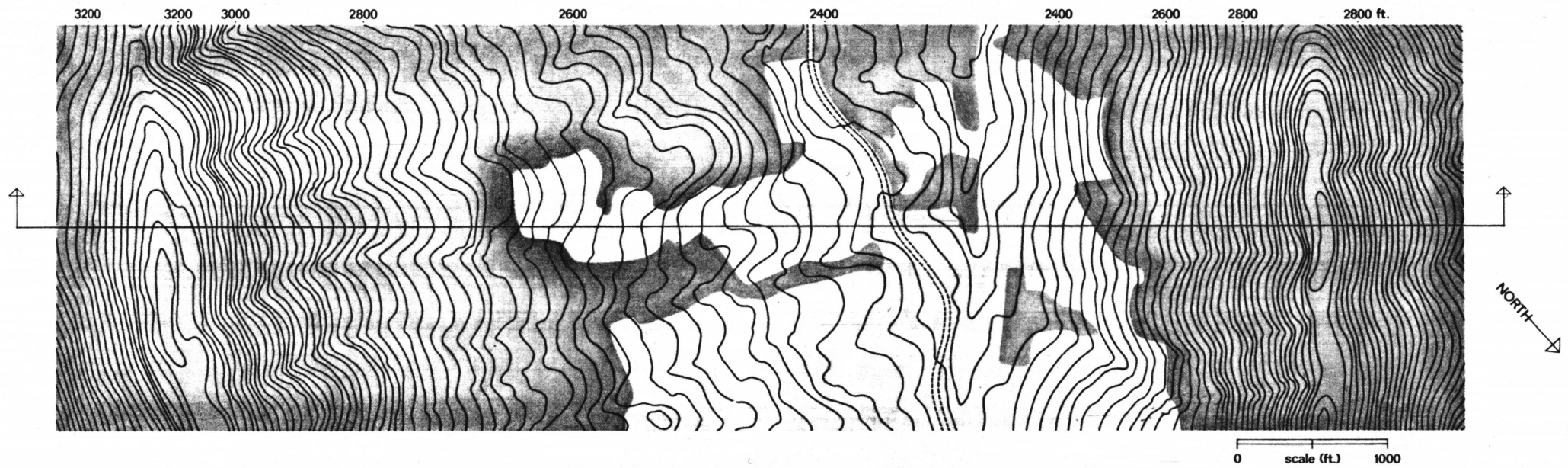
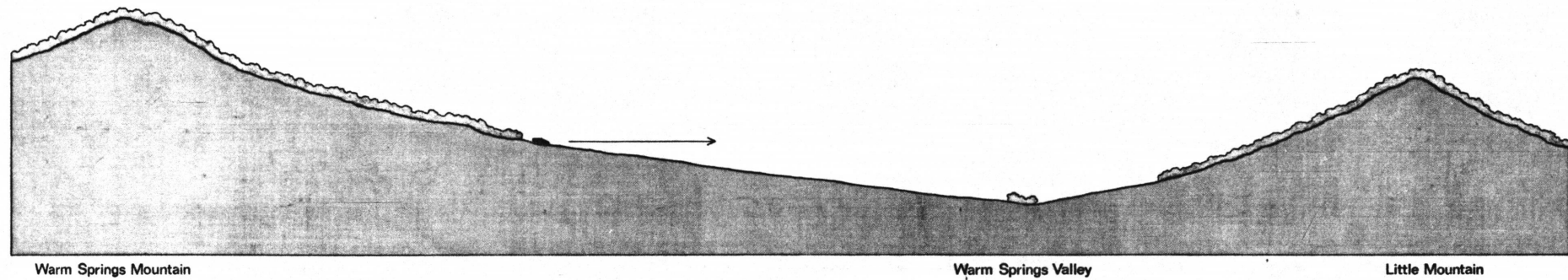
The site model gives an overview of the features of the land surrounding the actual building site. The land is steeply sloped. It lies on the Northwest face of a mountain ridge, Warm springs Mountain. The top of the mountain can be seen at the far upper right of the topo model; a valley, which lies at the base of the mountain, can be seen at the lower left corner of the topo. So, the site is situated just about midway between the base of the mountain and its peak.

The model was built at a scale of 1:200, based on the information from a U.S.G.S. topographic map; each contour shown on the model represents a contour drop of twenty feet.

The main road to the site (seen running roughly from left to right) is a two-lane U.S. highway; from the main road, a winding gravel drive leads up the hill to the actual site. The dashed lines (enclosing a rectangular area) show the approximate boundaries of the property.

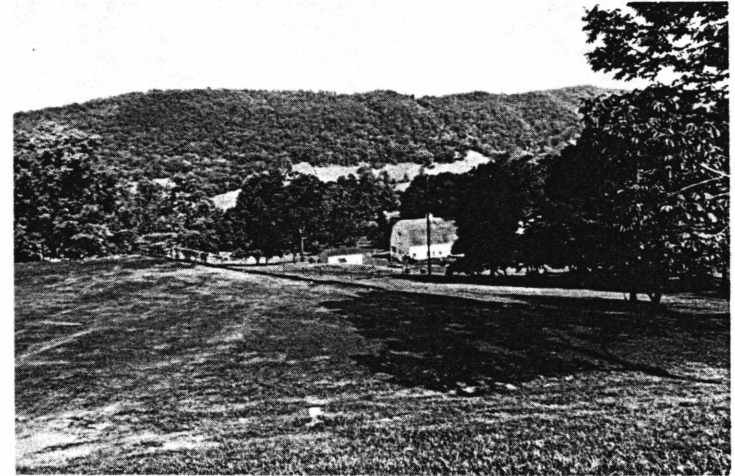
Forest areas are shown on the model by grey shading, while the lighter-shaded areas indicate meadows. The new building's site is located on the upper edge of a meadow, (just above the end of the gravel drive), within a large clearing in the forest. It is, on one hand sheltered on three sides by the forest; yet it is treated to a long lovely view through the clearing, down the side of the mountain.

scale: _____ 2000 feet.



Site Section. The site section and plan indicate an overview of the siting of the theater building on the mountainside, and of the view from the site. On the plan drawing, shading designates wooded areas while the unshaded areas indicate meadows. The site area itself, (vignetted in the drawing) is located at the edge of a meadow, surrounded on three sides by forest. But on the fourth side, the meadow extends into a long, open clearing which winds down the mountainside all the way to the valley floor below.

This opening of the forest (by the clearing) reveals and frames a beautiful view from the site, allowing you to see down the mountainside to the valley, and then past the valley floor to the mountains beyond. The linearity of the long clearing also suggests an axis, running the same direction as the section cut which is shown on the plan. This axis is significant in the development of the building partie. The dashed line shows the main public road (a two-lane U.S. highway) through the valley.

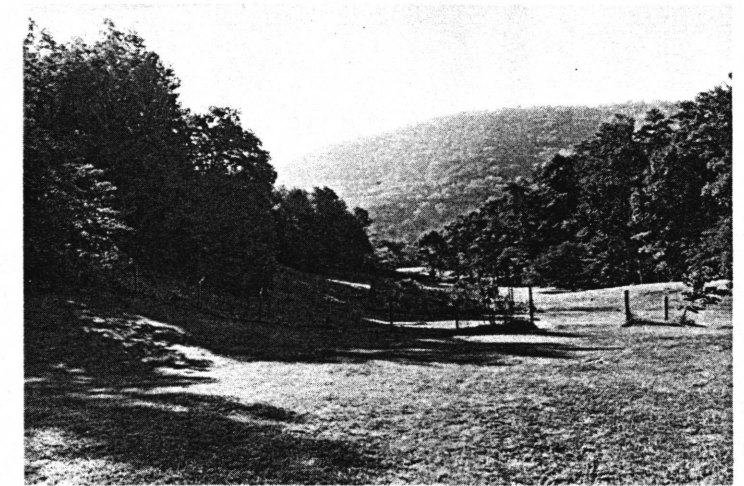


The view from the site.

The theater and amphitheater have been situated on the site to take advantage of the beautiful view down the hillside. The three photographs here show the view from the upper meadow: from the area of the site where the proposed building would be placed.

The barn may be used as a visual point of reference in the three photos; it is situated just at the point where the gravel driveway into the site splits into two forks, one leading to the manor house, and the other leading up the hill.

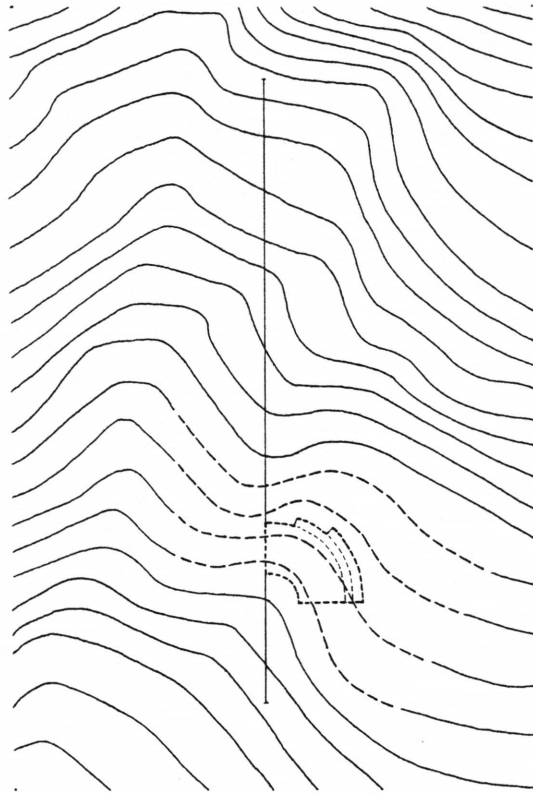
The photos show (sequentially) longer and more spectacular views, taken from viewpoints increasingly closer to the top of the meadow.



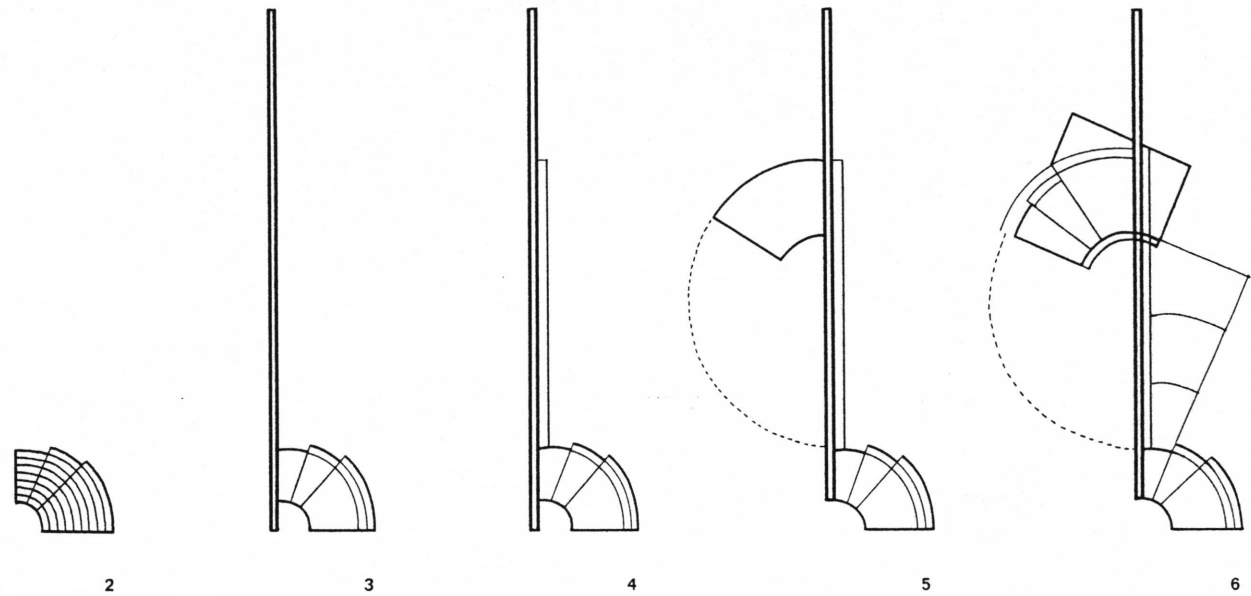
The view from the site: the lower meadow.

The views down the clearing shown here are taken from vantage points further down the hillside; these photographs show the 'view' as seen from several points in the lower meadow.

These photos were taken from viewpoints just below the level at which the gravel driveway (to the Manor House) cuts across the meadow, just below the level of the barn. The view looks down the clearing, toward the lower portion of the meadow; toward the place at which the clearing narrows, before it continues to wind its way down the hillside, toward the valley floor.



1



(1) the site. (2) the amphitheater. (3) the garden wall. (4) the walkway. (5) the theater space. (6) the theater building, linked by the garden wall and terraces to the amphitheater.

Development of the partie.

The partie was designed to fit in a close and harmonious relationship with the site. Elements which are key to the design of the partie are those diagrammed above. A *description* of the development of the partie (shown here) is given on the following page.

Development of the partie. (see the diagram, preceding page)

(1) The design begins with a natural hollow in the landform, high on a hillside. This place, situated high in the meadow, commands a spectacular view down the mountainside. Here, a low-profile stone amphitheater with a curved seating plan is set into the natural contours of the earth. In this outdoor amphitheater, listeners would attend concerts in the fragrant open-air; and as they listened to the music being performed, they would view the beauty of the mountains as a backdrop beyond the performers on stage.

The long clearing which winds down the mountainside (opening up this view) suggests an axis which runs along the direction of the clearing, and also shows the direction of the view (1).

(2) The amphitheater designed for this special place is to be built close to the earth, within this hollow on the meadow. It is to be paved of natural stone.

(3) Running up the hill from the amphitheater, along the axis of the clearing and the view, a garden wall is built. The wall, like the amphitheater, is made of natural stone and is to be built close to the earth, friendly to human scale. The garden wall serves both as a transition and a connecting link between the amphitheater (in the meadow) and the theater building uphill, (located at the boundary between the meadow and the forest).

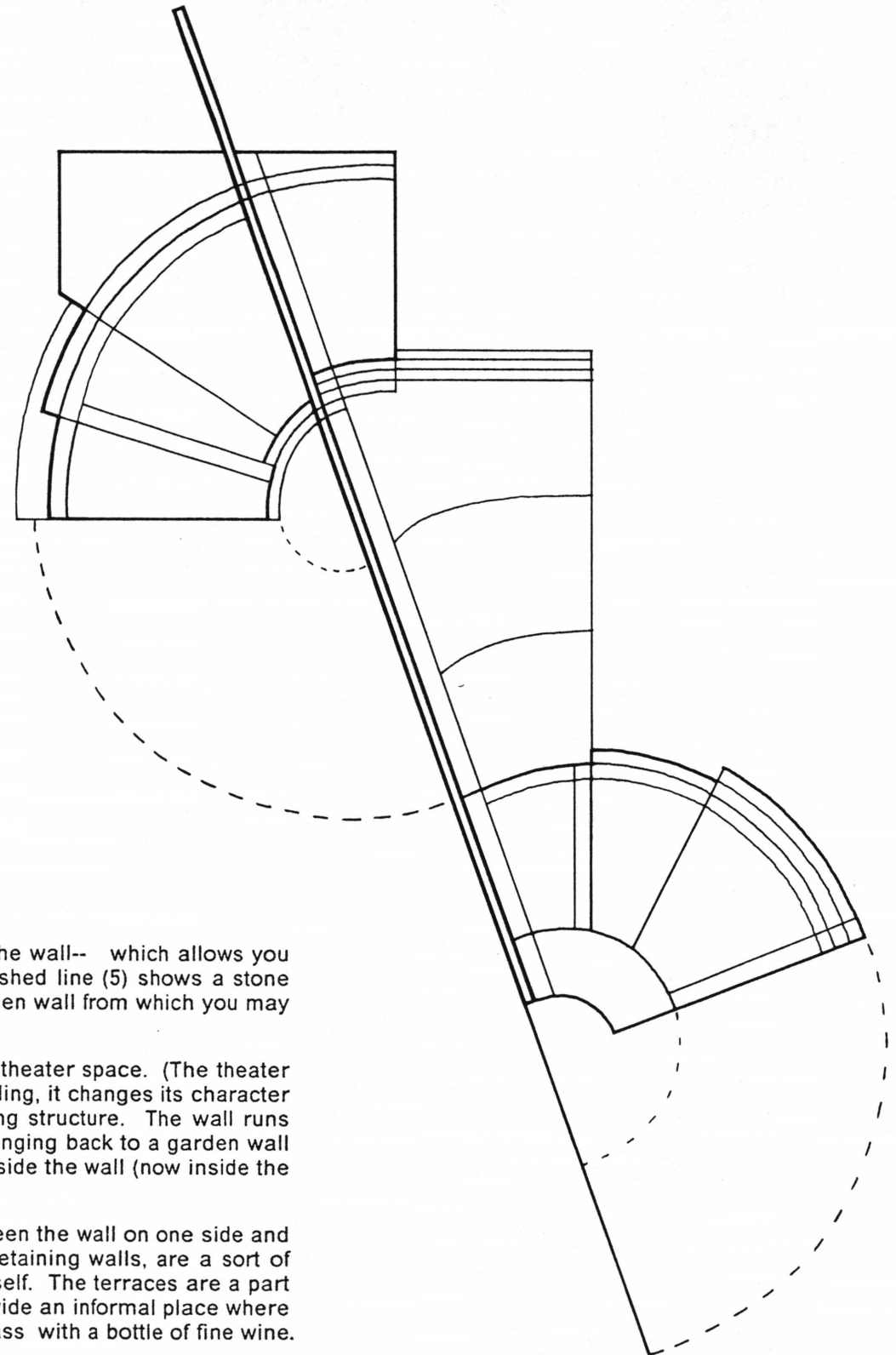
(4) The wall begins along the North side of the amphitheater, and climbs uphill. Alongside the wall runs a path, a series of steps which start at the amphitheater and lead up the slope.

(5) The garden wall (with the path which runs beside it) leads to the theater space. Located uphill from the amphitheater, the theater building is sited close to the junction between the forest and the meadow. The theater space, itself, is located on the more introspective 'forest' side of the wall.

To get to the theater from the path, you must actually walk *through* an opening in the wall-- which allows you to experience once again the central importance of the wall in the design. (The dashed line (5) shows a stone footpath which starts at the rear theater entrance and leads to an opening in the garden wall from which you may enter the amphitheater.)

(6) Other functional areas included in the theater building are fit around the central theater space. (The theater building is shown with a bold outline). Where the garden wall meets the theater building, it changes its character (becoming taller and more massive) to become a bearing wall, a part of the building structure. The wall runs through the building as a bearing wall, but then leaves the building once again, changing back to a garden wall and finally coming to an end. The path from the amphitheater continues to run alongside the wall (now inside the building), forming one of the building's main circulation corridors.

Inbetween the building and the amphitheater are three grassy terraces, lying between the wall on one side and the open meadow on the other. These grassy terraces, defined by shallow stone retaining walls, are a sort of transition between the 'built' and the 'unbuilt', since they are formed of the earth, itself. The terraces are a part of the meadow which have been tamed to be a part of the music complex. They provide an informal place where concertgoers may listen to a concert and enjoy the view while reclining on the grass with a bottle of fine wine.



Placement of the new building on the site.

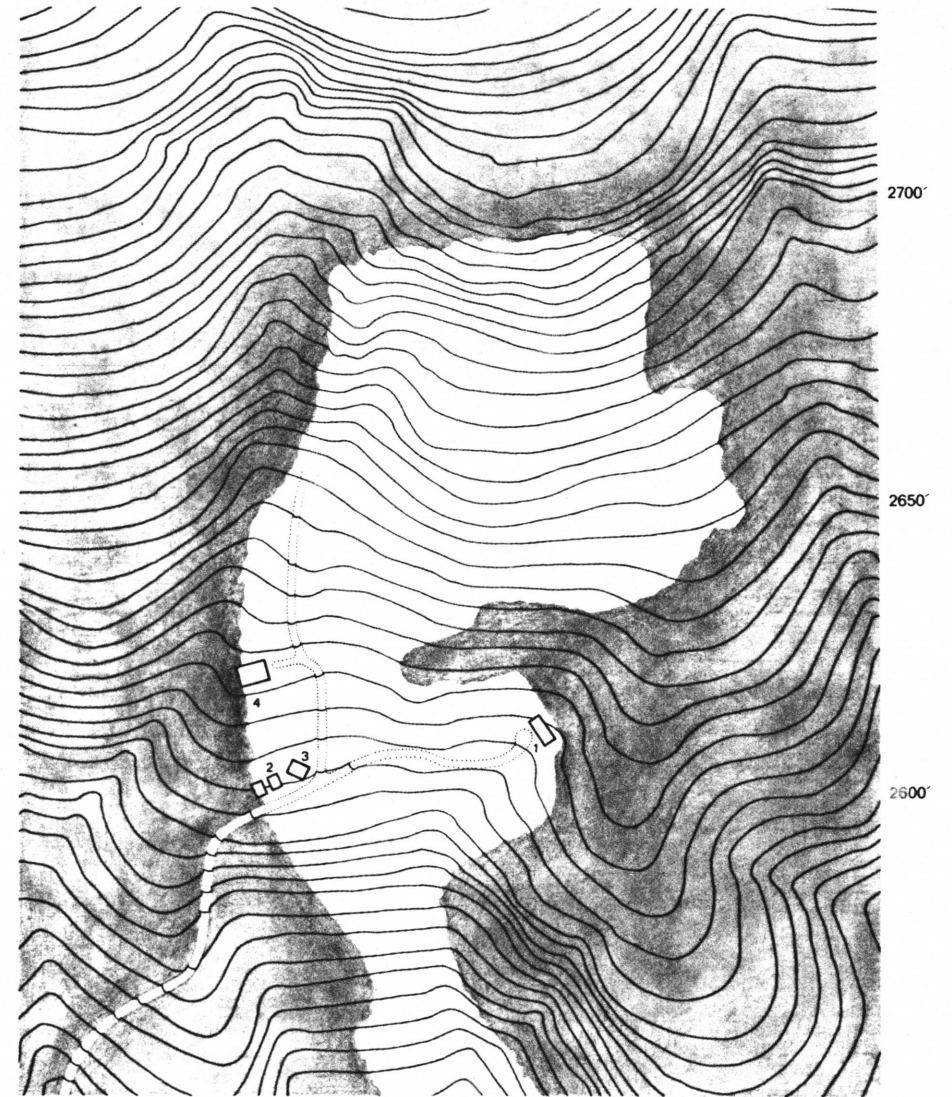
Because the meadow site for the new building is such a beautiful and sensitive site, it was important that the new building be placed *on* the site also in a sensitive way: to take advantage of the natural beauty of the site without disrupting its natural harmony. So the decision as to the exact placement of the new building on the site was approached carefully, keeping in mind three priorities related to the site and the context. These objectives were:

- to place the building high on the hillside, so that it might enjoy the spectacular view down the mountain slope;
- to situate the building in a way harmonious with preserving the natural beauty of the meadow; and
- to place the new building on the site in a manner consistent with the way the existing buildings (of the context) have been placed on the site.

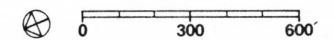
Because the great beauty of the site is largely due to the wide-open, natural, *undisturbed* quality of the meadow, it seemed evident that, while placing a new building on the site, the quality of the meadow must somehow be left intact, left undisturbed as much as possible. But at the same time, the *sensitive* placement of the building on or near the meadow would give the new building visual access to the meadow's special beauty.

So it was desired to find a site for the building located somewhere on or near the upper meadow. The site should be situated high on the hillside, facing in the direction of the long clearing which runs down the slope (in order to best take advantage of the view). And lastly, the natural topography of the site must allow the new building placed on the site to blend in gracefully with the natural contours of the land.

High on the meadow, facing down the clearing, such a spot was found: a place at which to begin. Here, provided by the natural contours of the landform, was a natural 'hollow' in the hillside, high on the slope, facing the view-- a place where a small curved amphitheater could be gently nestled into the natural contours of the hillside. On this spot, the shallow, curved landings of the amphitheater (low in profile) would blend in with the natural flow of the land; and at the same time, because of its prime location (near the top of the clearing), the new amphitheater would be perfectly poised for capturing a magnificent view down the mountainside.



The site (before the new building).



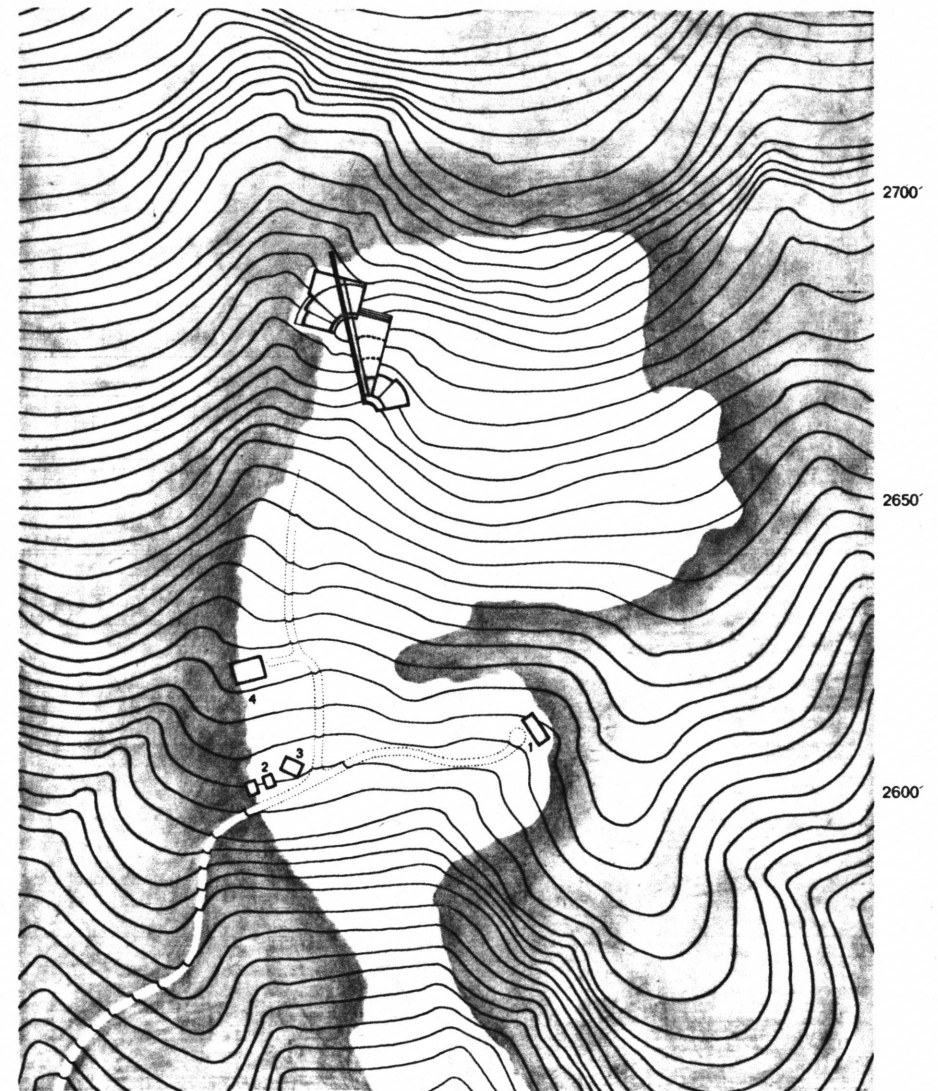
Placement of the new building on the site *continued.*

From the amphitheater, the remainder of the music complex lies uphill, between the amphitheater and the edge of the forest (shaded). The grassy terraces, which lie just uphill from the amphitheater (between the amphitheater and the theater building) are, like the amphitheater, low in profile, built into the earth. And the theater building is located just uphill from the terraces, located at the edge of the forest.

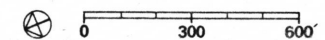
The amphitheater and terraces lie within the clearing of the upper meadow, (located off to one side). But although these elements are located on the meadow, because they are *built into the earth*, their presence does not diminish the wide-open quality of the upper meadow: they are not an intrusion upon the meadow; rather, they become part of the meadow's very fabric. Like a *bas relief* sculpture, built into the ground, they become a part of the meadow's surface.

The final part of the music center complex, the theater *building* is placed at the meadow's *edge* (just above the grassy terraces); it lies at the boundary between the meadow and the forest, pushing slightly into the forest. At this junction, the building may be privy to two very different worlds: that of the forest as well as that of the meadow. The theater building, unlike the amphitheater and the terraces (which are built into the earth) is the one part of the new structure which has height and mass. Because of this, in order to minimize its intrusion upon the meadow, it is particularly important that the building be located at the meadow's edge. Located at the edge of the clearing, the height of the building is merely a step up (from the meadow) toward the height of the trees in the adjacent forest. And so while the building sited here (at the edge of the meadow) may enjoy a long view all the way across the meadow, may enjoy the most beautiful part of the site and the view, still the meadow has been left mostly undisturbed; and the building's impact upon (disturbing) the site is minimal.

The placement of the building at the edge of the clearing is also consistent with the way each of the other (existing) buildings has been placed on the site; the meadow is left open, while the buildings (which form the context) have been grouped around the meadow's edge. The existing buildings shown are: (1) the manor house, (2) two small cottages, (3) a barn, and (4) a horse rink (Herter Hall). Forest areas on the drawing are shown shaded. Note that the axis of the new building (defined by the garden wall) is oriented upon the axis suggested by the direction of the view: the direction down the clearing.

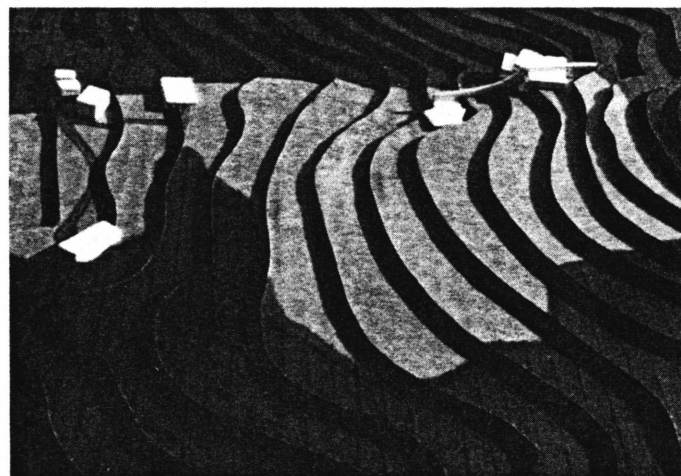
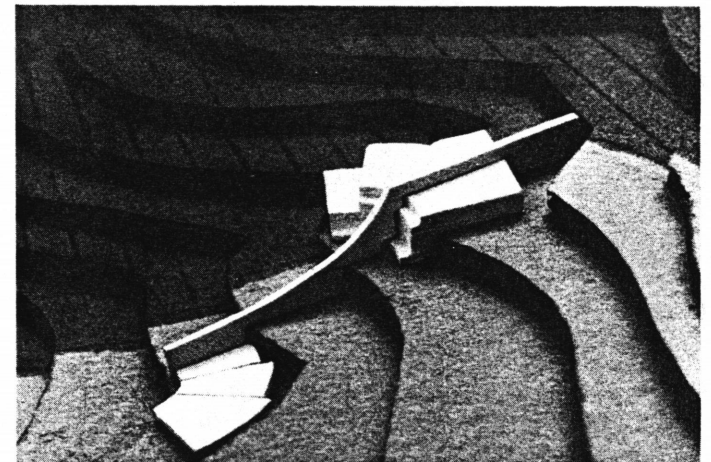


The site (including the new building).



**Placement of the building on the site:
mass model studies.**

The placement of the new building (theater and amphitheater) on the site is shown here. Each contour on the topo model represents a drop of 20 feet; the length of the wall (in the new building) in these photos represents about 230 feet. The model was built at a scale of 1:80. Shaded areas represent forest.



The site plan.

The site plan drawing (next page) shows the theater and amphitheater as they relate into the larger context of the site as a whole.

The natural features most important to the site are the steepness of the mountain slope (indicated by the contour lines), and the 'framing' of the building site on the meadow by the forest which surrounds it on three sides. As in previous drawings, the shading denotes wooded areas of the site; and the unshaded areas are part of the meadow. The characters of these two areas both contribute to the character of the building site.

The meadow is light and open; it catches the sunlight and the breezes; it opens up the view; it is easy to traverse, as it has been tamed in having been made a clearing. So, while it is made of the natural earth, of grasses and wildflowers, it is in a way man-made: it is land that has been cleared, and without continuing to be mowed, this clearing would soon be reclaimed by the forest.

The character of the forest is in contrast to that of the meadow. Here, tall trees filter the sunlight that shines onto the treetops, so the light that finally peeks through is muted in its quality. The breezes which whirl so freely through the meadow are buffered, here, by the forest. And the trees also limit your view-- so your attention is kept close at hand, instead of being coaxed to admire a distant vista. There is a feeling of quiet here, a feeling of shelter.

The theater building is placed at the edge of the clearing. In this way, it can enjoy the contrasting ambiances of *both* the forest and the clearing; and because it is placed off to the side (of the meadow), it leaves almost entirely intact the somehow vast-feeling 'openness' of the clearing which makes this meadow such a special place.

The existing estate buildings are shown in the lower portion of the drawing; they also were built at the edge of the clearing. The dotted lines show the access road to the buildings on the site. The road to the theater building starts as a fork off the road leading to the manor house. This fork was originally just a 'spur' off the main road, which came to a dead end near the edge of the forest-- just above Herter Hall (see site drawing). (On the site plan drawing, the place where this spur came to an end occurs approximately where the edge of the forest intersects with contour 2650.) To form the approach road to the amphitheater, the theater building and their parking area, the short road was extended. (*continued*)

The site plan, continued.

The new road leads up the hillside, initially staying relatively close to the edge of the clearing. But as it moves up the hill, the road momentarily turns in toward the meadow; this slight turn was included in order to direct your view (on your approach toward the building) toward two things: (1) an overview of the meadow, surrounded by forest, and (2) a brief first glimpse of the amphitheater and the garden wall leading up the hill: your first introduction to the music center.

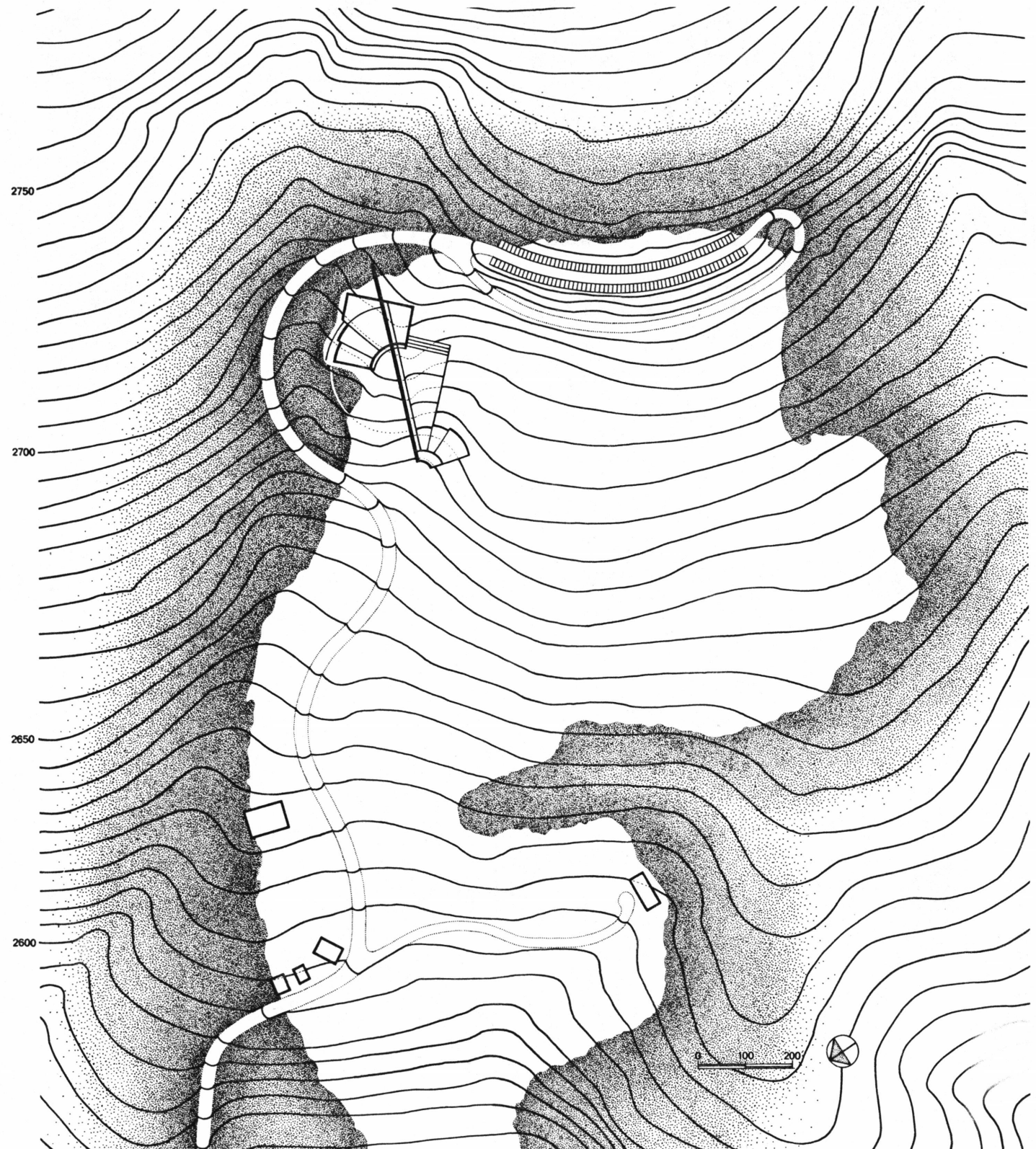
The road then turns into the forest, skirts around the music center building, and then re-emerges high on the upper edge of the meadow to lead to the parking area. The road is routed thus through the forest so as to avoid letting the road run up the center of the meadow. As it is, the wide-open quality of the meadow is left mostly intact.

Parking is located high on the meadow in a single double-loaded row which follows the natural contours of the land. The only change which was imposed on the existing contours was made on the upper meadow just below the row of parking. Here (between the row of parking and the 'return' loop of the road) the slope has been steepened to form a grassy earth berm; this berm, though not very high, is just steep enough to block any view from the lower meadow, the amphitheater, or the theater building of the cars parked on the meadow. The parking is thus isolated from view, minimizing its impact upon the beauty of the meadow.

When you arrive at the parking area, and begin the short walk from the parking area (across the upper meadow) to the theater or the amphitheater, you are greeted by a spectacular view (down the meadow) of the valley and the mountains beyond. And this same lovely view is the last thing you see as you drive out of the parking area, beginning your drive home. The road thru the parking area forms a one-way loop; the lower 'return' loop of this road is placed to capture the view for you one more time, as you begin to drive away-- to leave you with one final sweet taste of this music center in its lovely setting.

The site plan. *The new building is located (on its steeply sloped site), at the boundary between the meadow and the forest (shaded)-- leaving the wide expanse of the meadow mostly undisturbed.*

The site plan.



Organization of the building

Organization of the theater building.

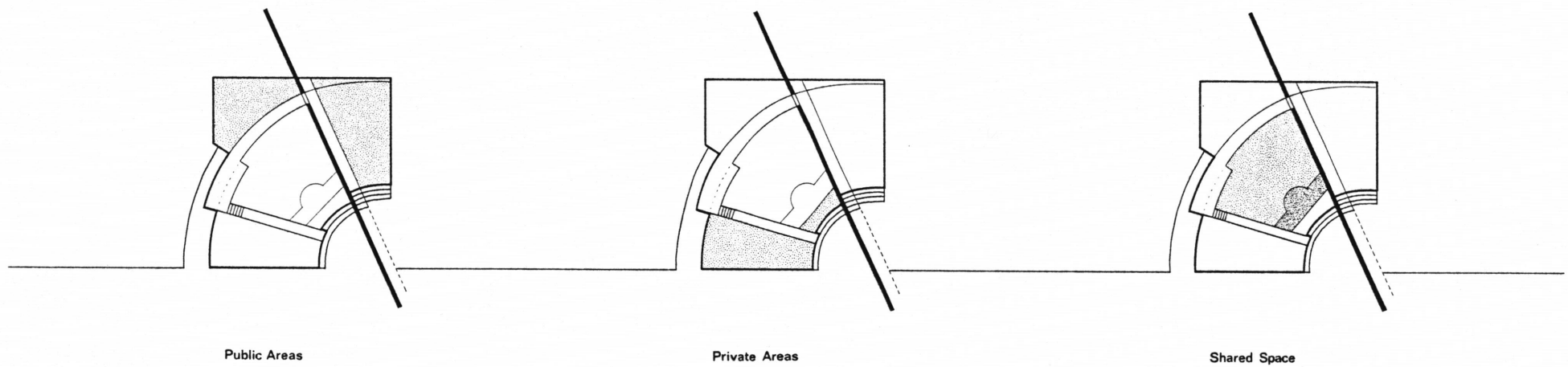
The organization of the theater building *functionally* (to design the plan) was based on three parameters: (1) satisfying the program requirements for the building, (2) providing a clear circulation pattern, and (3) keeping separate the public and private areas of the building.

Briefly, the program requirements for the theater building can be summarized as follows.

Program requirements for the theater building.

- A theater for the performance of chamber music.
- A clear circulation pattern.
- Public spaces:
 - a lobby (for the theater)
 - reception areas
 - public rest rooms
- Private areas of the building:
 - backstage area
 - green room
 - private rest room and kitchenette
 - musical instrument storage
 - a recording studio
 - and office/ administrative space.

The organization of the building is presented in greater detail on the pages which follow; including: a more detailed statement of the program; two diagrams, (1) 'public and private areas', and (2) 'the entrances and circulation'; and (finally) the plan drawings, along with a description of each of the spaces which is included in the plan.



Public/ Private. The building is divided into public and private zones, to separate areas used by the performers (before and after performances) from intrusion by the activities of the public.

(1) *Public space.* Areas of the building which are to be used by the public include: the theater lobby, the reception area, and the public rest rooms.

(2) *Private space.* Private areas are physically separated from the public areas, located in an entirely separate wing of the building.

The private areas of the building include these spaces: the backstage area; the green room suite; a room providing space for storage of musical instruments; a recording studio, (remote from the theater); and a private exterior porch.

(3) *Shared space.* The auditorium, at the heart of the building, is shared space: an interface where the public and the private meet. Here through the music, interpreted and performed by the concert artists, the public may enter into the 'private' world of the performers; and the performers, in turn, emerge into the world of the public: to find an audience with whom to share their art.

Program for the music center building:

The program for the theater building includes, in addition to the theater itself: public spaces such as lobbies and reception areas; private areas to be used by performers and theater administrators; and other areas needed to support the various technical activities required for the music center's operation. The main requirements for the program of the theater building are as follows:

A theater for chamber music

The theater must possess excellent acoustics and lines of sight, and it should provide seating for approximately 200 people, in an ambience of warmth and intimacy.

The stage area must be able to accommodate a large chamber ensemble (of up to ten players and their instruments), and

the backstage area of the theater must provide adequate space for temporary instrument storage and concert preparation activities.

A greenroom suite for the performers

The green room suite is to include the traditional 'green room' (where performers relax and warm up before performances), as well as a kitchenette and a private bathroom.

The location of the green room area must provide privacy for the performers (from public areas of the building),

and it must also provide the performers with close, private access to the backstage area.

Public spaces

must be provided for the enjoyment of theatergoers before and after performances, and during intermissions. These areas would include:

lobby space,

a reception area, and of course

public rest rooms.

Other areas which are required (related to various concert-support activities) include:

an instrument storage room

a remote recording studio

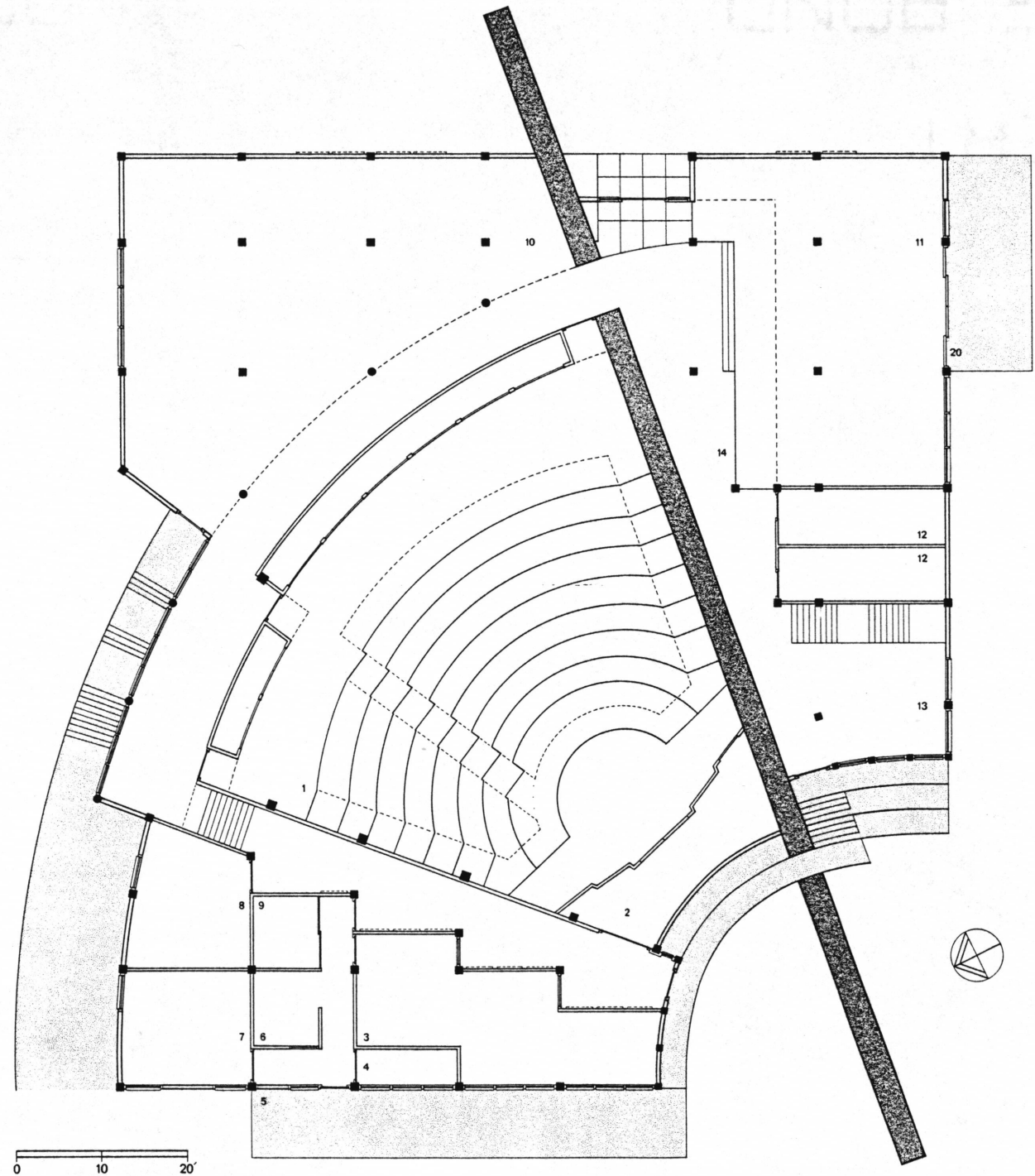
practice rooms

and a small suite containing offices, administrative space, and a conference room.

THE PLAN: first floor.

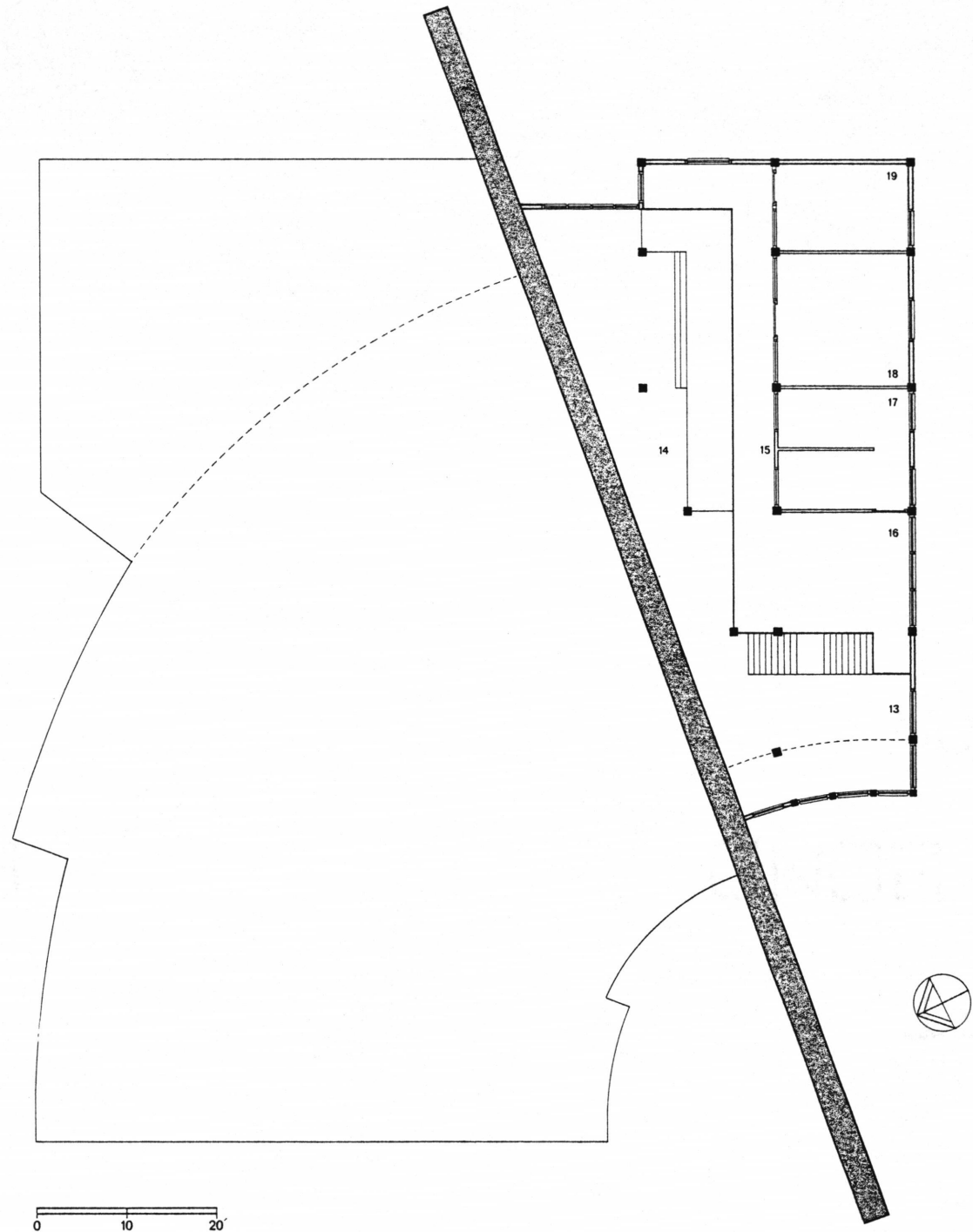
1. The auditorium
2. The backstage area
3. The green room
4. Private bathroom
5. Private exterior porch
6. Private kitchenette
7. Remote recording studio
8. Instrument storage area
9. Storage space for the green room area
10. The main lobby
11. The South lobby (the reception area)
12. Rest rooms (public)
13. Foyer
14. The space beside the wall
20. An exterior porch (public)

Drawing notes: The drawing areas of light-colored stippling indicate areas which are exterior to the building (porches, steps, walkways); the darker stippling shows the wall. Short areas of dashed lines (- - - -) denote clerestory windows, which lie above the cut of the plan drawing. Clerestory windows occur on the Southeast wall of the building, in the lobby areas. In addition, there are 'interior' clerestory windows, between the green room and the adjacent skylighted corridor (which has a higher ceiling) which let daylight in through the 'inside' wall of the green room.



THE PLAN: upper level.

- 13. Foyer (a 2-story space)
- 14. The space beside the wall (a 2-story space)
- 15. Second floor corridor (like a mezzanine)
- 16. Reception area for the offices
- 17. Two small offices
- 18. A conference room
- 19. A practice room



The plan for the theater building.

There are several types of functional areas provided for by the program for the theater building: the concert auditorium itself, as well as public and private areas related to the attendance of and presentation of the musical performances. Public areas include lobby space, reception areas, and rest rooms. The private areas, provided for performers, concert directors, and technical personnel, serve to support various activities related to the presentation of the concerts.

The character and the use of the various rooms and spaces in the theater building are described in the paragraphs following. The numbers included in the descriptions designate the rooms' locations as they are indexed on the plan drawings, (on the pages immediately preceding).

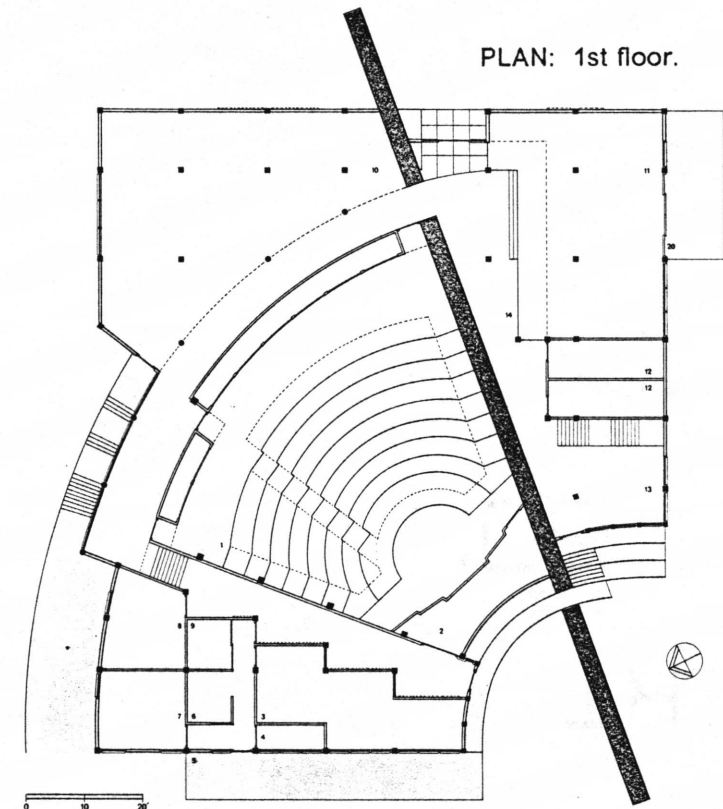
Plan: 1st floor, public areas.

The auditorium (1) is the heart of the building, and is placed centrally in the plan. It is the auditorium space which is the very *raison d'être* of the building; and because this space is so important, it is described in detail in a separate section of the book, 'The auditorium'. Still, for the sake of completeness here, the auditorium can be described briefly in this discussion as well. The auditorium is a relatively small, intimate concert hall. It is designed to seat only 197 people; their seating is placed on curved rows around a stage which projects forward. One wall of the room is made of stone; this is a section of *the wall* which figures so prominently in the building's *partie*. The ceiling of the room is supported by a magnificent exposed wooden space frame, designed on a radial grid. The members of the space frame form geometric patterns of stars and spirals, as you gaze up to view it from from the room below. The ceiling supported by the space frame is high (about 30 feet); this height is necessary to give the room sufficient volume for good acoustics. However, the depth of the space frame (about 8-10 feet) helps to lower the *perceived* height of the space down to the level of the space frame's *lower chord*, which adapts the space to human scale.

Lobby (10) and reception (11) spaces are provided close-by to the auditorium; the lobby is located directly behind it, and the reception space is nearby but across the wall, in the southeast corner of the building. The lobby and reception areas are quite different in character, due both to their differing forms and to the way their views face opposite areas of the site.

The lobby (10) is an introspective room. Its view to the outdoors (to the North) faces the forest. Its rear wall (to the East) is bermed into the slope of the site somewhat; clerestory windows high on the rear wall provide diffuse light from this direction. To the South, the lobby is bounded by a short segment of *the wall*. And the last 'boundary' of the room follows (and is open to) the curved hallway beside the auditorium. This edge of the room is marked by a change in flooring material, by the three round columns which bound the corridor, and by the change in ceiling height (elevated) over the skylighted curved corridor itself.

The reception area (11), in contrast to the main lobby, is a lighter, much more open-feeling space; its view faces out (to the South), across a wide, open mountain meadow. Sliding doors along the Southwest wall of the reception area open onto an exterior porch (20) where one can pause to breathe the fresh mountain air, while admiring the meadow. The reception area is bathed in light from three sides. From the direction of the porch, there is light through



the windows and the sliding doors. From the rear (Southeast) wall of the room (which, like the rear wall of the main lobby, is bermed into the hillside), there comes light through clerestory windows, placed high on the wall. And along the 'inside' boundary of the room (beside the wall), light enters the space through the skylights over the corridor-beside-the-wall. All along the length of this corridor, it is a two-story space; so the hallway is daylighted, the stone wall is washed with light, and the public spaces which adjoin the corridor receive this daylight from 'within' the building, as well.

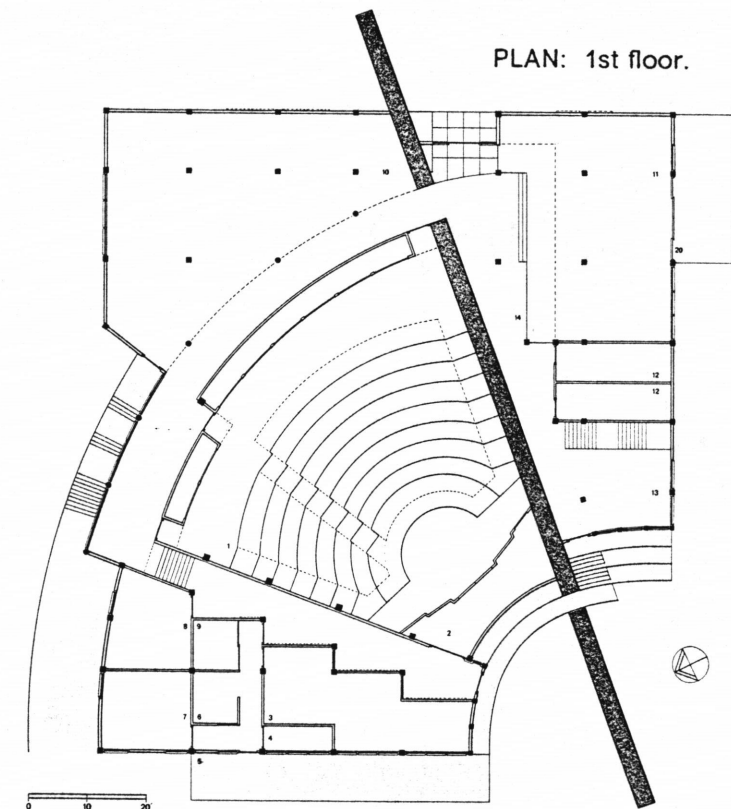
The reception area is open to the corridor-along-the-wall; its 'boundary', to this direction, is defined by a level change (the reception area is raised up as on a plinth, several steps above the level of the corridor) and by the columns which frame the edge of the plinth. Above this 'entrance' to the reception area (the steps), the mezzanine-like *second* level of the South wing of the building (15) has been pulled away from the wall, enlarging the two-story space which begins above the corridor. The first floor corridor similarly widens at this point, at the base of the reception area.

This 'space beside the wall' (14) celebrates the wall and the one opening through the wall (between the main lobby and the reception area), by creating enough space to allow one to actually step far enough back *from* the wall to see it in its larger context; *to be able to view* and more fully appreciate the massiveness of the wall, and the contrast between this massive solid wall and the relatively small opening which allows you to penetrate *through* it. The two story space, then, celebrates this important joint in the building. From below or from the balcony above, either one, the space is made more grand by the views that are opened up.

The remaining rooms in the public section of the first floor of the building include the public rest rooms (12) and a foyer space (13), both located near the building entrance which is closest to the amphitheater. The rest rooms are located here (in the central part of the South wing of the building) so as to be accessible both from the main concert hall, (when performances are given indoors) and from the direction of the amphitheater (during outdoor concerts). The foyer (13) is a two-story space; along one edge of this space runs a stairway which leads up to the offices located on the upper floor. The foyer, like the lobby spaces, is open to the corridor which runs alongside it. The foyer is intended to be a small, comfortably furnished sort of 'sitting room', whereas (by contrast) the actual lobby and reception areas will be sparsely furnished, with far more space for standing than for sitting.

Plan: 1st floor, private areas.

Private areas of the building which are directly related to activities surrounding the concert performances, themselves, are located apart from public areas of the building, in the North wing (first floor). The area most closely (physically) linked to the concert hall is the backstage area (2). Because the theater is designed for the performance of chamber music, the backstage area here need not be very large (as it would need to be to support theatrical performances, with stage sets, scenery, and so forth). Rather, the backstage area here need only accommodate the musicians and their instruments (directly before performances), and occasionally perhaps a grand piano or a harpsichord which might need to be wheeled onto the stage for the second half of a concert. The rooms in the private wing of the building have easy access to the



backstage area, through a private corridor. Besides this corridor, the functional areas which make up the private wing of the building include: a remote recording studio (7) an instrument storage area (8) and (perhaps most important) several rooms which form the 'green room' suite, the place where the performers relax and warm up before performing a concert.

The green room (3) is meant to be a pleasant, comfortably-furnished room, with an ambience somewhat akin to that of a living room. This is where performers prepare themselves to go onstage: by relaxing, calming and clearing their minds, tuning their instruments, playing scales to get their fingers warmed up. For the convenience of the performers, the green room is situated very close to the backstage area, and its 'suite' of rooms includes a small kitchenette (6), a storage area (9) and a private bathroom (4).

The view from the green room faces (Northwest) into the forest, the 'introspective' portion of the site. A private exterior porch (like a deck) (5) runs along the Northwest wall of the building (alongside the green room suite); the porch provides a place where the performers may pause and enjoy the fragrant outside air and the soothing sight and sounds of the forest.

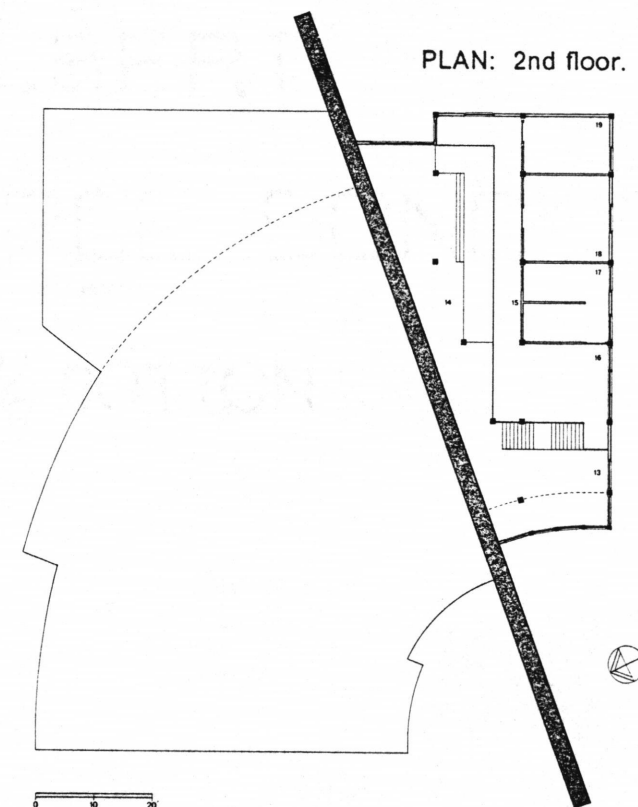
Opposite this Northwest (exterior) wall of the green room is the 'interior' boundary of the green room: an interior partition wall, which separates the green room from the corridor. This 'interior' green room wall is stepped back in three segments along the hallway it adjoins; the stepping is articulated along the grid of the building's post-and-beam structure.

The three shorter segments of this 'stepped' wall (segments perpendicular to the exterior wall) are 'transparent': one segment is the doorway from the corridor into the green room suite, while the other two segments contain fixed-glass windows between the green room and the daylighted hallway. The three longer segments of the wall (segments parallel to the exterior wall) are 'solid'; however these wall segments have clerestory-type windows, situated high on the green room wall (above eye level). (See the section drawing.) These small fixed-glass windows allow diffuse light from the daylighted corridor to wash in through the 'inside' wall of the green room, brightening what might otherwise be dark corners of the green room by filling them with light.

Plan: 2nd floor, the office area.

The second floor of the building occurs only in the South wing of the building; it is a mezzanine-like floor which houses the offices for the music center. Two areas of the second level, the reception area (16) and the second floor corridor (15) look out over adjoining two-story spaces of the building: the reception area looks out over the first floor foyer area, and the entire second floor hallway is open to the two story space which runs along the length of the wall. The skylights which run along the wall light these open second floor areas, as well the first floor corridor below.

Besides the open areas on the second level, there are several, relatively small, enclosed rooms. These include two offices (17), a conference room (18), and a single practice room (19). These rooms, though enclosed to achieve privacy, are still well daylighted; on their outer wall, they have windows which look out over the meadow; and they also have areas of fixed glass on the partition wall which faces the corridor, which lets in daylight from the 'interior' of the building (from the skylights along the wall).



Entrance/ Circulation.

Because the public and private areas of the building are kept separate, there are also different entrances and separate patterns of circulation for the two zones of the building. Entrances and major corridors of circulation for the public and private zones of the building are shown on this page.

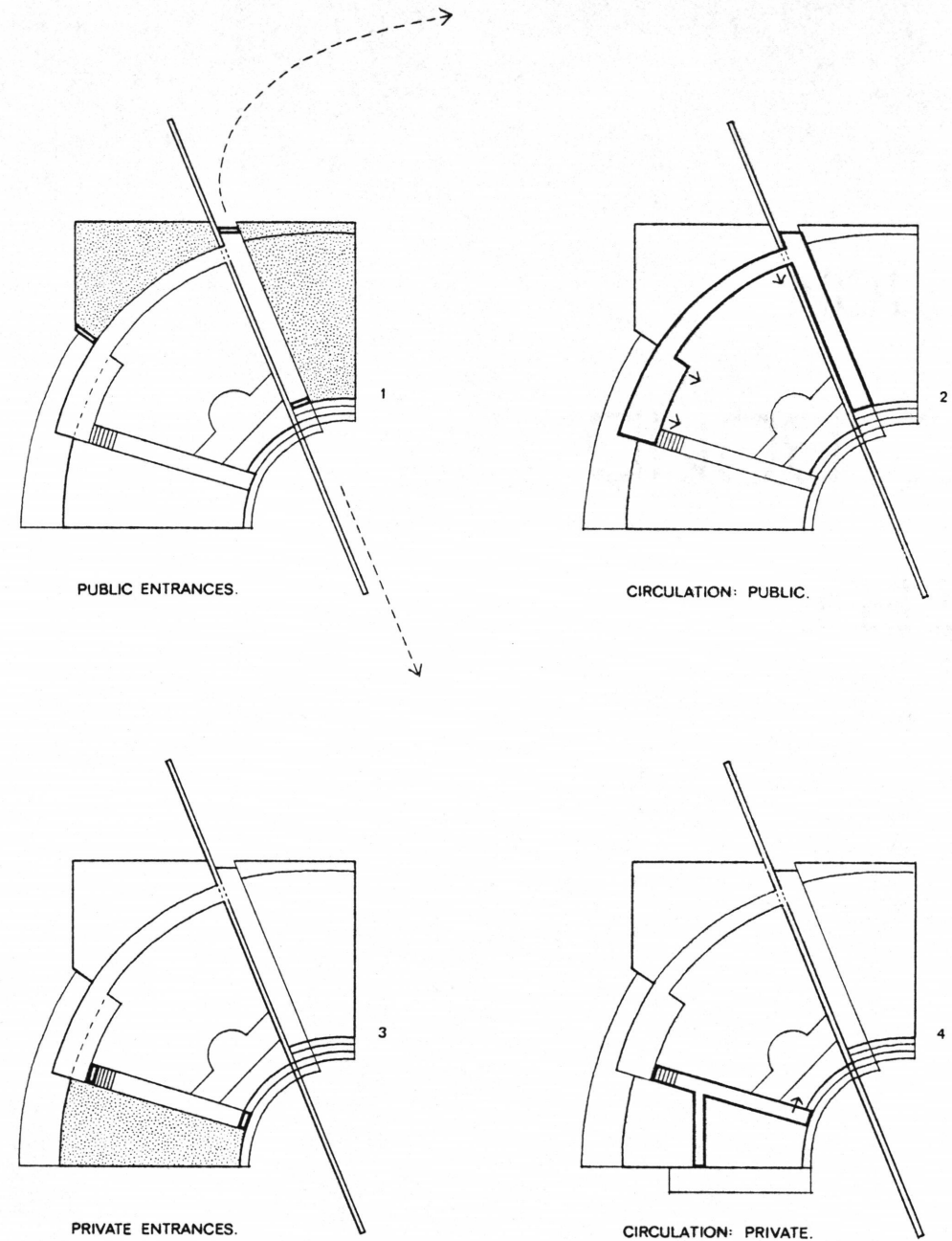
Entrances and circulation corridors are outlined (in their separate diagrams) in bold. The public areas of the building are shown (shaded) in diagram one; and in diagram three, shading designates the area of the private wing. The entrances and patterns of circulation are arranged as follows.

(1) There are three public entrances into the building. One (left) allows entrance directly into the lobby behind the theater. The second entrance (center) is an entrance beside the wall; this entrance (being closest to the parking area) is the entrance through which the majority of people will enter the building. And the third entrance (right) allows entrance to the theater building from the direction of the amphitheater. (The public portion of the building is shaded; the curved arrow shows the direction to the parking area, and the straight arrow indicates the direction leading to the amphitheater.)

(2) The public circulation is provided by two intersecting corridors: one, the straight corridor which runs alongside the wall, and the other the curved corridor behind the auditorium. These give the public access to the major public areas of the building: the theater, and the public areas *peripheral* to the theater: the lobby and reception areas, and the public rest rooms.

(3) There are two entrances to the private wing of the building, located at opposite ends of the private corridor. One is an exterior entrance (right) and the other (at left) is an interior connection to the public portion of the building. (The private zone of the building is shaded.)

(4) Circulation for the private wing of the building, which is kept separate from the public circulation, allows private access for the performers to and from the green room area, the private porch, the instrument storage area, the remote recording studio, and the backstage area.



Building entrances/ circulation.

The description (regarding the entrances and circulation) given here, refers to the diagram on the previous page.

(1) Of the three entrances to the public areas of the building, it is the second entrance-- the one beside the wall-- which is the *main* entrance to the building for theatergoers, as this is the entrance located closest to the parking area; (the direction to the parking area is shown by the curved arrow.) Concertgoers who enter the building at this entrance must, in order to get to the auditorium, walk through an opening *through* the wall. And so they are, on their way to the theater, introduced to the stone wall as a key element of the building's structure.

The third entrance to the building, located at the far end of the corridor along the wall, opens out onto a set of exterior, curved, stone-paved steps, facing the amphitheater. From these steps, one may pause and admire the view of the mountains and of the garden wall as it leads down the hill. As the wall steps down the hillside, it leads first past the grassy terraces and then to the amphitheater; (the direction downhill to the amphitheater is indicated by the straight dashed arrow). So, this entrance, as well as furnishing a way to leave the theater building to get to the amphitheater, will also (conversely) provide an entrance by which summer concertgoers who are coming *from* the amphitheater may enter the theater building, to use public facilities such as the reception area and the rest rooms.

(2) Circulation for the public areas of the building, arranged in the form of two intersecting corridors, provides public access to the auditorium, as well as to the other (peripheral) public areas of the building (shaded): the lobby, the reception area, and rest rooms. They also provide egress toward the amphitheater (downhill) and the parking area (uphill). The small arrows show the location of public (interior) entrances to the auditorium.

(3) The private wing of the building (shaded) has its own private entrances and circulation corridor; in this way, the private areas are kept separate from the rest of the building. The two main entrances to the private wing of the building are located at opposite ends of the main corridor. At one end (the entrance at left), the private corridor connects to the curved public corridor; so this joint of the building (where public meets private) may effectively be considered an entrance to the private part of the building. The other entrance to the private wing is an exterior entrance, located at the far end of the private corridor.

(4) The circulation for the private wing of the building consists of one main corridor (which runs the length of the private wing, alongside the auditorium), intersected by a second short corridor, a 'spur' off the first. The main corridor provides circulation between the backstage area (indicated by the small arrow) and the other rooms of the private wing (such as the green room suite and the instrument storage area), as well as providing a connection between the private corridor and the public areas of the building. The shorter corridor, which leads off the main hallway, travels through the green room suite past the remote recording studio, and then opens out onto a private exterior porch (which faces into the forest). Here in the quiet of this more introspective side of the building, the musicians may pause to refresh themselves with the fresh air and the peacefulness of the forest, and thus to center and quiet their minds, as they prepare to play their music.

The structure of the building

Structural organization of the building.

The building's basic structural organization is based on the interplay between two structural systems: a bearing wall made of stone, and a post-and-beam framework of wood.

The two systems are contrasting in nature. The wall, which forms the major axis of the building, is solid, massive, opaque; rarely penetrated by openings. The post and beam system on the other hand, is skeletal in nature. It is a framework; its character is transparent and open. Thus the framework is virtually the opposite, in nature, of the wall. Whereas the wall is a solid, the post and beam structure (forming an open frame which encloses a space) is made up mostly of void.

The wall finds its beginning in the substance of the site. It first rises up out of the ground as a low garden wall (far down the hillside), as an outcropping of boulders might rise up through the ground in a field. The garden wall then climbs up the hillside, becoming a bearing wall only when it has intersected with the building: at this point, the post-and-beam structure of the building frames into the wall.

It is the wooden framework which actually encloses the space of the building; the wall is solely a bearing element which passes through.

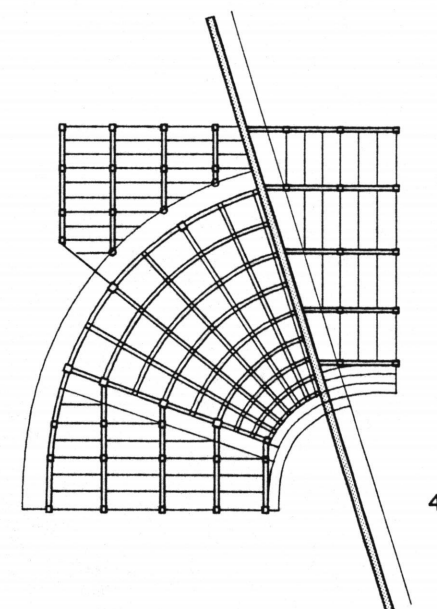
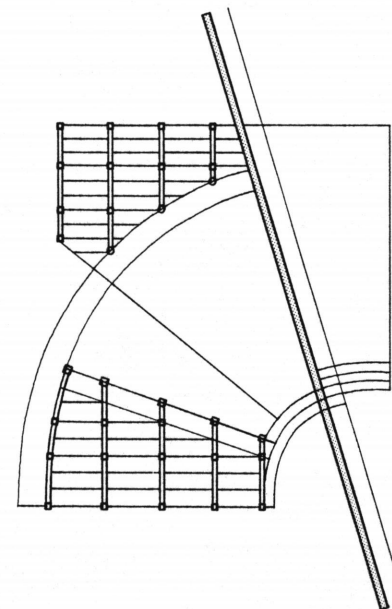
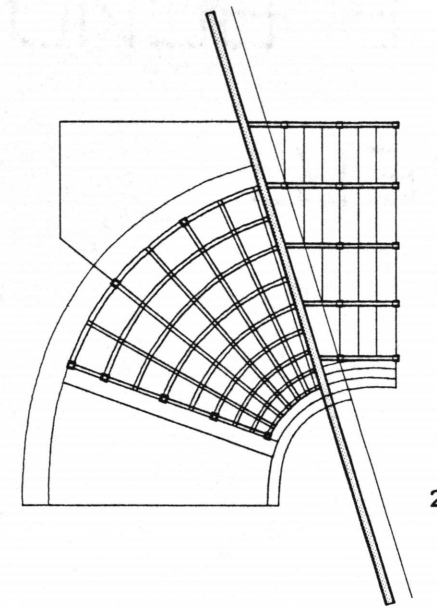
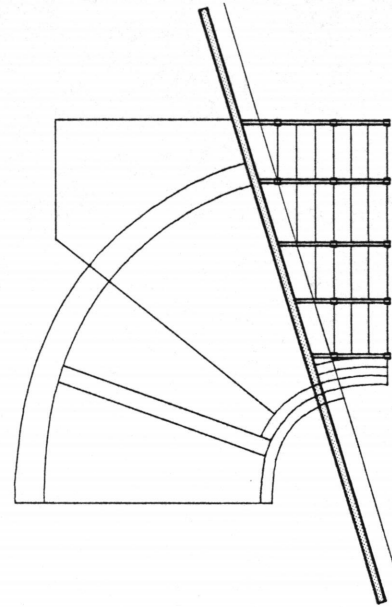
Diagram: the structural organization.

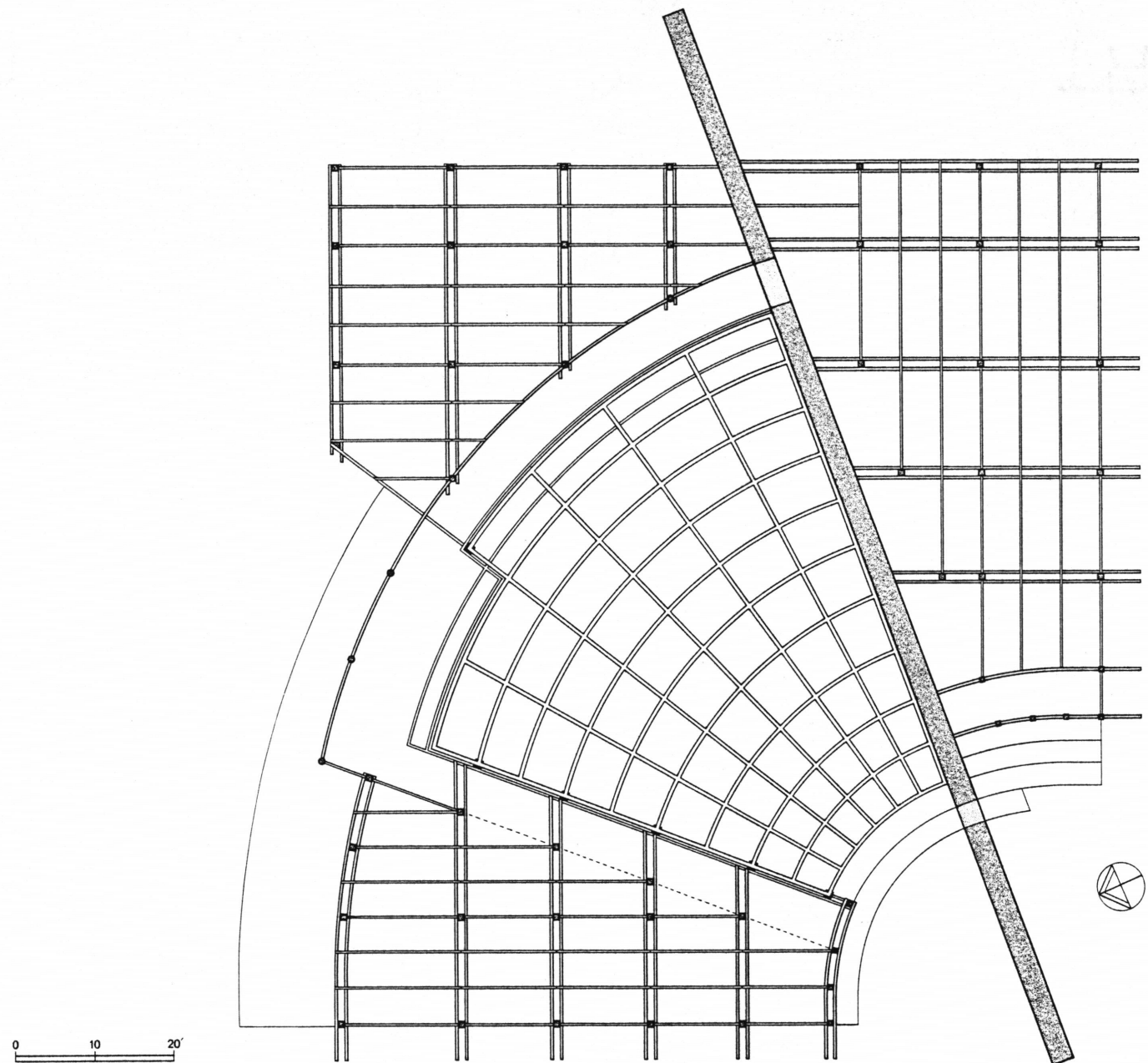
(1) In the areas of the building adjacent to the wall, the wooden framework frames into the wall. Here, the post and beam frame of the South wing of the building is shown. Beams are supported at one end by wooden columns; at the other end, they are borne by the wall.

(2) On the other side of the wall is the auditorium space. In order to achieve a large clear span for the ceiling/roof structure here (over the concert hall), the auditorium uses a wooden space frame system rather than a post-and-beam grid. But like the post and beam frame on the other side of the wall, the auditorium's space frame is supported along one edge by wooden columns, while its opposite edge is supported by the wall.

(3) In areas of the building which are not adjacent to the wall, the structure is strictly post-and-beam; all loads are borne by the wood columns.

(4) The last frame shows the diagrammatic structure of the building as a whole.



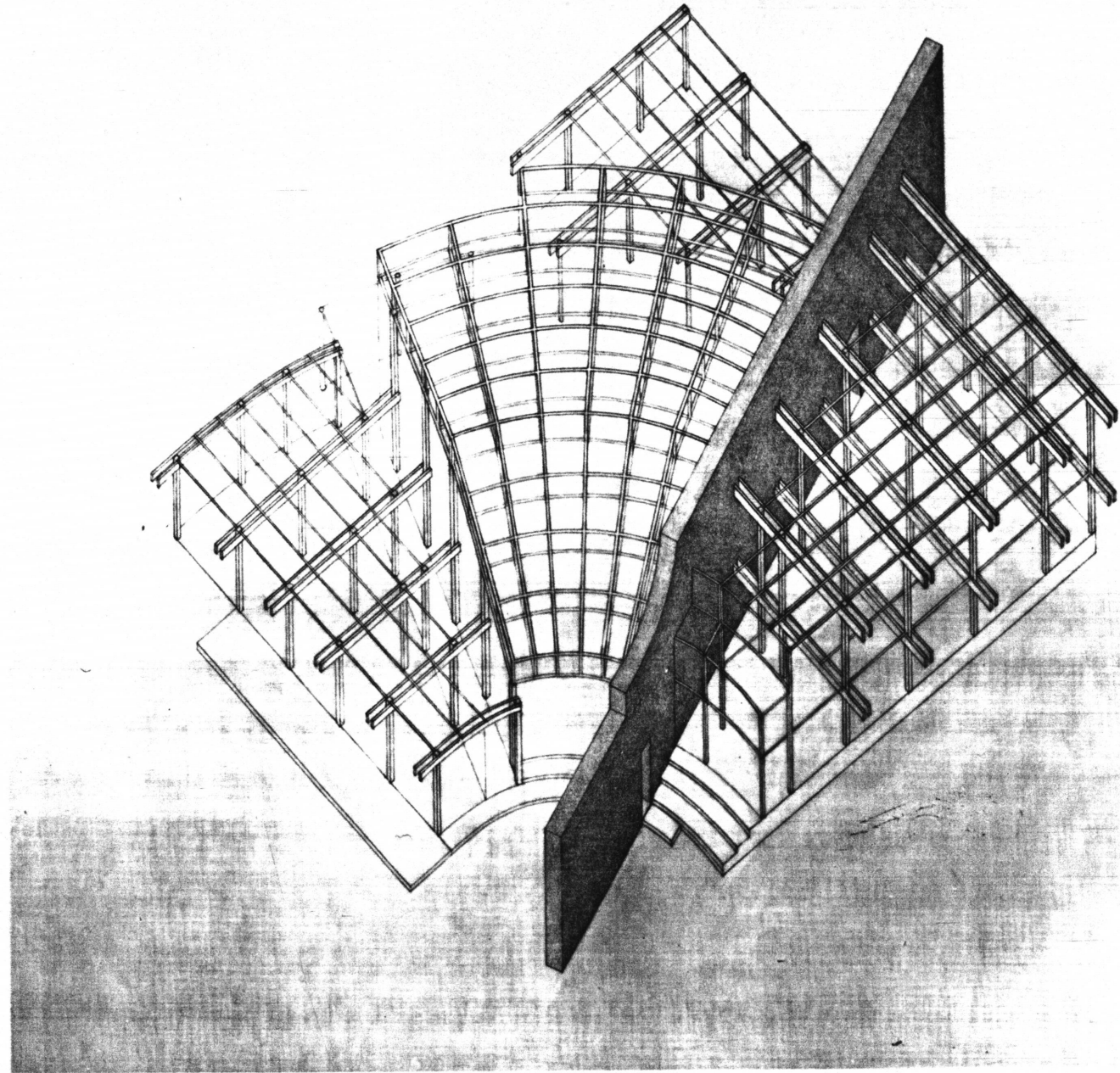


The framing plan, shown here, illustrates the building's post-and-beam structure and its relation to the stone wall.

The structure's load is carried by a grid of wooden columns; these are spanned by split beams, which in turn support secondary beams (the rafters and floor joists). The rafters and joists, positioned about five feet on center, support wooden decking made of one inch thick planks, tongue-in-groove. (The decking is not shown.)

The structure of the space frame is shown in greater detail in the chapter describing the auditorium. The stippled area of the drawing shows the position of the stone wall.

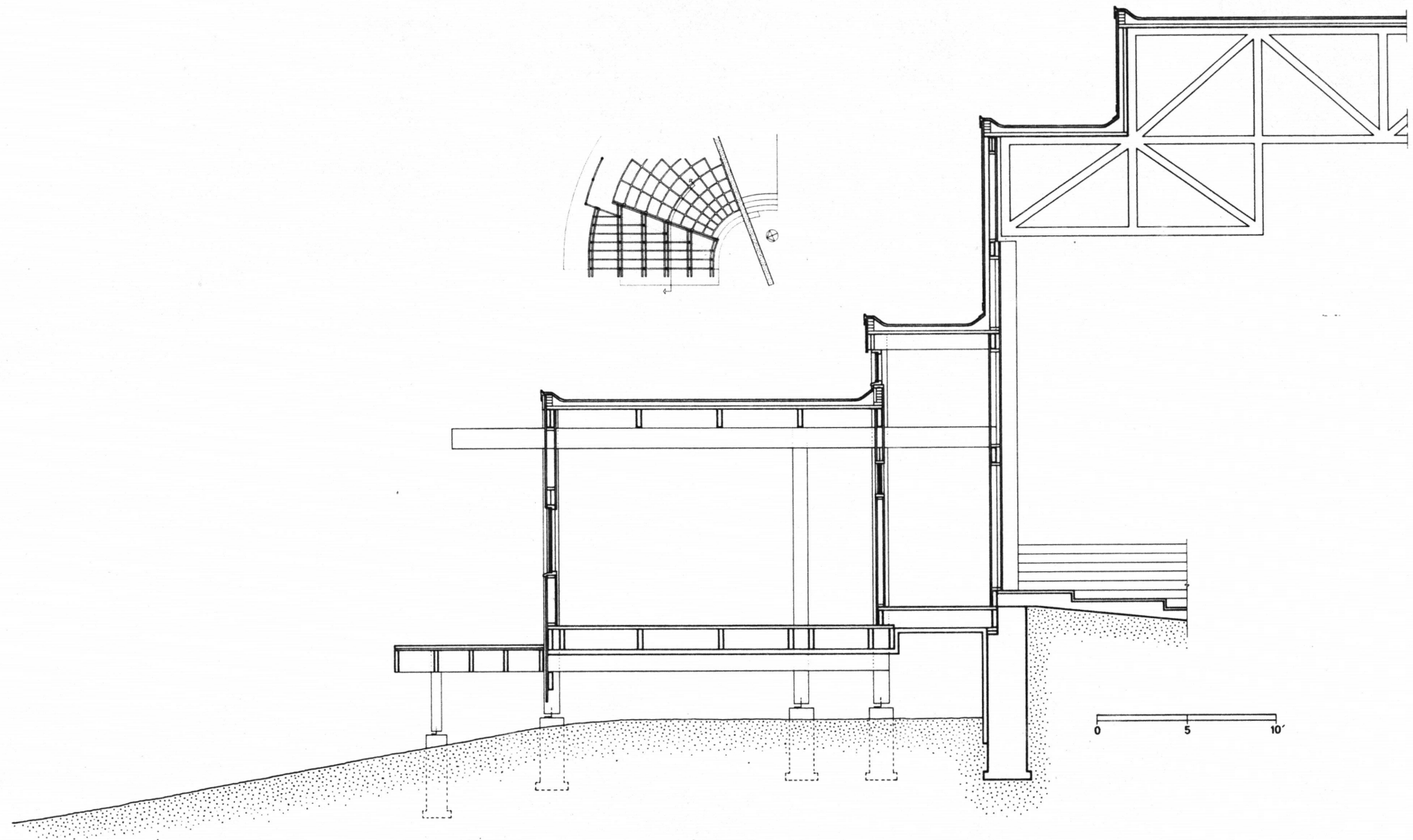
The building's structure: axonometric.



The structure of the new building is diagrammed here, in axonometric form. The wooden framework (including the space frame) is supported in peripheral areas of the building by wooden columns; whereas, along the axis of the wall, the wooden framework bears onto the wall. Split beams are used in the post-and-beam portion of the framing. The South wing of the building (seen to the right of the wall) is two stories high.

The section shown is cut through the North (private) wing of the building; the location of the section cut is shown diagrammatically on the small inset drawing.

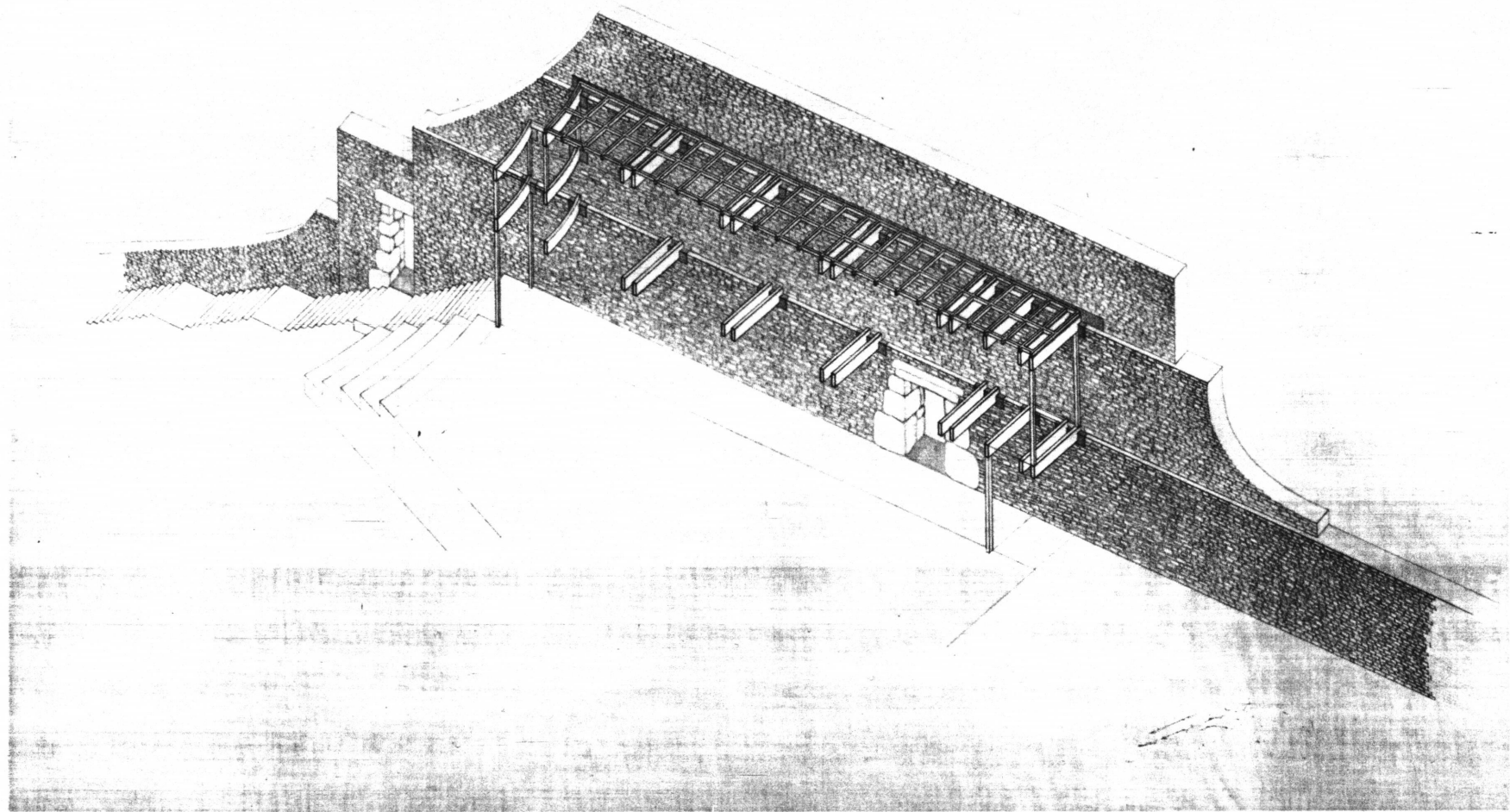
The plan areas seen in this section are: the private porch (to the left); the green room and its adjacent 'private' corridor (center); and a portion of the auditorium space (to the right).



Section drawing.

The wood post-and-beam structure of the building is shown. Floors and ceilings are built of wood decking; and the wooden floors, roof beams, and decking which forms the ceiling, have all been left exposed to (interior) view. Wood columns in the areas of the green room and the porch bear onto concrete piers, whereas the larger columns located at the edge of the auditorium bear onto a concrete foundation/retaining wall. The wood columns, where they are engaged in walls, generally extend out slightly beyond both faces of the walls. The columns supporting the space frame, however, extend out beyond the face of the partition wall on the auditorium side only; from the direction of the adjacent hallway, the 'auditorium' columns cannot be seen. Rigid insulation has been used on the floor and the roof of the building. Interior partition walls are framed and plastered.

There are windows on the exterior wall of the green room which frame a view of the forest. But the green room is also daylit from its 'inside' wall (adjoining the corridor). The corridor itself is daylit through clerestory windows located above the partition wall which separates the green room from the hall. From there, fixed glass (interior) windows, situated high on this partition wall (between green room and hallway), allow diffuse light from the daylit corridor to illuminate the green room from its 'inside' edge.



Section/axonometric drawing: the wall.

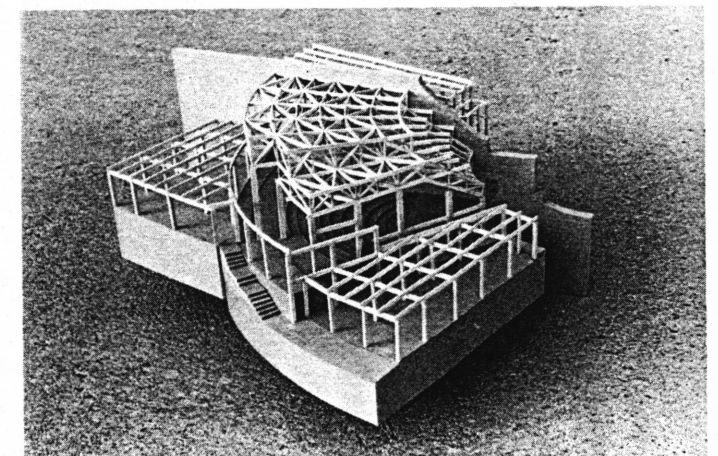
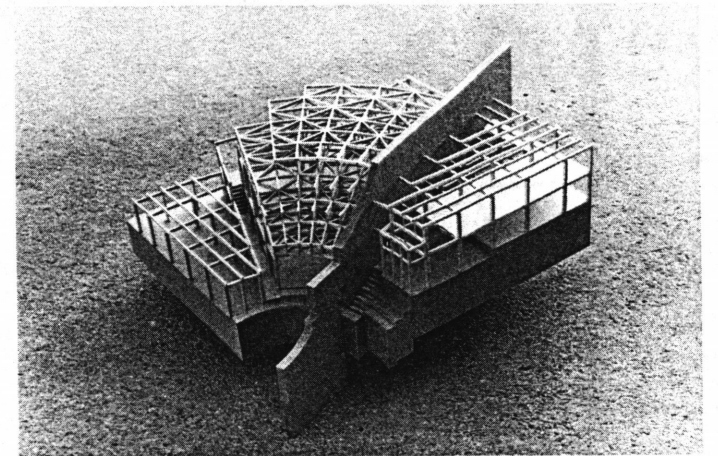
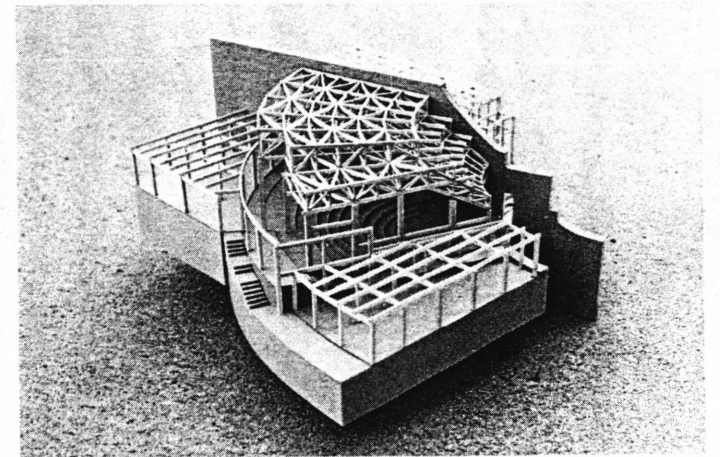
This section/axon drawing was made to show the form and structure of the wall and the manner in which beams may frame into it. The section cut for this section drawing was made parallel to the wall, six feet away from the face of the wall, to the south: the cut occurs along the hallway which runs alongside the wall. So in the plane of the section cut, the split beams of the post-and beam framing have been cut through; and the wall is seen in the background.

Section/ axonometric drawing: the wall.
(see drawing on the previous page.)

The wall is thickest at its base, and then decreases in thickness twice as it increases in height: this change occurs at the levels at which the first and second floor) beams frame into the wall. So, at each level at which beams frame into the wall, there is a ledge articulating the wall thickness. Beams frame into special pre-cast concrete 'stones', strategically placed along the wall; these 'stones' provide special (cast) beam pockets into which the ends of the beams are fit. The pre-cast 'stones' thus create a *joint* at which the wood of the framework may join into a wall made of stone.

The corridor which runs alongside the wall is a two-story space, skylighted from above; the metal framing for the skylight is supported by the second floor beams. Where this metal framing meets the wall, it frames into a recess in a poured-in-place concrete beam (which is a part of the wall). The beam thus provides a smooth, uniform surface to which the metal framing may join: the beam creates a concrete interface at which it becomes possible to attach a (smooth) metal frame to a rough stone wall.

Two openings through which one may penetrate the wall are shown. One, the entrance leading through the wall to the theater space, is seen at right; and the second (a much smaller opening in the wall), located along the curved (exterior) face of the building, is seen at the left.



The structural model.

Choice of the structural elements.

The materials and the elements of structure from which the new building is to be made, are taken from study of the buildings of the context-- where natural materials have been used, simply and honestly, in harmony with the site. So it was with the intent that the materials and form of the *new* building (like those of the context) might also blend gracefully into the natural beauty of the site, that the two materials used in the design of the new building's structure were chosen: the materials of stone and wood. The wood is to be used in the form of an open wooden frame, and the stone is used in the form of a stone wall.

The wall. The form of the garden wall-- built of rough-cut stone; low in profile, built close to the earth-- was created in the spirit of trying to design using natural materials, in harmony with the natural beauty of the site. In this spirit the wall is, itself, considered to be like an outcropping of stone from the site. Built of rough stone, the form of the wall rises up out of the ground; but at the same time, it remains low in profile, resting close to the earth's surface. Like a boulder found in a field, the wall is a part of the *substance* of the earth which has pushed up through the surface of the ground. And thus, although the garden wall is *built* (is man-made), its material, its scale, and its very character as a garden wall, make it a reasonable and natural element to find in a mountain meadow. As the garden wall climbs further up the hill, it meets and enters the theater building, now becoming a stone *bearing* wall, an integral part of the building's structure; in the building, the wall (as structure) works together with the structure of the wood frame.

The frame. The use of a wooden frame as structure in the new building was chosen in part because it relates to the context (where post-and-beam framing has been used in the existing structures). But also, the structural 'language' of the framework was chosen (for the new building) for its open, skeletal. It is intended, like the framework of a traditional Japanese house, to form exterior 'walls' which may open to the out-of-doors-- in order to embrace the great natural beauty of the site.

The auditorium/ Space frame

The theater: design objectives.

- The object of the design of the theater is to create a room which will enhance the experience of chamber music.
- It should, then, be a space with excellent acoustics, and
- The interior form of the theater should create a visual ambience of warmth and intimacy.
- The room should provide seating for a small audience (not more than 200 people), and must provide good lines of sight to the stage, for those seated in the theater.
- Finally, the room should be built of natural materials, and the structure of the room should be expressed. exposed to view.

Design of the auditorium (an introduction).

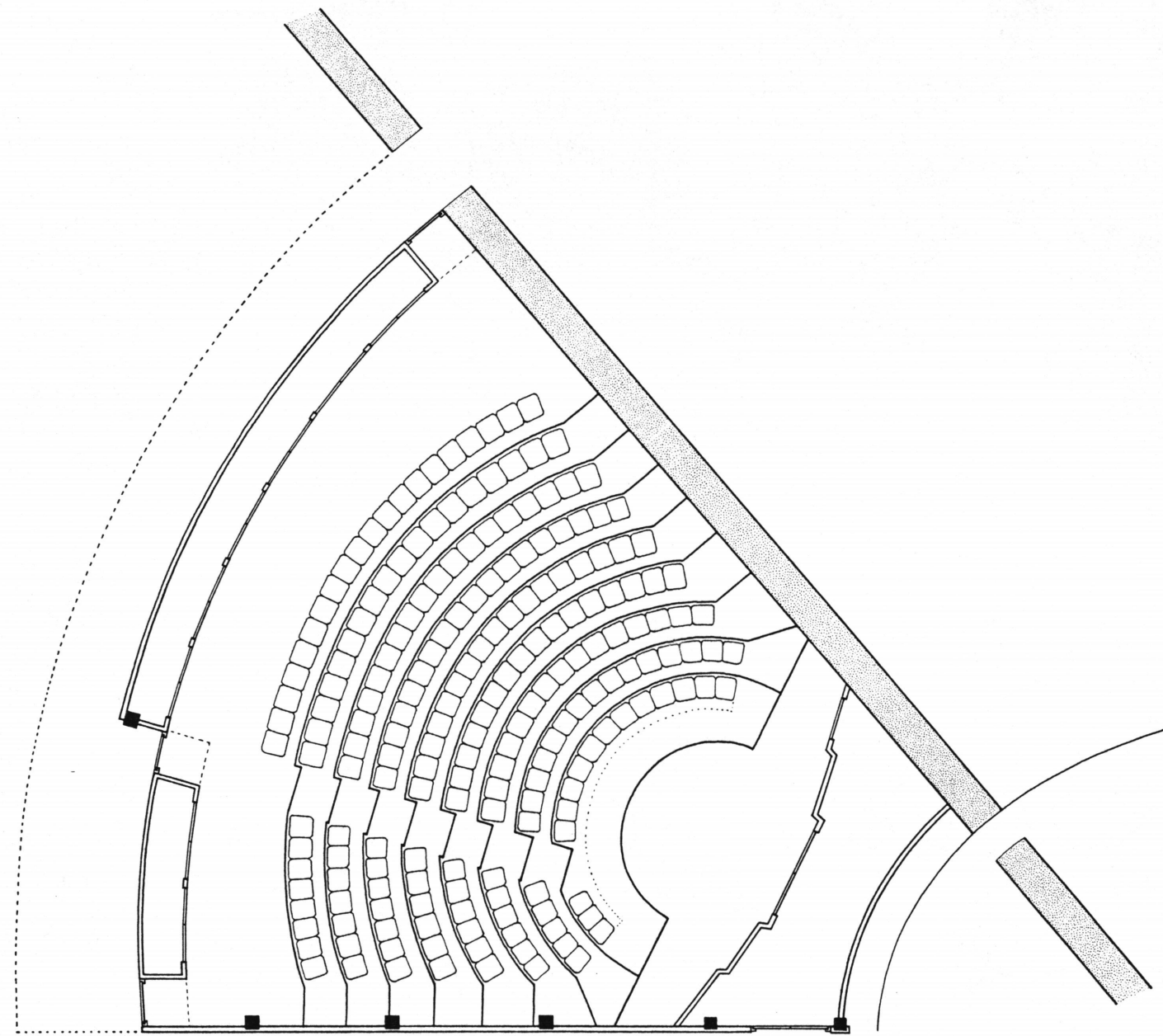
The auditorium, a concert hall for chamber music, is the heart of the building: it is the reason behind the entire design. So the auditorium should be, above all else, a place for listening; a room for music-- a space which will enhance the experience of chamber music.

The nature of the music, itself, is intimate in character-- written for small ensembles, to be performed for small groups of listeners. And so, to enhance the experience of listening to chamber music, the auditorium should provide a theater space which is intimate visually, as well as warm and resonant, acoustically. Because the theater is for chamber music (specifically), its size is small-- seating less than two hundred people. And the seating arrangement for the room is informal, with seats arranged on a series of curved landings, wrapped about a stage which projects forward into the audience.

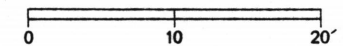
The roof/ ceiling structure over the theater space is a curved wooden space frame, supported along one side by a stone bearing wall (the left side wall of the auditorium) and along its other edges by wood columns. The *form* of the space frame (over the auditorium) divides the *interior volume* of the room into two different parts, along the axis of an off-center aisle. Along the line of this aisle, the level of the bottom chord of the space frame changes height (in section)-- so that to the left of the aisle (over the wider section of seats), the ceiling is higher, and to the right of the aisle (over the narrow section of seats) the ceiling is dropped to a lower level. Thus two different kinds of space are created within the larger space of the room as a whole: wider, higher, more open (to the left), and narrower, lower, more intimate in scale (to the right).

The *depth* of the space frame allows the ceiling of the room (above the top chord of the structure) to be high-- enhancing the acoustics of the theater, by adding to the room's volume-- while allowing the *visually perceived* level of the 'ceiling' (at the *lower* chord of the space frame), to be relatively low: thus bringing the ceiling height down a bit, to a level friendlier to human scale.

Finally, the space frame, besides serving as structure, is (itself) beautiful visually. Its wooden members form curved geometric patterns of stars and spirals; and its curved form reflects the curved seating plan of the theater space, below. The space frame, as well as the auditorium's seating arrangement, form, and structure, are described on the pages which follow.



Seating plan for the theater. Seating for the theater is arranged in curved rows, wrapped about a stage which projects forward into the audience. Because the theater is designed expressly for chamber music, it was kept quite small in size: it seats only 197 people. A more detailed description of the seating plan, and of the form and design of the theater room is given on the page following.



The seating plan for the theater

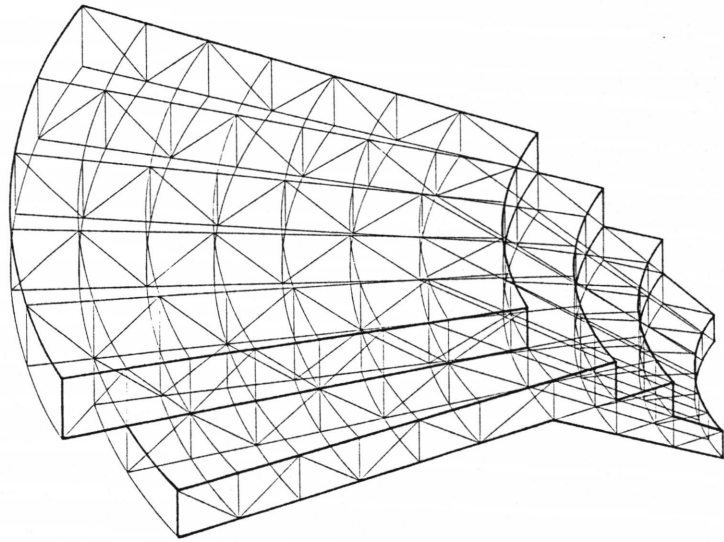
The seating plan in the theater is arranged in a roughly circular fashion, around a stage which protrudes forward into the audience. Because the stage is 'pulled' forward into the seating area, the listeners are actually seated *around* the musicians as they perform. This seating arrangement, somewhat informal, is intended to heighten a feeling of 'connection' between the listeners and the performers.

The curved form of the seating plan is meant to resemble the natural pattern in which listeners might gather around a street musician or a minstrel: the listeners, drawn by the sound of the music, will gather near the musician, loosely grouped, and they will tend to form a semi-circle around the source of the sound.

In order to maintain the informality and the intimacy of the theater setting, and of the visual relationship between the performers and the audience, the stage height was set low: only two feet above the level of the audience. The audience's seats, arranged in curved rows around the stage, are placed on shallow landings; each row differs in level by only six inches from the next. The various landings for the auditorium seats are shown in the drawing by bold lines.

Circulation within the seating area is provided by three aisles. Besides the aisles located along both sides of the room, there is also one 'central' aisle, running through the mid-portion of the auditorium; this aisle is placed off-center, such that the performers need not look forward from the stage into an empty space. This aisle divides the room into two sections. Reflecting the difference between these two seating areas, the ceiling of the room (supported by an exposed wooden space frame) steps down in height, over the aisle. So, above the wider section of seats the ceiling is higher, and above the narrower section the ceiling is dropped by about 6 feet-- creating two different sorts of spaces within the room as a whole. The smaller, lower section of the room is more introverted in character; whereas the larger section with the higher ceiling celebrates a feeling of openness.

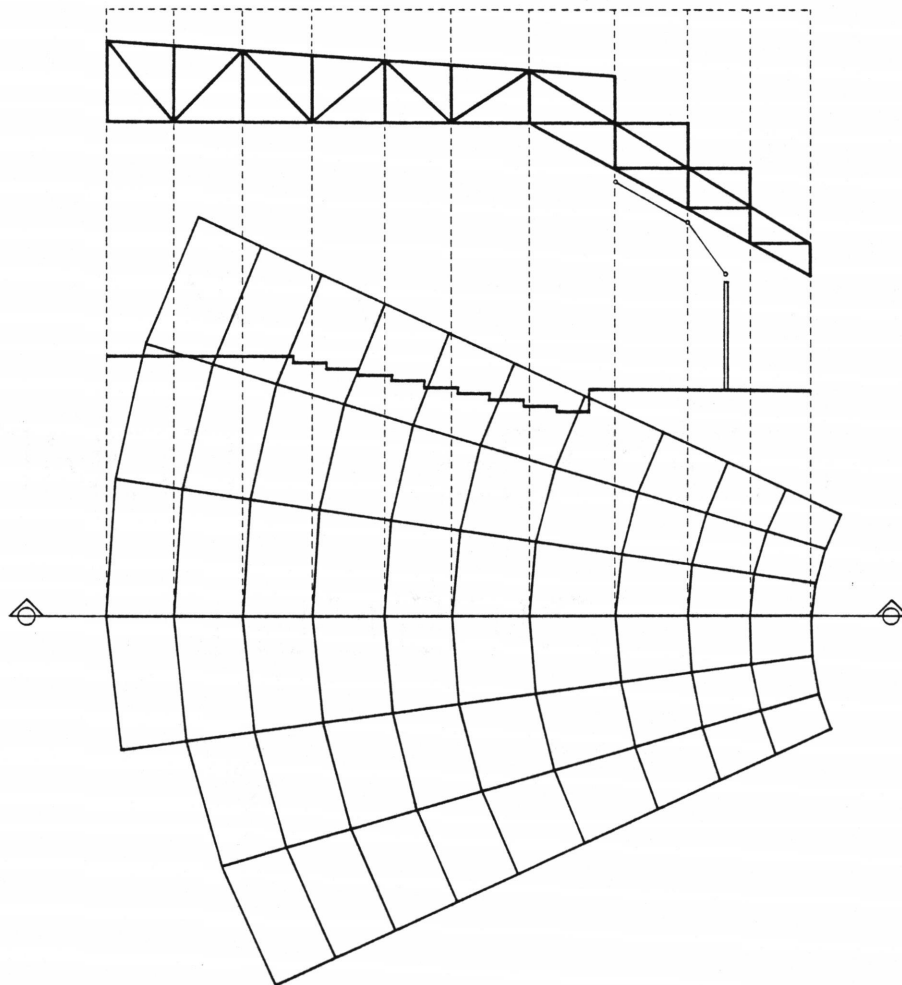
Because the theater is designed solely for the performance of chamber music, it was kept small in size. Chamber music is by its nature an intimate art form, originally intended to be performed in a 'chamber', for a small, select group of listeners. So, in keeping with this tradition, and in order to protect the ambience of intimacy needed for the concert hall, the seating capacity of the theater was limited to 197 seats. An audience of this size would be small enough that each seat in the theater could be located fairly close to the stage, allowing each person a heightened experience of the performance; yet it would be large enough in numbers to generate a great deal of energy in response to a concert performance.



The space frame.

The basic form of the auditorium's space frame is diagrammed here, in plan (lower left), in section (center), and as a 'wire-frame' axonometric drawing (upper left). The wireframe drawing was computer-generated, using CADAM software.

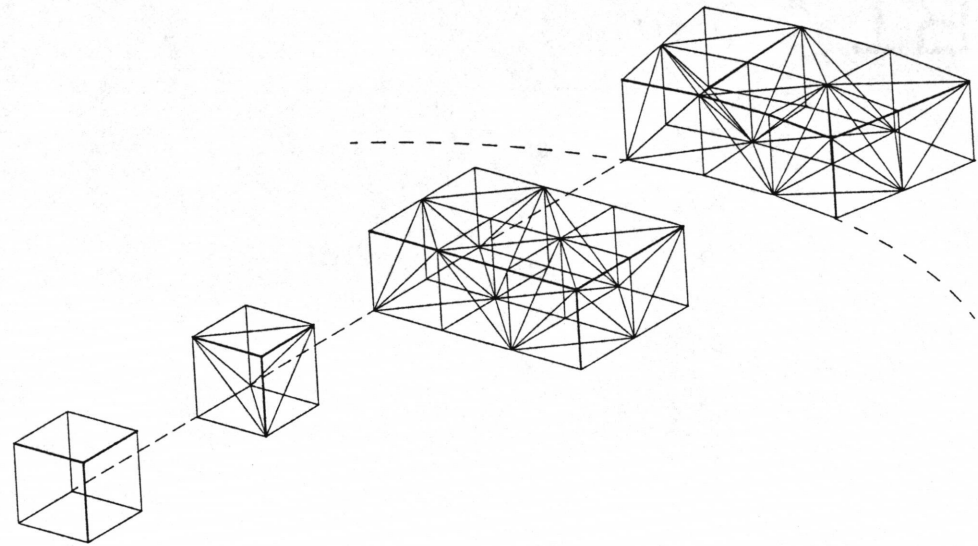
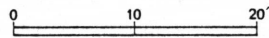
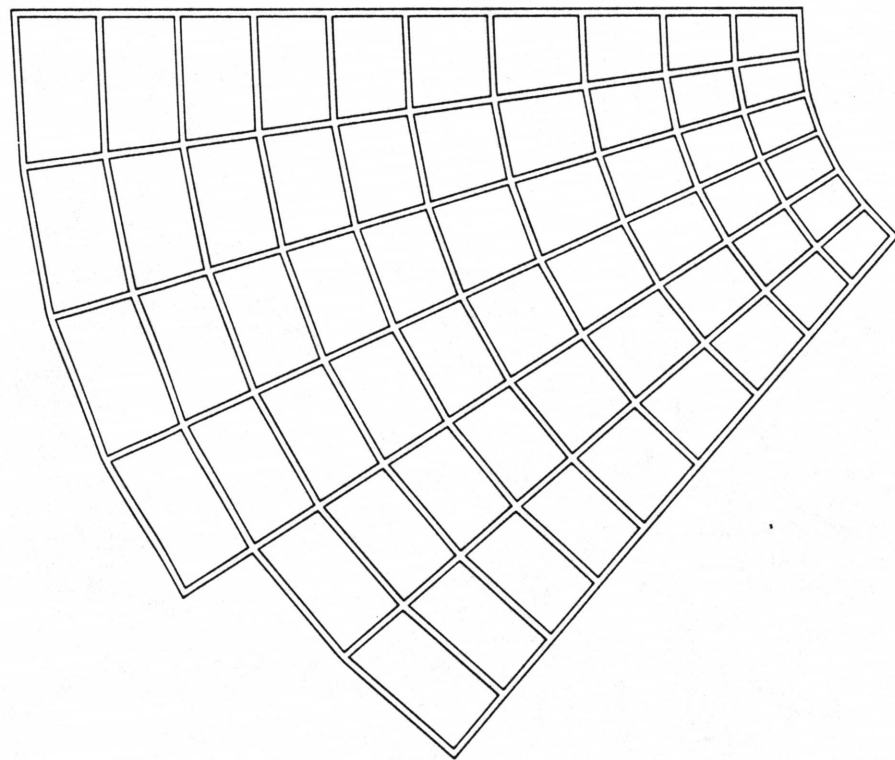
The section drawing (the section is longitudinal) illustrates how the space frame steps down over the front of the theater room (over the stage area), while level of the ceiling remains high over the seating area. The space frame also steps down in transverse section; this lateral articulation of the form can be seen along the leading edge of the axon drawing.



The space frame is to be constructed of wooden struts, which are connected by metal joints. The wooden space frame is exposed to view from the auditorium below, as it is enclosed (sheathed with exposed wood decking) just above the upper chord of the structure.

The depth of the space frame (which runs about 8 to 10 feet) contributes height and (therefore) volume to the 'acoustic envelope' of the room, while at the same time giving the visual impression of *lowering* the ceiling, to the people seated below. This increased volume which the depth of space frame contributes to the room is extremely important in setting up a good 'reverberation time' for this small theater— to make the room resonant, so that the making of music will fill the room with sound, will make the room sing.

While the upper chord of the space frame defines the acoustic space of the room; it is the structure of the *lower* chord of the space frame which is, as seen by viewers seated below, visually perceived as the 'ceiling' of the room: 8 to 10 feet below the level of the *actual* ceiling. This 'lowered' ceiling height helps to make the theater room more intimate in feeling, friendlier to human scale. Thus, the depth inherent in the structure of the space frame simultaneously serves to raise the ceiling of the room (for acoustic purposes), while it also *seemingly* lowers the ceiling (defining the form of the interior space).

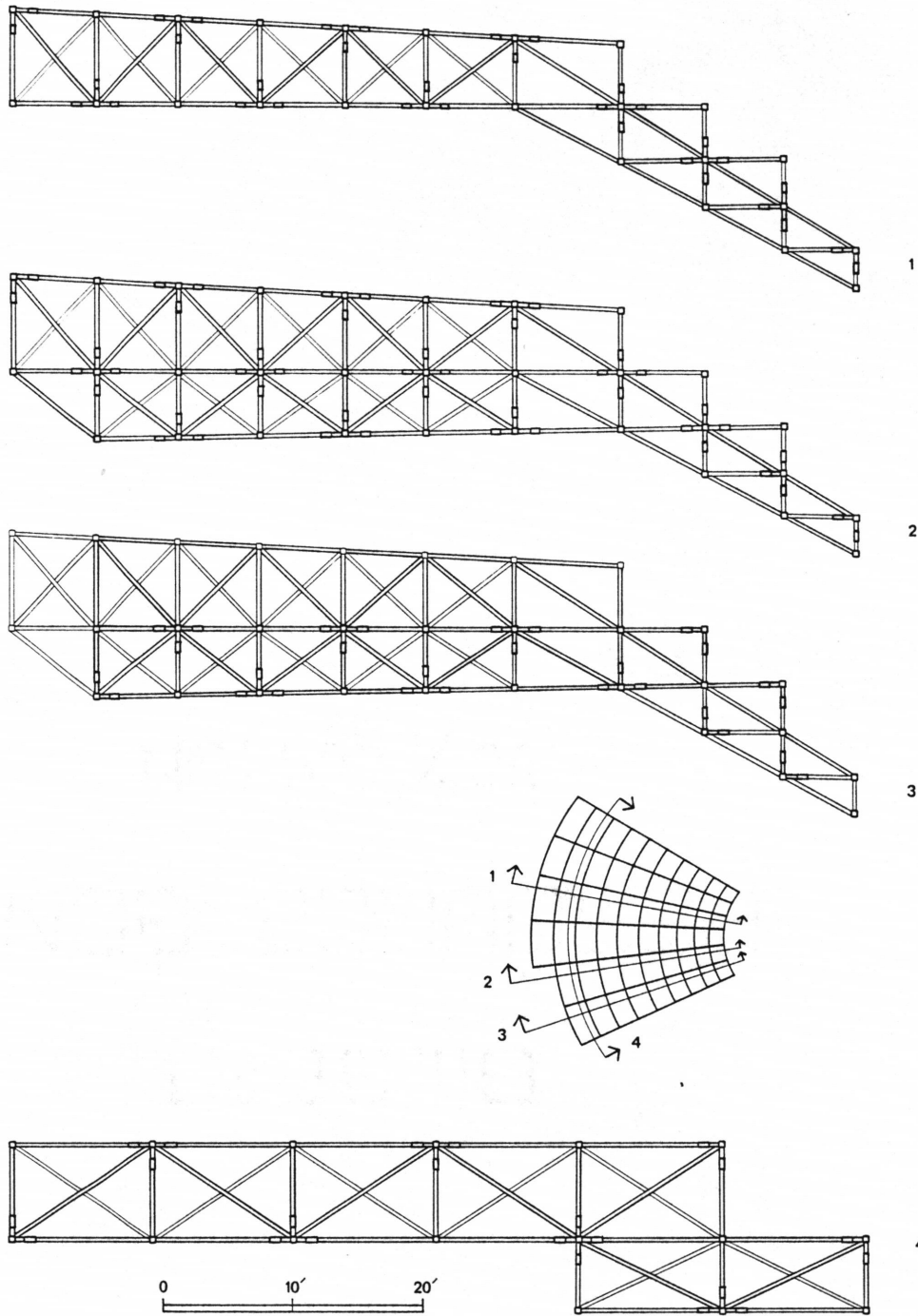


Space frame plan.

A reflected ceiling plan of the space frame, showing its basic form, is shown here, at left. The plan shows the radial grid on which the space frame's structure is based.

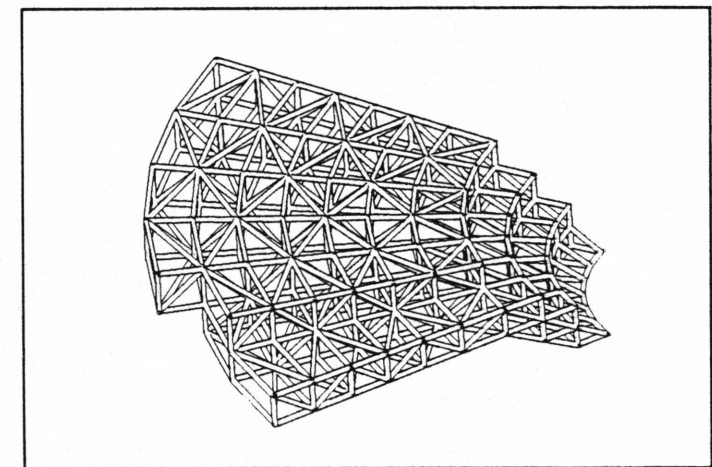
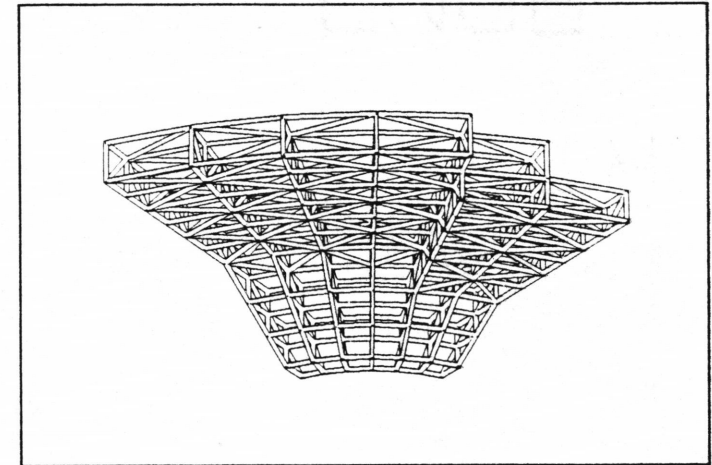
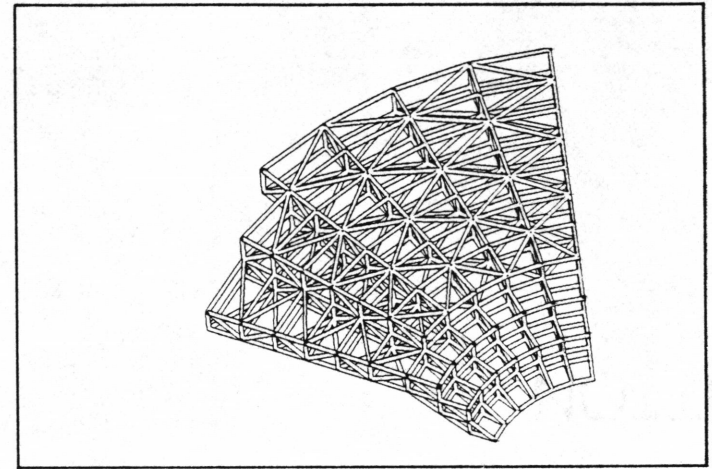
The subunit of structure which has been used to create the space frame's form is basically that of a cube, diagonally-braced along each face (as diagrammed above); a series of these cubes, joined together, creates a 3-dimensional matrix of structure which is extremely strong, and capable of spanning long distances without intermediate support.

For this design, the grid upon which the space frame is based was radially deformed into a curved form, in order that the space frame better fit with and complement the curved shape of the auditorium room below. The pattern of diagonal bracing shown in the diagram above is used throughout the structure of the space frame, although it is not shown on the plan drawing on this page.

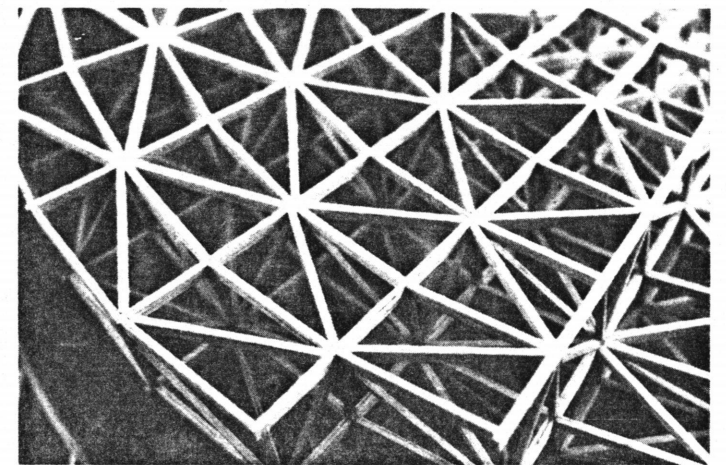
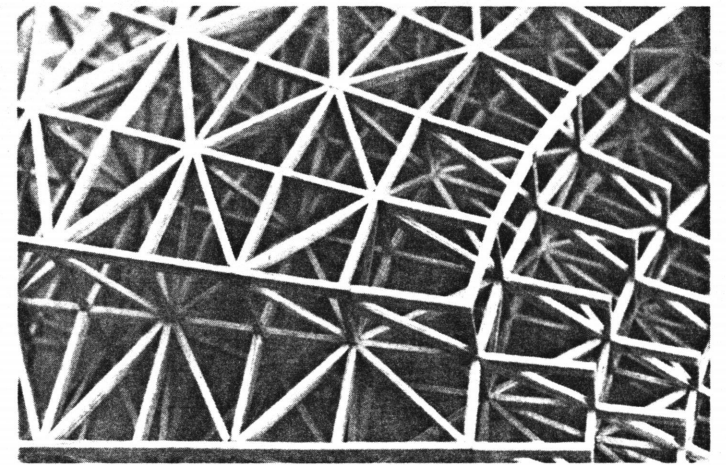
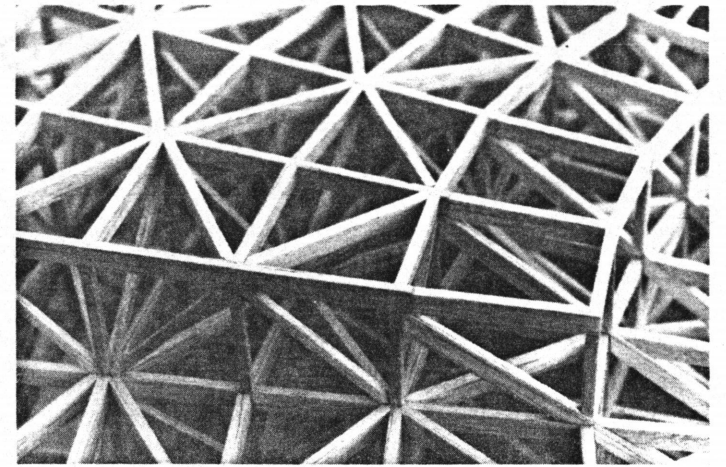


Space frame: sections.

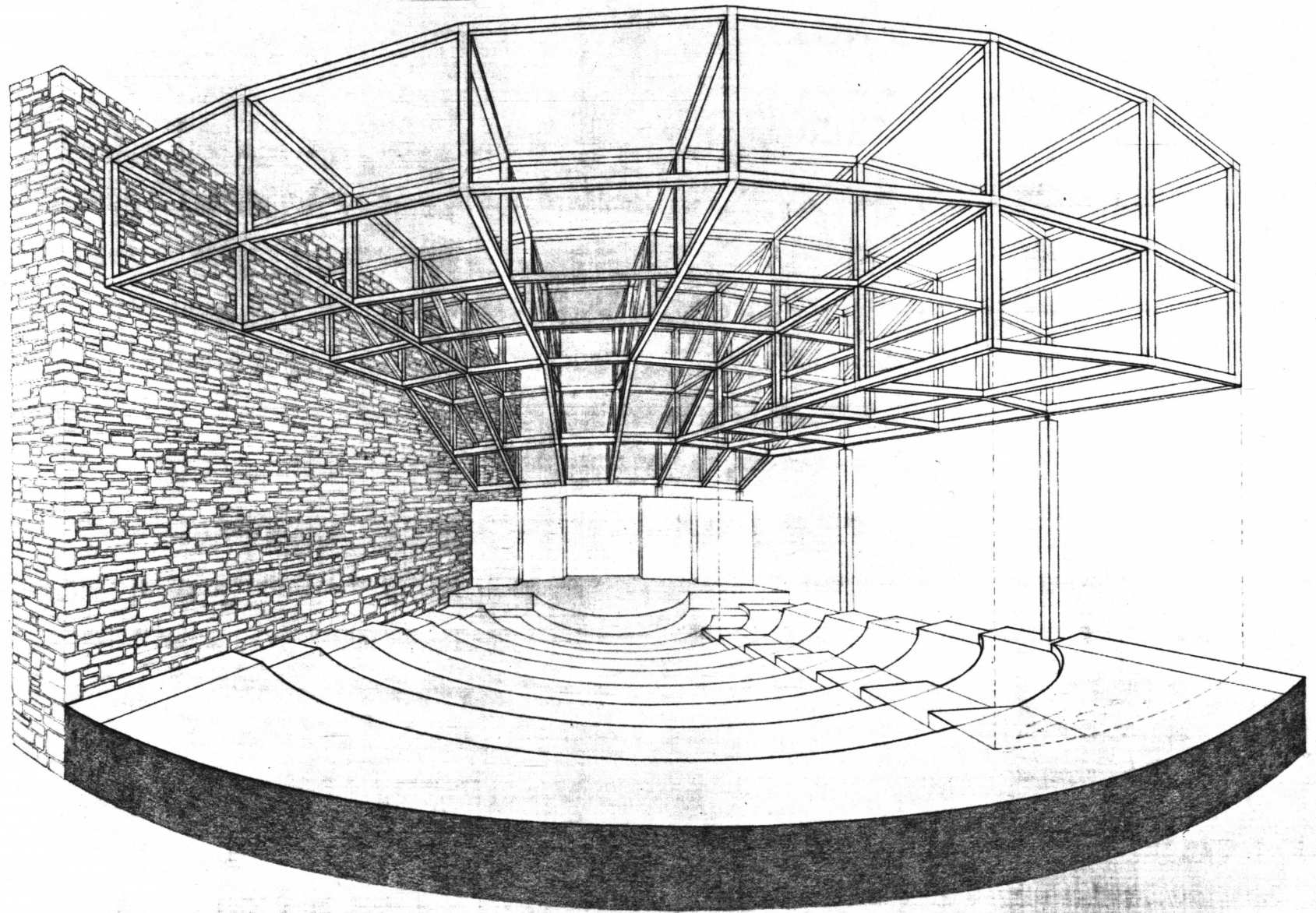
The form and structure of the space frame are illustrated here by four section drawings. As the section cuts were made *between* 'truss' lines, the cut ends of the members emanating from each joint can be seen outlined in bold. As shown (seen most easily in drawing 4), the space frame 'steps down' over the right side of the auditorium; this level change provides a lowered ceiling above the area of seating which is situated to the right of the aisle.



Studies of the space frame:
these drawings were computer-generated,
using IBM 'CATIA' software.



The space frame.



THE FORM:
building, wall, terraces, amphitheater.

The form of the building complex.

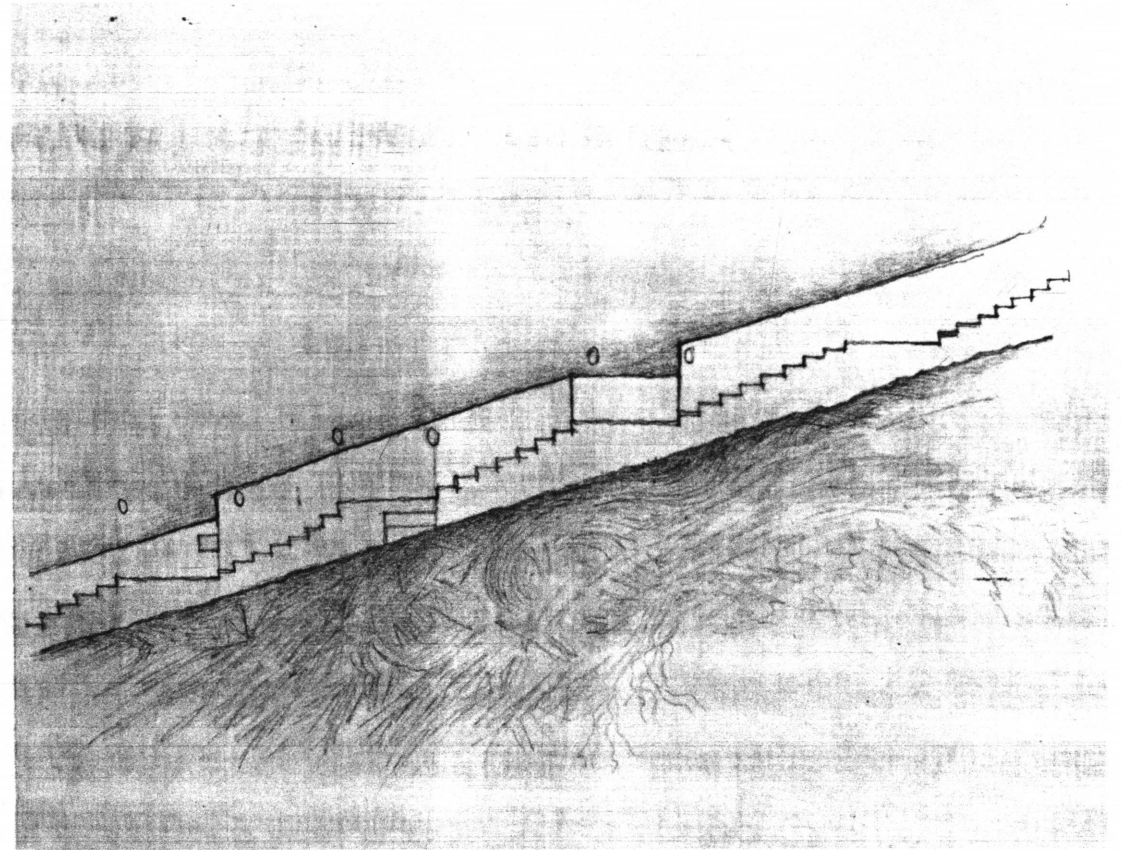
The form of the building complex as a whole includes the theater building, amphitheater, the terraces and the wall. And the form has as its setting the steep slope of the meadow. So it is to this sloped site that the 'form' of the music center must relate. To address the slope of the mountainside, the form of the building complex *follows* the hillside, terracing down the slope. This stepping of the 'form' down the mountainside can be seen throughout the form of the building complex as a whole-- in the building, the steps, the terraces, the amphitheater-- the massing of the form constantly stepping down, terracing down the hillside; the repetition of its curved steps creating a rhythm as it goes.

It is from the amphitheater that the curved steps begin. Built into the earth and paved with cut stone, the curved steps of the amphitheater take their form from the contours of a natural hollow in the site. And from this beginning, the curved steps are then repeated-- reflected through the geometry of the rest of the theater complex as it moves up the hillside.

The form of the theater complex-- once again starting from the amphitheater-- begins its growth from the substance of the land on which it is built. The amphitheater and the terraces both are built *into* the ground, low in profile, like a bas-relief sculpture built into the earth. Whereas the amphitheater is paved with cut stone, the terraces are made of the earth itself, covered with grass; they are defined around their edges by low stone retaining walls, which separate the terraces from the remainder of the meadow. Because the terraces are parts of the hillside which have been contained-- articulated-- they are a part of the 'built' and not a part of the 'natural'. But at the same time, since they are made *of* the earth, covered with grass, built into the ground, they are *almost* still a part of the meadow-- but a part of the meadow which now *steps* up the hillside.

The wall is also an important element of the 'form'. The wall, like the theater and the terraces, also has its origins in the earth. Built of stone, it begins at the amphitheater as a shallow garden wall, and then runs up the hillside to the theater building. The wall thus serves to link the building and the amphitheater together, creating an axis, and marking a path between the two.

But the form of the building, being a visual matter, is far easier to illustrate with drawings than to try to explain in words. So the following pages show drawings which are studies of the form-- the articulation of the wall, the terraces, the form of the building on the mountainside.

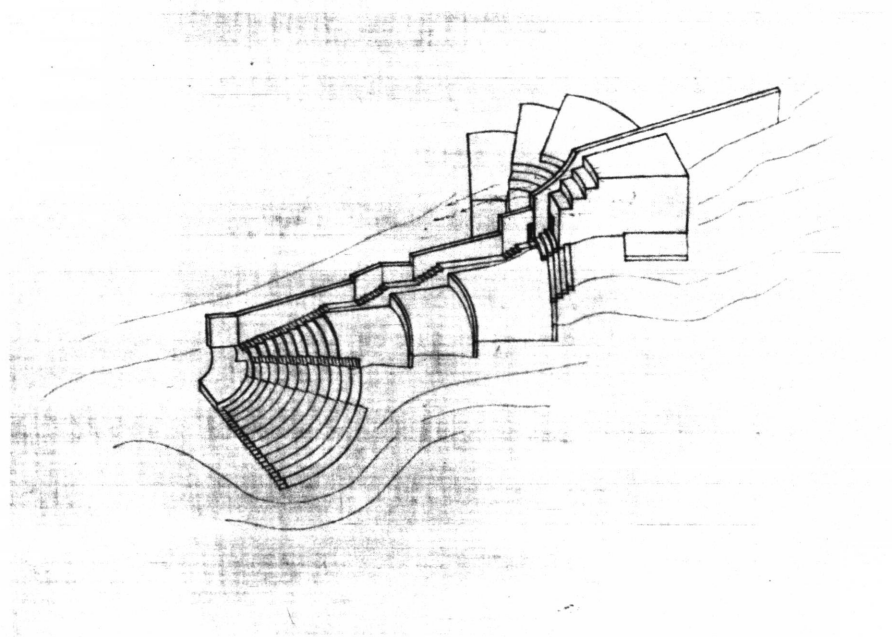
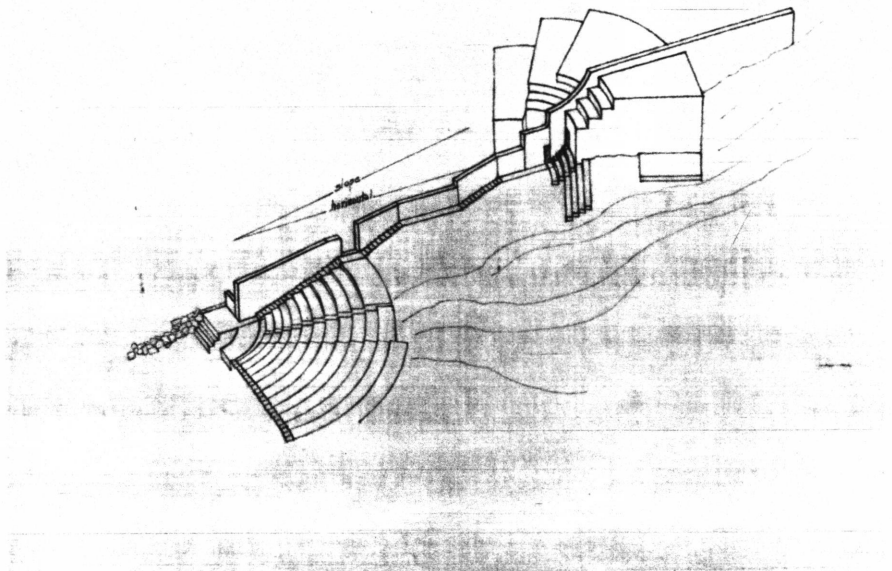


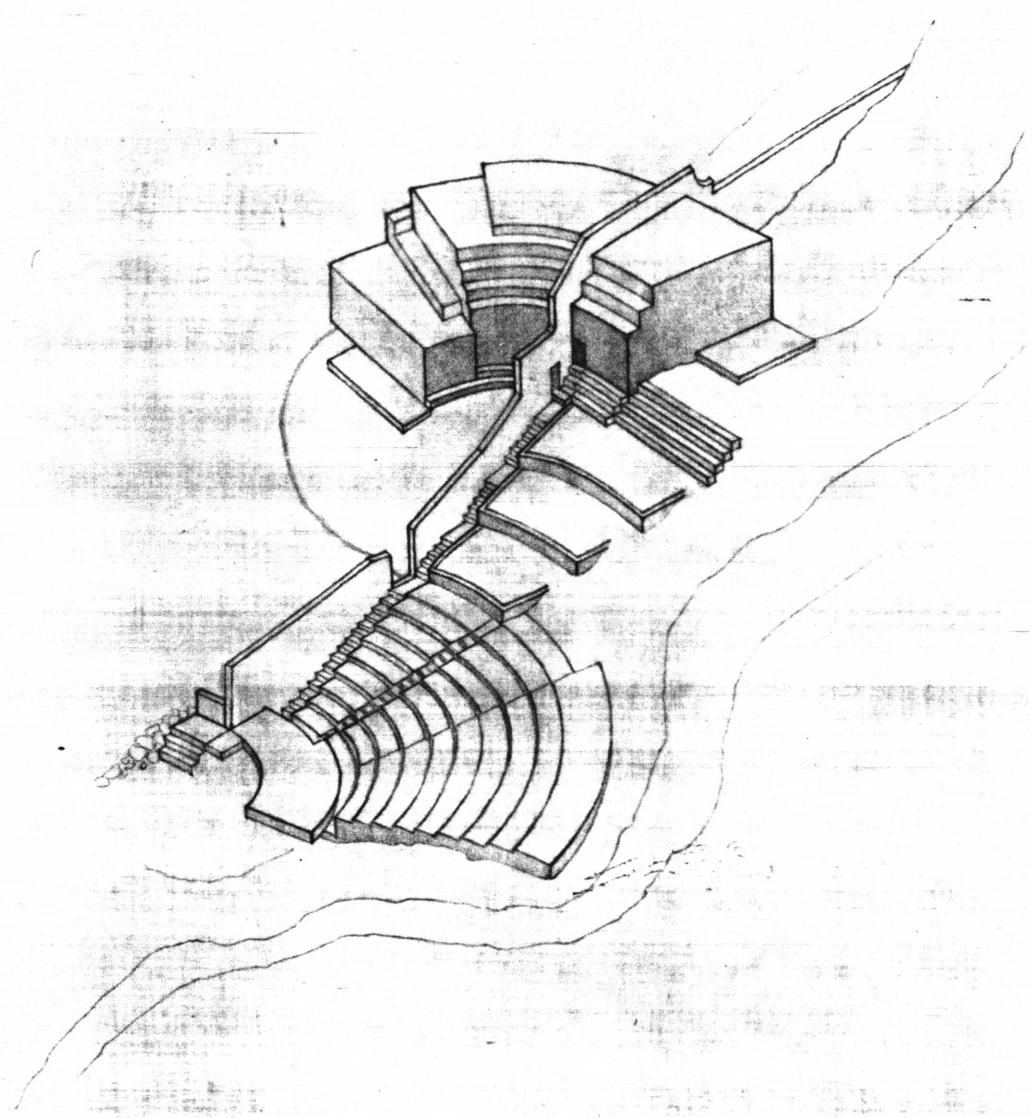
The articulation of the wall up the hill: a study.

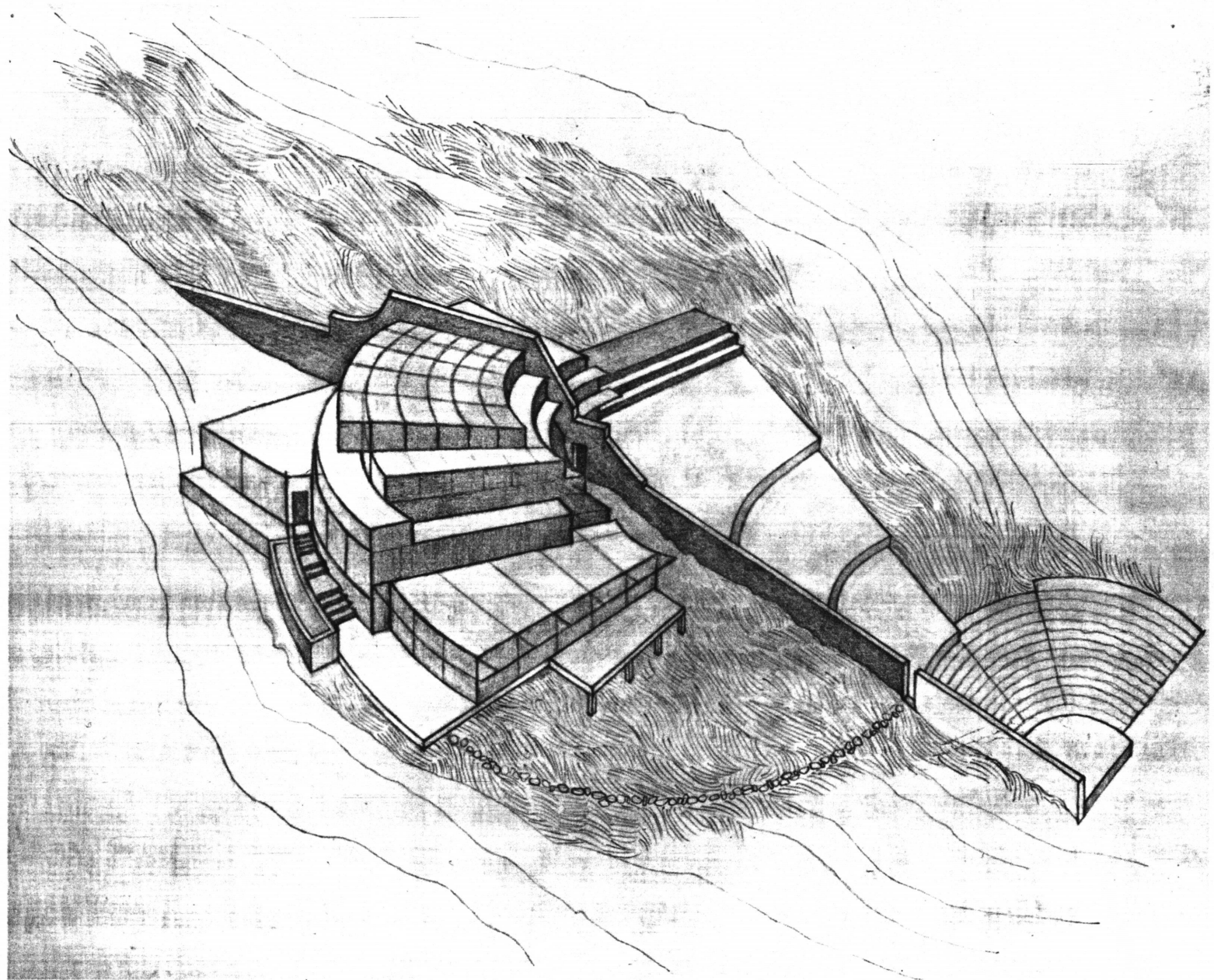
The profile of the garden wall as it climbs the hillside, is low in height; friendly to human scale. It varies from about four to six feet in elevation. Running alongside the wall are flights of stone steps which allow you to follow the wall, to climb the hill alongside it.

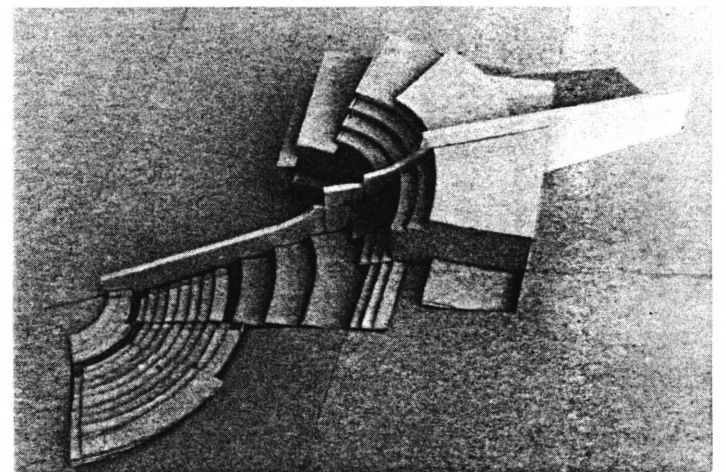
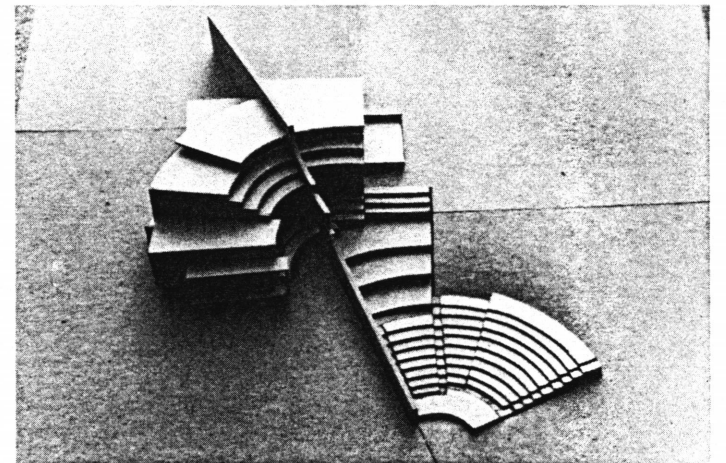
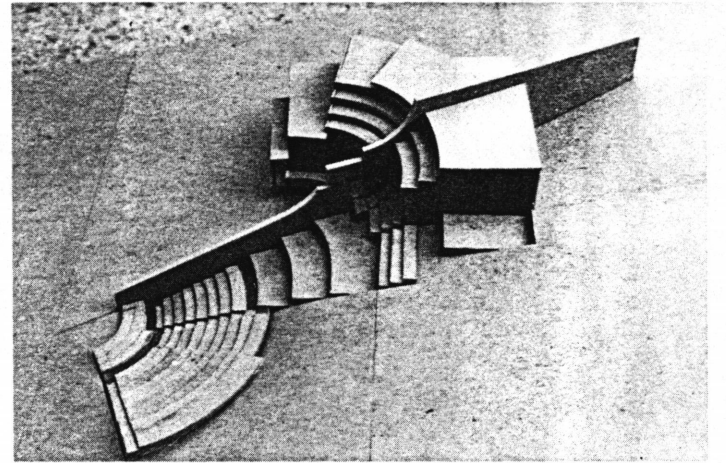
Whereas the elevation of the top of the wall climbs the hill at a relatively steady pitch, the pitches of the short flights of stairs— since the stairs alternate with landings— are relatively steeper than that of the wall. The result of this difference in pitch is that, as you *start* to climb a flight of stairs, the wall is taller than you are; and it blocks your view to the other side. But because the stairs ascend more steeply than the profile of the wall, by the time you approach a landing, your eye level becomes *higher* than the level of the wall— allowing you now to see over it, to see to the other side.

Thus, as you ascend the steps (beside the wall), the wall will alternately block your view (across it), and then will yield, allowing you to see over the top. While your view across the wall is blocked, your attention will focus on the axis of your travel, the stone wall and stone steps themselves, the terraces, and the view of the meadow to your right. But it is not long (as you continue up the stairs) before you reach a landing. Here, you can see over the wall. Here you may pause, rest a minute from the steep climb; and look across to the other side.



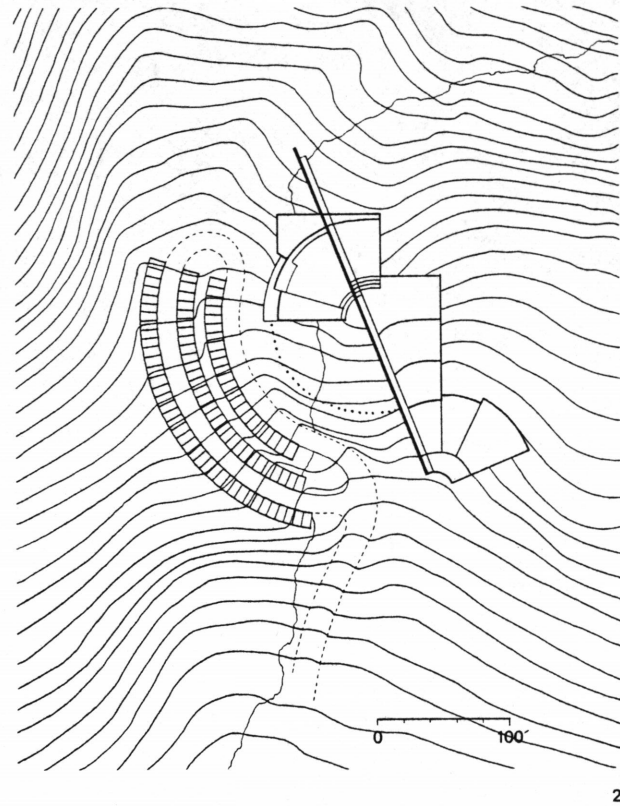
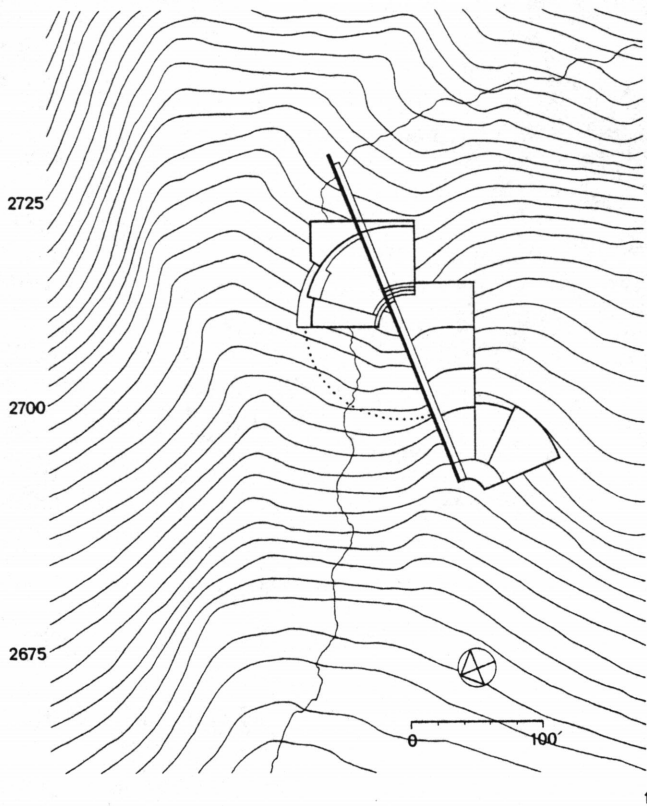






Studies of the form:
amphitheater, building, wall, and terraces.

The appendix/ Bibliography

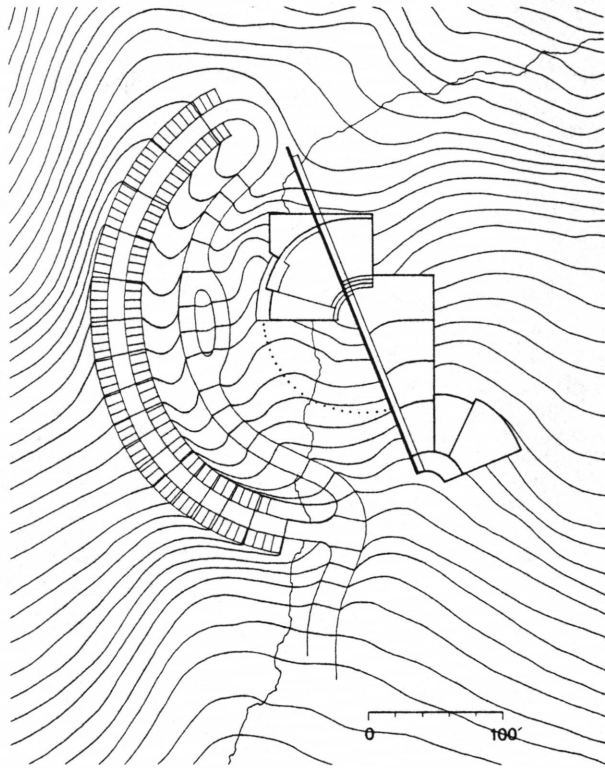


Alternate parking schemes.

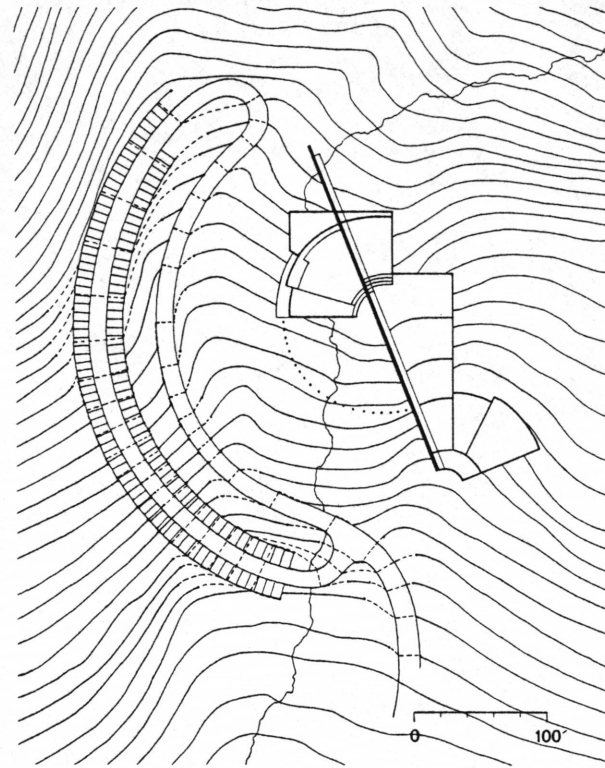
Situating an area for parking a hundred or more cars, while causing the minimal disruption of a beautiful and sensitive natural site, is a delicate problem at best. The original concept for locating the parking area revolved around the priority that the meadow was to be left undisturbed; that, with the exception of the theater building and amphitheater (sited far to the edge of the meadow), the meadow must be left open and natural-- undisturbed by driveways, paving, and especially by cars. So the approach drive was kept close to the edge of the meadow, and the logical place to place the cars seemed to be up off the meadow, in a glade just slightly into the forest. In this way, the cars would be hidden from view (from the meadow). And visitors arriving at the music center would park in glade-like lot in amongst the trees; they would be able to enjoy a short walk through the forest to approach the theater. The meadow would be left undisturbed, and the visitors as they arrived would immediately experience first-hand the contrast of the double nature (forest and meadow) of the site.

Three variations of the parking scheme based on the original concept are shown here (on this page and the page following). The first diagram of the series of four (diagram 1) shows the theater building, terraces, and amphitheater of the music center (sited on the edge of the clearing) as they exist before the parking is added; the original (undisturbed) contours of the land are shown. The wavy line running from the upper right to the lower center of the drawing shows the boundary of the clearing; to the left of this line the site is wooded and to the right of the line begins the meadow. In the following three diagrams, then, the three different parking schemes which are proposed for the site are shown (diagrams 2, 3, and 4).

The first parking scheme (shown in diagram 2) places cars in two arc-shaped rows, along a road which makes a one-way loop within the parking area. Between the single-loaded row and the double-loaded row, there is a small green space. The parking area is situated within the forest, but it is fairly close to the meadow's edge, and fairly



3.



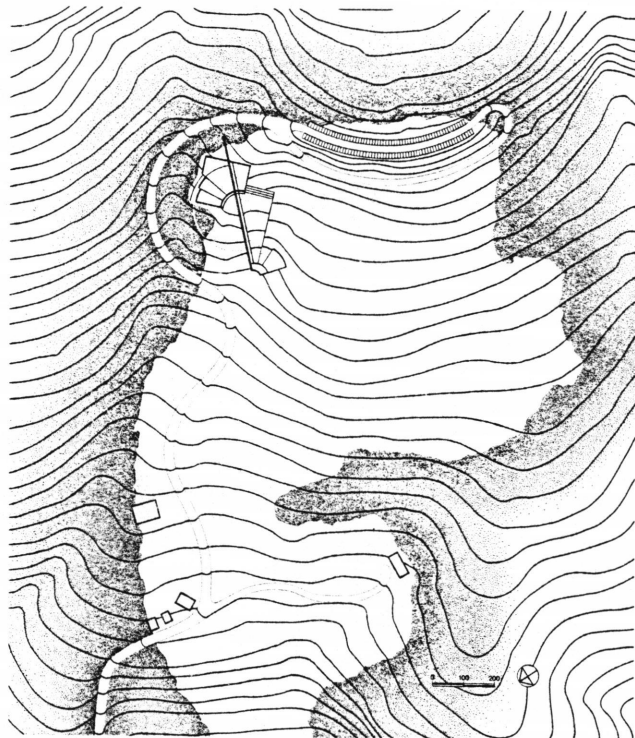
4.

Alternate parking schemes. (continued)

close to the theater and amphitheater as well. The curved dotted line between the theater and amphitheater designates a stone footpath which links the two 'theater' spaces together; this footpath, which runs partly through the forest, is easily accessible from the parking area. Note that, compared to the original contours, the land for this parking area has been terraced off somewhat, along the arcs of the curve.

The second parking scheme (diagram 3) is a variation upon the first arrangement. In this scheme, the parking has been arranged into a single (longer) double-loaded row. The road is still a one-way loop in the parking area, but a small drop-off area has been added, near the rear entrance to the theater building. In order to minimize the visual impact of the road and the cars (through the forest) upon the theater building, the road and the lines of parked cars have been moved further away from the building, and the green space between the road and the first row of cars has been bermed up to form a small hill, a visual barrier. However, in this scheme, the contours of the land have been changed considerably from the original, over a fairly large area.

Finally, in the last parking scheme of the series (diagram 4) parking has been arranged into a single long double-loaded row of cars, and the road (and parking area) have been even further removed from the theater building. This arrangement provides a visual buffer space (approximately eighty feet) of forest to block any view of the road or the parked cars from the theater building. Although the parking area in this scheme is fairly long, it was designed to cause much less alteration of the site contours than the scheme in diagram 3. In this scheme (diagram 4), very little of the site (aside from the area to actually be paved) needs to be cut or filled: in the diagram (4), portions of the contours lines which would be altered from the original contours have been indicated by dashed lines. (A retaining wall would be required along the upper edge of the outside row of cars).

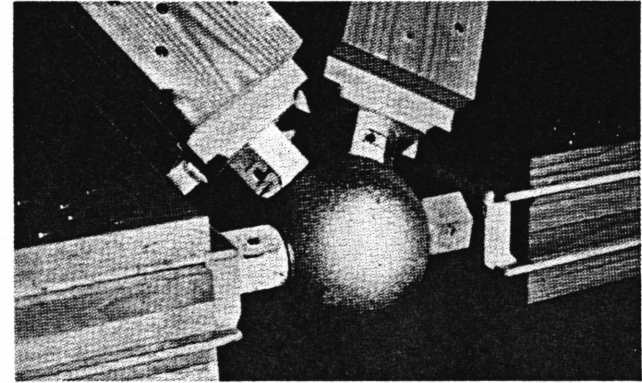


Alternate parking schemes. (continued)

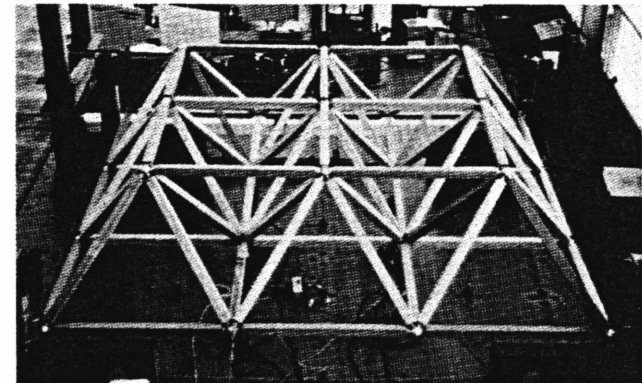
Eventually, however, after great consideration and consternation, (and at the insistence of my committee members), all of these parking schemes were abandoned-- in favor of an arrangement which situated the parking along the upper edge of the meadow (see the Site Plan). There were several reasons for this change in intent. Principally, these were as follows.

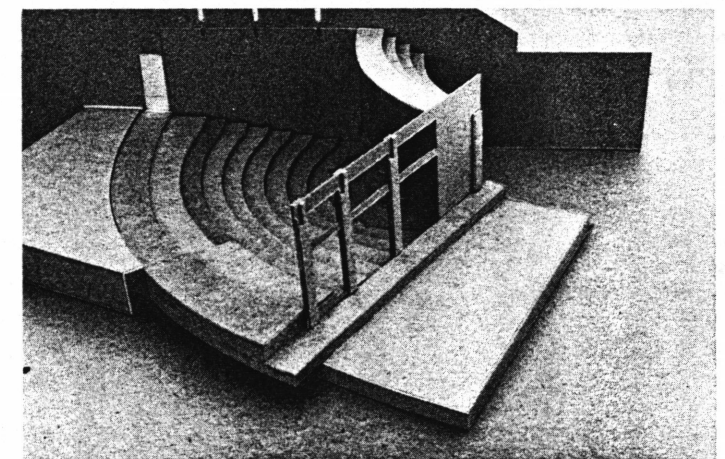
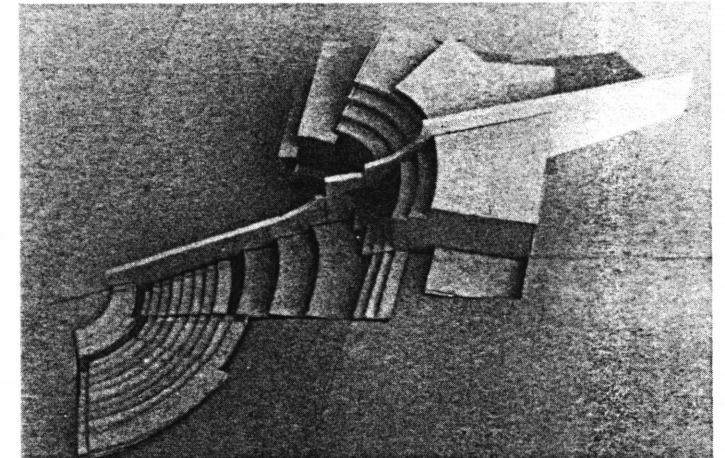
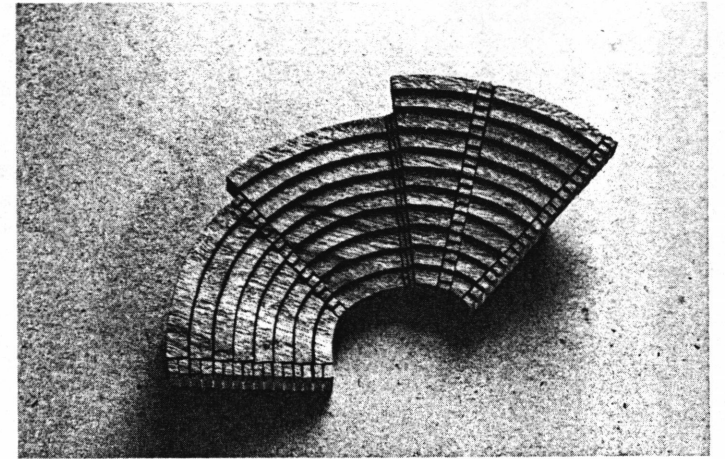
While the placement of parking in the forest was originally intended to save the natural beauty of the meadow from being disturbed, it eventually became apparent that the grading of the parking in the forest would cause a great deal of disturbance to the forest. The cut-and fill operations necessary to execute some or all of these schemes would result in the clearing or death of many trees even outside the actual paved areas themselves. So the construction processes involved in creating these parking arrangements would cause the areas to lose their 'desired' character of being sheltered glades within the forest; rather, they would become sizeable clearings of their own. Trees replanted in areas re-graded could eventually fill in these voids, but of course it would take these trees many years to mature to full size. Finally, the paving of a long steep portion of the hillside would funnel a great deal of drainage to the lower end of the parking arc; and this drainage would potentially cause a major problem with erosion at the lower end of the paving.

So, parking was 'moved' to the upper meadow. Here, a doubly-loaded row of cars could be situated somewhat removed from the theater, and following the natural contours of the land. A small berm was to be built up between the row of parking and the theater building, so the cars would not be visible on the meadow from the building. Here, however, minor changes made to the existing contours could be blended in and then sodded over, so that the new contours could be healed into the existing site almost immediately.



Space frame joint. The photographs here show the wooden space frame, and the steel joint by which the members are connected, as described by Ernst Gehri (see list of references).

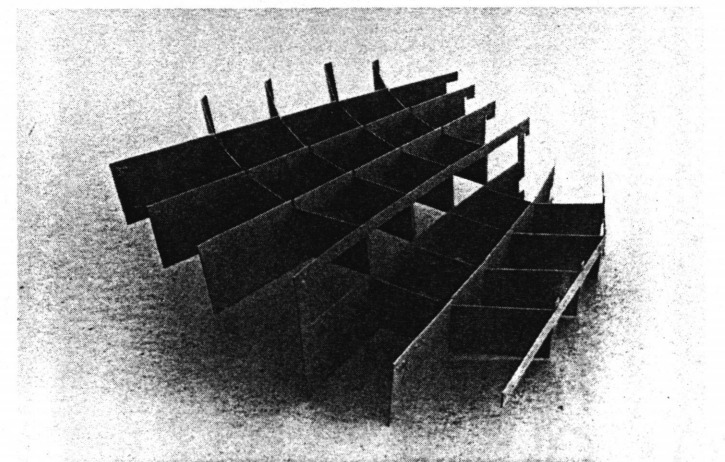
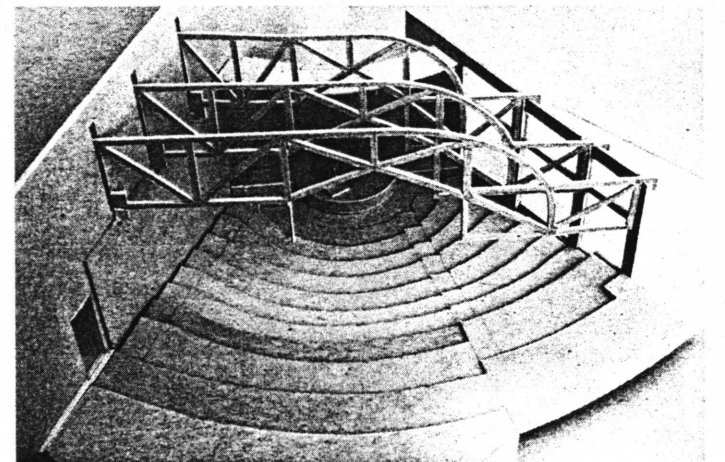
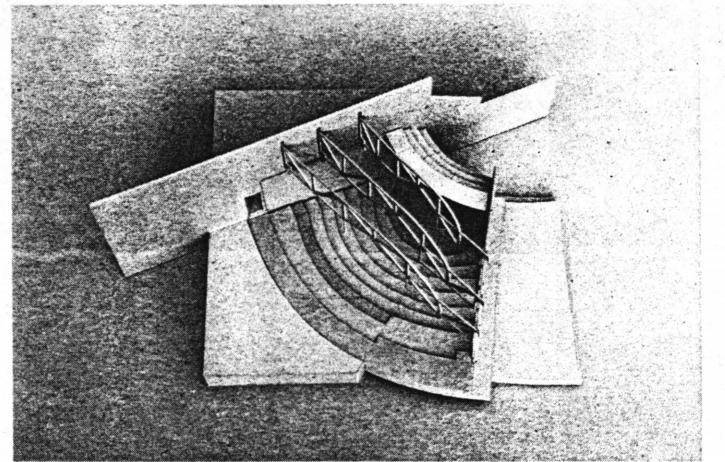


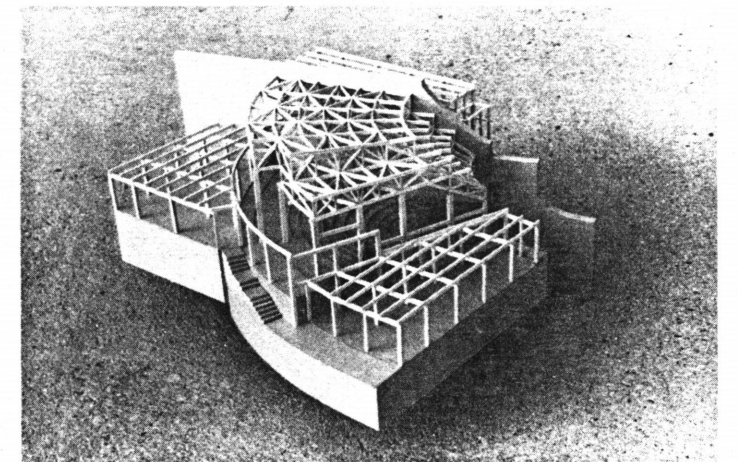
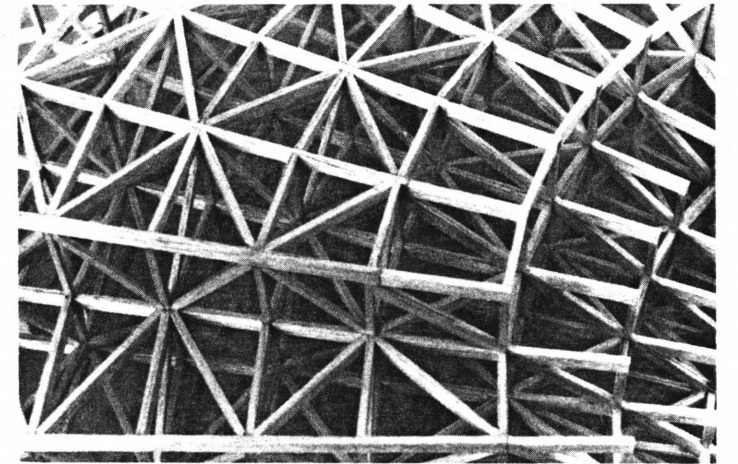
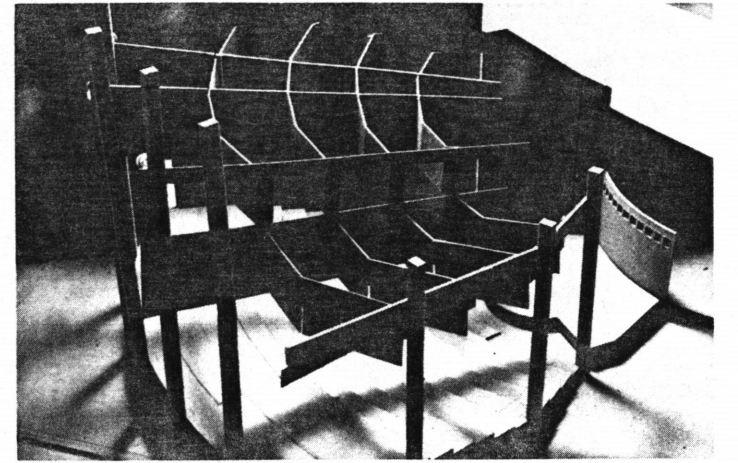


The ontogeny of the design.

The word 'ontogeny' as used in Biology refers to the progressive development (often through several developmental stages) of an individual organism. Thus, a butterfly develops from egg to caterpillar to pupa to the adult butterfly. Several immature and intermediate stages, leading to one final form.

Buildings are not alive, and do not sprout wings. But like a developing organism, the design in this thesis has gone through many developmental changes, on its way to becoming its final form. Some of those intermediate forms (arrived at in the course of the design process) are shown here and on the next several pages.





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- Mr. and Mrs. Luca Di Cecco, of the Garth Newel Music Center, in Hot Springs,
Virginia; who shared with me their ideas and preferences (as performing chamber
musicians) on the subject of theater design;

and who (as directors of the Garth Newel Music Center) graciously provided me with
information on the music center's current activities, and on the history of the estate;

as well as providing me with free access to the estate's buildings and grounds, so
that I might study and photograph them (as the site and architectural context) for this
thesis project.
- Mr. Ernst Gehri-- a Swiss engineer at the Swiss Federal Institute of Technology, near
Zurich, Switzerland-- who designs and tests wooden space frames (the members of
which are connected by steel joints).

Mr. Gehri presented a lecture on his work (with wooden space frames) at Virginia
Tech on September 25, 1984 (in the Department of Forest Products, at Cheatum Hall,
Virginia Tech.); and the material which he presented in that lecture had a strong in-
fluence upon the course of my design for this thesis.

Mr. Gehri's work may be found in the following publication:
"Entwicklung des ingenieurmässigen Holzbaus seit Grubermann" (the article);
Sonderdruck aus Schweizer Ingenieur und Architekt 101. Jahrgang, 1983, Heft 25 und
Heft 33/34 (the journal source and date)-- "Development of an Engineering Method to
Build with Wood According to Grubermann"; from a special edition of the Swiss
magazine *Engineer and Architect*; 101st year; 1983; Issue 25 and Issues 33/34.

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- Mr. Robert N. Chiang, Professor of Architecture, at Virginia Polytechnic Institute, in
Blacksburg, Virginia; who taught my course on the subject of Architectural Acoustics.

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the scanned document**