Proposal:

New Visitor Center
The Very Large Array
National Radio Astronomy Observatory
Socorro, New Mexico

January 14, 2005

Table of Contents

A New Visitor Center at the Very Large Array 3
The old visitor center is too small 4
The EVLA is coming 4
Who are our visitors and how will we serve them? 4
How will the new facility be different from what we already have? 5
The Space 6
The Location 7
The Cost 7
What impact will the new VLA Visitor Center have on the region? 8
How do we fund the building of this new facility? 8

Business Plan for New VLA Visitor Center

How will we operate it? 9
Financial Plan: What will it cost and how do we pay for it?
Expenditures 11
Revenues 11
How do we start?
Startup Plan 12

Marketing 13

Order of Events/Timeline 15

Appendix A
Visitor numbers and admission fees 16

Appendix B
Admission price survey, voluntary responses 17

The Design 21

A New Visitor Center at the Very Large Array

The National Radio Astronomy Observatory's Very Large Array has generated more scientific discoveries than any other ground-based telescope in the history of astronomy. The VLA Expansion Project will keep the VLA at the cutting edge of science for at least another quarter century. The 27 giant radio telescopes stretched across the Plains of San Agustin are a jewel in the crown of New Mexico tourism, matched only by the magnificence of the star-strewn New Mexico skies.

We should build an education and visitor center worthy of this instrument and location, bringing the excitement of discovery to the taxpaying public.

Imagine approaching the new visitor center from the south, near the center of the array, descending below ground level and then rising to a breathtaking panorama of the nine telescopes along the array's north arm. A left turn takes you into the exhibit hall: two stories (5,000 sq. ft) of interactive displays encouraging visitors to linger, think, discover, while learning about the Universe and its mysteries as revealed through radio astronomy. You pause on the outdoor observation deck at the north end of this wing, snapping photos of the heart of the array and watching the telescopes as they slowly slew to their next source. You investigate the east wing of the building: students in one of the classrooms are using slinkies, ropes, wires and ripple tanks to investigate waves and wave makers. An elderhostel group in the other classroom questions the speaker about recent VLA discoveries. The video presentation in the theater plays to yet another group of visitors. You stop at the gift shop to purchase a tee shirt and a cold drink before strolling out to the nearest antenna, the first stop on the self-guided walking tour. You decide to catch the guided tour when you return for the star party next month.

The remainder of the 15,500 sq. ft. structure houses staff offices and maintenance and storage areas. The concept for the center, created for the VLA by the University of New Mexico's School of Architecture and Planning, celebrates the expanse of the Plains, the grandeur of the desert environment, the intrigue of the giant telescopes, and provides space for inspiring learning and discovery.

The old visitor center is too small.

In 1983, in cooperation with the State of New Mexico, a 2400 sq ft visitor center (a manufactured building) was erected at the Very Large Array to provide exhibits and information on radio astronomy for the general public. Tourists show themselves around the exhibits and take the self-guided walking tour. In 2003, a 400 sq. ft. gift shop was added to the north side of the existing visitor center. The gift shop clerk answers questions and sells souvenirs daily from 9-4.

Our statistics show that more than 23,000 people visit this center every year. It is designed for a maximum of 18,000 visitors per year and it has experienced the wear and tear and normal deterioration of a structure receiving that much use. It does not provide enough toilet facilities for a typical class of 30 students, and the 900 square foot exhibit hall is too small to allow the addition of new, interactive and more exciting exhibits.

The EVLA is coming...

A new visitor center will be constructed to coincide with and to complement the expansion of the Very Large Array to the EVLA (as stated in the EVLA Phase I Proposal), slated for completion in 2012. As a national research center used by scientists from all over the world, the EVLA has the unique opportunity to share with the taxpayers a peek into the wonders of the cosmos as shown by large radio telescopes. No other facility accessible to the general public can boast such an array of telescopes where real discoveries are being made.

Who are our visitors and how will we serve them?

Our guests travel to the VLA from all fifty states and more than 40 foreign countries. A quick glance at our guest book will show that 60% of those who sign in are from outside New Mexico. They represent a diverse population of ages, educational backgrounds and cultural origins. Addressing all those aspects is a formidable, yet exciting challenge.

- **Interested Public:** This is the largest sector of our visitors. The group is generally composed of well-educated, usually middle-class families and individuals, who are curious about what the VLA is and does. For most, the VLA is a planned destination or stop. Guided tours, on-site educators and public star parties featuring optical and radio resources will expand their understanding of astronomy and enhance their visit.

- **Families:** The VLA is often a planned stop on family vacations. Parents who have a general interest in the VLA wish to share this with their children/grandchildren.

Creating programs that emphasize family groups learning together, exhibits that address all age levels so there is "something for everyone," and advertising the VLA Visitor Center as a family destination will go far in reinforcing science literacy and astronomy as a leisure activity, if not a profession.

- **Students:** Each year more than 1,000 students visit the VLA as an organized class activity, ranging from public and private K-12 field trips to college astronomy classes and clubs. A field trip to the VLA is a golden opportunity for teachers and visitor center staff to collaborate on pre- and post-visit activities that will extend the field trip experience into the school learning environment. Classrooms at the center will provide space for a more enriching experience, targeting state and national science standards and the specific curriculum of the school. Lesson plans also will incorporate activities for exploring the history and culture, flora and fauna, and geology of the area.

- **Teachers:** Research Experiences for Teachers are available during the summer through a special grant from NSF. Individual teachers are given the opportunity to work with scientists on astronomical observations and data reduction. They then translate their experiences into appropriate inquiry-based activities for their students. We also offer a 2-week Radio Astronomy for Teachers class in conjunction with the Master of Science Teaching Program at New Mexico Tech. Classrooms at the Visitor Center will furnish an appropriate venue for the program.

- **Astronomy clubs**: Approximately ten local astronomy clubs visit the VLA each year. Guided tours enhance their understanding of the VLA and the role it and radio astronomy play in studying the Universe. Amateur astronomers will have the opportunity to explore New Mexico's dark skies from the patio at our new Visitor Center, using both optical and radio resources (the Small Radio Telescope). The annual NRAO-sponsored New Mexico Enchanted Skies Star Party would have a permanent home at the new facility.

- **Other groups:** Amateur radio groups, Scouts, local summer camps, elderhostels, courtesy tours, and organized charters often visit the Very Large Array. For most of these groups, there may not be a common interest in radio astronomy or astronomy in general, but it provides a venue for informing and exciting people who might not visit otherwise.

How will the new facility be different from what we already have?

An advisory committee has identified the essential elements required in a new visitor center, based on current visitor numbers and a peak projection of 100,000 visitors per year. They are researching best practices in educational programming, available exhibit technology, and

working to make the most efficient use of space, both indoors and out, in order to provide a memorable educational experience for all our guests.

We must create exhibits that pique the curiosity of our guests, answer some of their questions, challenge them to learn more, and give them an opportunity for reflection. We must provide adequate washroom facilities, "sit-down" space, and, because the nearest restaurant is 20 miles away, minimal snack and beverage service. Our guests need picnic tables and shelter from the elements during inclement weather. The entire visitor facility must provide barrier-free access for all. A pictorial tour of the new center can be found in Appendix A.

1. The Space.

Exhibit Hall:

Exhibit hall: 5,000 sq.ft.

New Mexico is the fifth fastest growing state in the nation according to statistics from the US Census Bureau. The population of 1.8 million in 2000 is expected to increase to 2.2 million in 2010 and to 2.6 million in 2020 if growth continues at the current rate. With a larger state population that is in close enough proximity to visit the VLA, and an enhanced education program, we will need an exhibit hall large enough to not only populate with exhibits now, but to have space to change exhibits as warranted by new scientific discoveries and technology. We also have occasion to host many visitors from out of state: Synthesis Imaging Summer school, annual Festival of the Cranes, Enchanted Skies Star Party, quarterly guided tours. We expect those numbers to increase as well. Current best practices prescribe a formula of 20 visitors/year/square foot[1]. Based on a projection of 100,000 visitors per year, the exhibit hall should be 5,000 square feet. Funding for the new suite of interactive exhibits. will be sought through NSF informal science grants.

Classroom space:

2 classrooms: 1300 sq.ft.

Two classrooms of 650 square feet each. This will be enough space to accommodate 2 classes of 38 students at the same time based on a formula of 17 sq. ft. per student[2]. If they are constructed with a removable wall between them, it will increase our flexibility so that we can use the space to maximum efficiency. By placing a removable wall between classrooms and theater we will be able to handle larger groups and conferences.

---

[2]Anderson, Before the Blueprint, 27.

[3]Based on Method 2 for determining classroom instruction space, http://www.highered.nysed.gov/bpss/pgl1030.html

Theater:
900 sq.ft.

Theater:

900 sq. ft. with moveable seating. The current theater is 450 sq. ft. and can accommodate about 45 adults in bleacher-style seating[3].

Parking:

Based on a formula of one parking space per 1,000 people[4], we need a parking lot to accommodate 100 cars plus bus and RV parking. We currently have convenient space for about 10 cars.

Outside Space:

Outdoor exhibits, walking and driving tours, a star party area for small/medium-sized optical telescopes and a picnic area will be included in the design.

Total facility square footage:

Total area:
15,550 sq.ft.

5000	exhibits
300	lobby
950	gift shop (shop + vending)
5450	storage, janitor closet, loading, mechanical, circulation
750	washrooms
1300	classrooms (2 @ 650 sq ft)
900	auditorium
900	office space
15550	

2. The Location.

A site located just to the south and east of the center of the array has been selected for the new center. There is ample room for parking and outdoor exhibits. The observation deck on the control building is within walking distance, as is a visitor antenna. This location provides excellent views of the array (especially the north arm). Picnic and telescope platform areas could be constructed nearby for easy access.

3. The Cost.

Total cost:
$5.6 million

3,110,000	Based on a cost of $200 per sq. ft. for construction (building only)
1,500,000	Exhibits
1,000,000	Furnishings, parking lots, landscaping, architectural fees
5,6100,000	Total

---

[4]Theaters at Arecibo and Green Bank will seat 100 and 150, respectively; theater at McDonald will seat 74. Ours should seat 90.

[5]Anderson, Before the Blueprint, 29.

What impact will the new VLA Visitor Center have on the region?

Public activities at the VLA are planned in conjunction with other community events, such as the semi-annual opening of Trinity (site of the first atomic bomb explosion) and the Festival of the Cranes, sponsored by the Bosque del Apache. Such scheduling encourages tourists to avail themselves of local lodging and food while attending the various events. According to the most recent (1995) statistics from the New Mexico Department of Tourism, a tourist who stays overnight in New Mexico spends an average of $113.83 in the local community. Collaborative scheduling among Socorro County tourist venues increases the amount of time and money tourists spend in Socorro County.

In 2004, State Representative Don Tripp sponsored House Joint Memorial 7 to "designate US 60 as National Historic Highway." Highway 60, originally known as the "ocean-to-ocean highway," has been a key route in facilitating trade and commerce for more than 80 years. The Memorial asks the President to sign legislation authorizing the Secretary of the Interior to create a U.S. Highway 60 corridor conservation program. Tourism will be actively promoted along the route and the VLA visitor center will play a major role in attracting tourists to travel this historic road.

It will require four new staff member to operate the new visitor center.

How do we fund the building of this new facility?

We plan to seek capital building funds from:

- New Mexico State Legislature via our state representative Don Tripp and our senators Ben D. Altamirano and Joseph A. Fidel;
- The U.S. Congress via our lobbyist April Burke;
- Corporations and foundations with interests in New Mexico, astronomy, and space exploration

We will seek a National Science Foundation planning grant to plan the exhibits; and we will write an informal science grant to fund the exhibits.

Business plan for New VLA Visitor Center

How will we operate it?

Operations

- Hours

In order to reach the bulk of the traveling public, the visitor center will operate on a seasonal basis. Summer season will be Memorial Day to Labor Day, with the visitor center open daily from 9:00 a.m. to 6:00 p.m. (70 hours per week) with extended hours during star parties and special events. Winter hours will be 9:00 a.m. to 4:00 p.m. (49 hours per week). We will close on New Years Day, Thanksgiving Day, Christmas Eve, and Christmas Day.

- Staff

The seven Visitor Center staff members will be a part of the Observatory's Education and Public Outreach department and will consist of two educators, two maintenance personnel and 3 marketing people.

* Overall management will be the responsibility of a **director/educator** who will supervise staff and visitor center activities, including teaching classes, giving tours and assisting with star parties.
* The **business manager** will be responsible for gift shop operations including sales, purchasing stock, customer relations, display, inventory, reports, and answering questions from the public. This person also will take on the role of public relations and marketing in coordinating advertising efforts for the center and special events, and will provide tours as needed.
* An **educator** will design, schedule and implement programs and tours.
* Two **sales clerks** will staff the gift shop.
* Repair and maintenance of visitor center exhibits will be the primary responsibility of an **exhibit maintenance technician**. This person will assist with creation of new exhibits and, during slow periods, will assist the servo department in exchange for help with visitor center coverage.
* Finally, a **custodian** will be available during heaviest traffic times to clean the facility, do minor grounds work, HVAC and electrical preventive maintenance. A custodian with carpentry skills could assist with exhibit repairs. Part time custodians currently on staff will provide assistance on "off" days and vacation coverage.

- Exhibits

An exhibit committee consisting of scientists, technicians, engineers, educators and interested members of the public will undertake the preliminary exhibit plans. The committee will determine the "take-home" messages the individual exhibits should convey as well as the overall look and feel of the exhibits. We will hire a professional exhibit design firm to provide input and expertise in the planning phase, and then to design, fabricate, prototype and test and install the final products. We will seek funding for the exhibits from the National Science Foundation.

- Giftshop

The current visitor center has a well-stocked, well-managed giftshop that generates enough revenue to restock and to pay the salaries of two clerks with some surplus. The current per-visitor expenditure is $5.78. The knowledge and experience for furnishing, decorating and stocking a giftshop already exist in the current staff, thus making the transition to a larger giftshop an easy one.

- Programs
  * We will offer regular, daily guided tours as a part of the admission fee.
  * We also will offer tours specially tailored for education and astronomy groups free of charge.
  * The education staff will design and implement pre- and post-visit activities as well as programs for schools that specifically address national science standards.
  * During the summer season and on weekends we will offer programs targeting families learning together.
  * We will devise a plan for regular star parties, taking advantage of the dark New Mexico skies to link optical and radio astronomy in the minds of the participants.
  * We will use special astronomy-related occurrences, such as eclipses, as catalysts to draw in visitors for one-time events.

Financial Plan

What will it cost and how do we pay for it?

Expenditures

* Staff grades, salaries and benefits:

Position	Grade	mid-range salary	number of positions	total	benefits	total
Educator	5	$46,300	2	$92,600	$30,558	$123,158
Business manager	4s	$28,700	1	$28,700	$9,471	$38,171
Sales Clerk	2s	$21,550	1.5	$32,325	$10,667	$42,992
Exhibit Maintenance	4s	$28,700	1	$28,700	$9,471	$38,171
Janitor	2s	$21,550	1	$21,550	$7,112	$28,662
					total	$271,154

Revenues

A breakdown of representative observatory visitor center admission and tour fee structures may be found in Appendix A.

* Admission fees: In a survey of 94 visitors over a two-week span in the spring of 2004, we found that the majority who filled out the survey would be amenable to paying an admission price to a new visitor center with interactive hands-on exhibits. Of those 94, 29% would pay as much as $5.00, 30% would pay 3.00. 9% would not pay an admission fee. Complete survey results appear in Appendix B.
* Tour fees: In the same survey, 29% would pay as much as $5.00 for a guided tour of the facility, while 22% would pay $3.00. 20% of the respondents would not pay for a guided tour, though some would pay for a tour if there were no admission fee.
* Giftshop revenue: with the current gift shop we take in an average of $5.78 per visitor as shown by our visitor count and daily revenue sheets.

Based on the above, we suggest the following fee structure:

Adults	$5.00
Students and senior citizens	$4.00
Families	$15.00
Children 5 and under	free

Price of admission includes guided tour at regular tour times. Special tours for education and astronomy groups will be free of charge, but must be scheduled at least two weeks in advance.

How do we start?

Startup Plan

The following breakdown of operating costs and revenues for year number one are based on a variety of visitor numbers and admission prices. It assumes building construction and exhibit costs have been paid.

1 # visitors	25000	49000	25000	49000	100000
2 avg expenditure in gift shop per person	5.78	5.78	5.78	5.78	5.78
3 avg admission fee per person	3.00	3.00	4.00	4.00	4.00
4 avg price per unit (admission fee plus giftshop sales)	8.78	8.78	9.78	9.78	9.78
5 stock cost (variable cost per unit)	2.89	2.89	2.89	2.89	2.89
6 gross margin per unit (avg price per unit - variable cost per unit)	5.89	5.89	6.89	6.89	6.89
7 fixed cost of operations (including salaries)	328,368.00	328,368.00	328,368.00	328,368.00	328,368.00
8 number of visitors needed to break even	57296	57296	48980	48980	48980
9					
10					
11 sales (avg expenditure*number of visitors)	219,500.00	430,220.00	244,500.00	479,220.00	978,000.00
12 Cost of Goods Sold	72,250.00	141,610.00	72,250.00	141,610.00	289,000.00
13 gross margin (line 11-line 12)	147,250.00	288,610.00	172,250.00	337,610.00	689,000.00
14 expenses (fixed cost of operations including salaries)	328,368.00	328,368.00	328,368.00	328,368.00	328,368.00
15 Marketing	9,100.00	9,100.00	9,100.00	9,100.00	9,100.00
16 surplus	-181,118.00	-48,858.00	-165,218.00	142.00	351,532.00

Our goal is to have 49,000 visitors who pay an average admission price of $4.00. With appropriate marketing this is an attainable goal..

Marketing

The marketing challenge faced by the VLA Visitor Center is not so much selling itself as it is making people aware of its existence.
Challenges:

- people know of the VLA but don't know there is a visitor center there;
- many federal sites in New Mexico are "secret" or restricted: people don't realize the VLA is open to the public and has a visitor center;
- most east-west traffic in New Mexico travels I-40 or I-10. Highway 60 is a lesser-traveled alternative route to/from Phoenix, Flagstaff, Tucson, and the Grand Canyon. More may be enticed to use this route if they know they can visit the VLA and still reach their destination.

Meeting those challenges:

1. Highway signage

   People can't visit if they can't find us. We have been successful in acquiring large signs on I-25 in Socorro advertising our exit, but once off I-25 there is nothing. We often hear the complaint from visitors that they missed the turn because our signs were so small. A highway department campaign to increase our visibility along highway 60 would require personnel time, but since it is the highway department's venue, no money. Another option would be the rental of a bill board just outside of Socorro. Current rental rates: $800 for the vinyl for the 10'x40' sign and $250/month rental based on a 12 month contract for $3800/year. [Oscar Medina with Lamar Outdoor advertising, 1-800-334-2236] Another option is a large sign nearer to the VLA, produced commercially and posted on private land rather than highway right-or-way at a cost of $1200 to $2000 per sign plus permission to post and a small annual rental fee. [Mitzi Chavalier, Ye Olde Signs, Truth or Consequences]

2. Brochure distribution at highway visitor centers, local and regional hotels/motels, Albuquerque convention center.
   - The New Mexico Department of Tourism staffs 12 visitor centers around the state, attracting tourists as they enter the state on primary highways and Interstates. The Centers distribute brochures that have been "approved" for state and area attractions. The Very Large Array participates in this program, free of charge other than the cost of printing the brochures and mailing them out when needed. Brochures are also distributed to Socorro area motels through the Socorro Chamber of Commerce, and such places as the Forest Service station in Magdalena, Magdalena Chamber of Commerce, Daily Pie Café in Pie Town, Carrizozo Visitor Center and others as requested. Brochure printing costs in the fall of 2003 were $2,057 for ten-thousand, enough brochures for about 14 months.

   - Membership in the Albuquerque Convention and Visitors Bureau ($250 per year) provides us with brochure distribution at the Sunport International Airport, Old Town Visitor Center and Albuquerque Convention Center.

3. "Free" advertising in local publication calendars and through public service announcements. We currently advertise our public tours in the events calendars in such periodicals as New

Mexico Magazine, New Mexico Enchantment (the Rural Electric Cooperative Association monthly newspaper), and the Albuquerque Journal Friday Venue. KUNM, National Public Radio in Albuquerque, runs public service announcements of our tours.

4. Paid advertising:
   We are listed in the Albuquerque Official Visitors Guide and Vacation Planner as a "museum: outside Albuquerque". The Guide is published twice a year and has an annual distribution of 420,000 through information centers, mail/phone requests, hotel distribution, conventions, and public relations/tourism requests. Additional advertising in the Guide would run from $10,000 for a full page ad in both issues to $3,000 for a one-sixth page ad in both issues.

   Other paid advertising opportunities:
   - The Guest Guide is published monthly and distributed to rooms in 130 hotels and motels in Albuquerque and Santa Fe. Rates range from $2640 to $12,000 annually, depending on ad size.
   - New Mexico Traveler is a hard-cover visitors' guide placed in New Mexico's "top resorts and vacation rentals." It claims to be an opportunity to reach 4.0 million readers. Ad rates range from $700 to $4,000 in the special "Out West" section.

All of these reach tourists who are already in New Mexico, but the Very Large Array is an attractive destination to a much broader, national and international audience. Reaching these potential tourists involves advertising in national publications.

Sky and Telescope
1/6 page black and white ad one time $920 three times $2685

Astronomy Magazine
1/6 page black and white ad one time $1105 three times $3231

Another important aspect of our advertising (and our education and public outreach!) is our website. Many of our guests during public tour days tell us they found the information on the web and planned their vacation around it. We will continue to update our webpages in a timely and informative manner and make them as dynamic and appealing as possible.

Marketing budget:
A staff member experienced in and dedicated to marketing will offer other options as well. We suggest a startup marketing budget:

Brochure printing	**$2,100**
Paid periodical advertising	**$4,000**
Highway signage (2 signs)	**$3,000**
Total	**$9,100**

Order of Events/Timeline

2005:
- Create Visitor Center Construction advisory committee, including representatives outside of NRAO
- Design initial fundraising plan and begin search for money
- Initiate planning grant for exhibits through NSF
- Address operating budget/staffing/and revenue concerns

2005-2007
- Search for and secure architect and exhibit designer
- On-going: refine exhibit concepts

2008
- Begin construction

2010
- Complete construction

Appendix A

Visitor numbers and Admission Fees

National Solar Observatory, Sunspot, NM
30,000 visitors
$2.00 adults, $1.00 10-21 and senior citizens, under 10 free, $5/family
no guided tours

Kitt Peak National Observatory, Tucson, AZ
60,000 visitors
no admission fee
guided tours $2 adults, $1 students

Lowell Observatory, Flagstaff, AZ
70,000 visitors
$5.00 adults, $2.00 youth 5-17, $4.00 AAA/Senior/Student, Children 4 and under free

McDonald Observatory, Ft. Davis, TX
120,000 visitors
$5 Adults / $4 Children 6-12 / $15 Family
guided tours $7 adults / $6 kids 6-12 / Family $22 (Includes admission to the Visitors Center)

Arecibo Observatory, Puerto Rico
100,000 visitors
Adults $ 3.50 / Children and Seniors $ 1.50

Green Bank Observatory, Green Bank, WV
45,000 visitors
$25 per chartered bus for commercial tours

Appendix B

Admission price survey, voluntary responses

March 23-April 5, 2004

How far did you come?	How do you know about us?	What would you pay for admission?	guided tour?	how many in your party?	How many under 16?	suggestions
15		no	no	2		
50	husband	2	2	6		hands-on activities that would interest school kids
50	friends	no	1	2	0	easier displays to read (bigger print), interactive displays would be great
60	tours and physics today	1	1			
70	sister	1	2	4	2	
99	friends	1	maybe	2	1	more space pictures
100	friend	3	not if there is an admission price	3		scientists to talk with, experts who know about the place
100	brochure	3 to 5	3 to 5	5		
100	atlas	5	3	2	1	a hands on telescope
100	people in torc	3	3	5		
100	visit	3	3	5		
105	parents-Los Alamos	5	5	2		hands on, scientists to talk to, I don't know, just stuff
120	New Mexico	3	3	6	2	a guide
125	friend/internet	5	5		2	
134	green guys told us	3.5	1	4	2	a miniature that you can move around yourself
137	catalog from senior center in abq	no	no	23		
138	friends	4	no	24	0	lunch food facility, much larger placards of description under photos
150	reading	no	no	4		
150	science teacher	2.5	no	2	1	dish network overseas tv
150	brochure	1	no	4		
150	just always knew	2,3	2,3	2		
150	movies, internet	4	4	4	2	
150	interest in astronomy	2	3	6	3	real time view of what the scopes are looking at
150	known about it for years	4,5	2	2		longer dvd info presentation

How far did you come?	How do you know about us?	What would you pay for admission?	guided tour?	how many in your party?	How many under 16?	suggestions
160	reading	1	2	13		place to eat
175	known about it for some time, probably college	5	yes	20	3	more hand-outs, printed matter to be taken home
175	reputation	3	2		6	
175	internet	2	2	23	3	more interactive displays
180	visitor center	3	2	4		
200	heard of it for many years	2	no	2		
200	science public, movie, i25 sign	3	3	2		map of array & surrounding area
230	sighting	3	no	2		
400	Contact	1	no	2	1	
500	many sources	5	5			someone to answer technical questions or an interactive software program
700	friends	5	5	2		new research, new pictures
1000	drove by	3	no	3		
1200	2010	5	5	1		
1600	all my life	2	5			someone to answer serious questions, a rotating post doc?
1800	tv and AAA guidebook	5		2		
100m	Bear Canyon senior center	3	3	32		more movies
125m	oy Scouts	3	5	19	14	it was great as it was
150m	friend	5	5	4		espresso
150m	Bear Canyon senior center	1	2	13		eating area
15m	paper	no	no		30	
160m	Contact	2	2	4	1	
1800 from CO, visited Trinity	Dad worked for phone company, I read about VLA as a kid	3	no, but I'd pay to talk to an astronomer	2		fiorello terenzi style sound of radio signals like pulsars
1800 into a 2500 road trip	I was a geek as a kid	5	3	2		HO scale model of VLA, ADA compliant displays
2 hrs	known about it for a long time, but never before in the area	4	4	3	1	more photos, exhibits

How far did you come?	How do you know about us?	What would you pay for admission?	guided tour?	how many in your party?	How many under 16?	suggestions
200 miles	too long ago to remember	3	3	2		web based terminals w/bookmarks into VLA tour, virtual technology, etc.
250m	internet	2	no	5	3	more buttons to push
260m	nasa,contact, internet	5	5	4		larger gift shop, dvd presentation
260m	long time interest	3	3	4		
260m	friends	2	2	4		bigger gift shop and more items in stock, DVD w/history of, etc.
260m	friends	2	2	4		
300+ miles	college	5	5	2		
5 hours		5	5	1		
55m	popular press	2	no	6		exploratorium style exhibits
900m	lifelong space/astronomy interest	5	5	2		simulator of moving telescope for kids--have computer control model exhibit
900m	known about it for ages	3	5	2		
abq	boy scouts	2	no	20	12	
abq	Contact	5	5	30		cart rides from building to building
abq	been here before, brought friends	3	3	3	1	small hands on model, controllable with joy stick, mouse
abq	school	3	3	3	1	
abq	Contact	3	3	23		add a snack area for people with sack lunches
Atlanta, GA	I saw the GBT and read about it there	3	3	1		
AZ	web	2	2	6	3	demo of actual data if possible
AZ	science teacher	0.5	0.5	15		hot food, more candy
El Paso	guidebook	5	5	2		more astronomy
Gallup	contact, NM guidebook	2	5	2		interactive displays
IL	road sign	2,3	1,2	2	0	
It was on the way	friend	no	no	2		we like engineering details, how it all works. Perhaps a display of various components--antenna model, wave guide, etc. I'd also like to be able to see the computers better
Las Cruces	Rick Richans	5	5	2		it all was great!
long ways	teacher	0.5	0.25	15	2	munchies
Los Alamos	drove by years ago	5	5	2		hands on activities

How far did you come?	How do you know about us?	What would you pay for admission?	guided tour?	how many in your party?	How many under 16?	suggestions
Los Angeles	relative in ABQ told me about the tour. I knew about the VLA from Contact	5	2	3	1	
Minnesota	internet, tv, books	5	5	3	1	
NJ	can't remember that far back	3	5	2		
passing by	saw sign on 60	2	3	3		
Rio Rancho	internet	3	4	3	1	hot chocolate
Ruidoso	don't know	5	5	4	2	
Santa Fe	was here in 1984	3	3	3		scale model cutaway model of antennas
Santa Fe	web	2	2	3		info about current experiments, what telescope is looking at now
Silver City	guide books, friends	5	5	2		more astronomy-related items, automated observatory of the sky--see Christa McAuliffe Observatory, Concorde NH
socorro	school	3	3	1		
socorro	internet	3	3	1		
South Dakota	saw sign on 60	2		2		longer video
Springfield, MO	astronomy articles	no	4	2		more computer interaction activities
TX to AZ	passing through	5	5	2		
Vancouver, BC	Contact	5	yes	2		a better explanation of how radio is not sound (for arts folks like me). Perhaps some radio waves broadcast as sound. Photos or mockup of control room..Donuts!
Virginia	web	no	no	4	2	
	pictures	2	no	5		interactive and children's hands on

VLA
Very Large Array Visitor Center

Plains of San Agustin

VLA
VISITOR CENTER

NRAO

Program

Main	
Lobby	300
Restrooms	750
Gift Shop	950
Gallery	
Gallery	5,000
Education	
Theater	900
Classroom 1	650
Classroom 3	650
Staff	
Business Manager Office	500
Tour Guide Office	400
Service	
Storage	2,500
Custodian	250
Loading	200
Mechanical	500
Circulation	2,000
Total Square Footage	**15,550**

(approximate square feet)

*Parking for approximately 100 vehicles, plus bus and RV.

Collaboration Team:

National Radio Astronomy Observatory (NRAO)

University of New Mexico School of Architecture and Planning

Principal Investigator:
Tim B. Castillo
Assistant Professor of Architecture

Theory Consultant:
Troy R. Lovata, Ph.D
Assistant Professor, University Honors Program

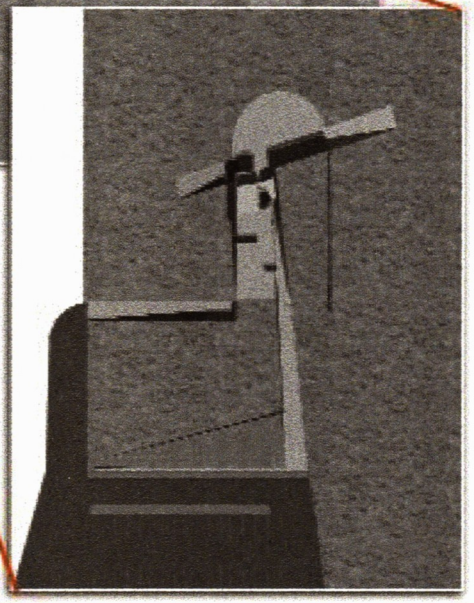
Design Team:
Erik Mease
Nireshwala Nitish Suvarna
Dathan Tsosie
Gauri Vengurlekar

VLA
VISITOR CENTER

Location

This aerial view of the VLA shows the location of the new visitor center. The control building is circled.

The half circle is a courtyard the diameter of a dish.



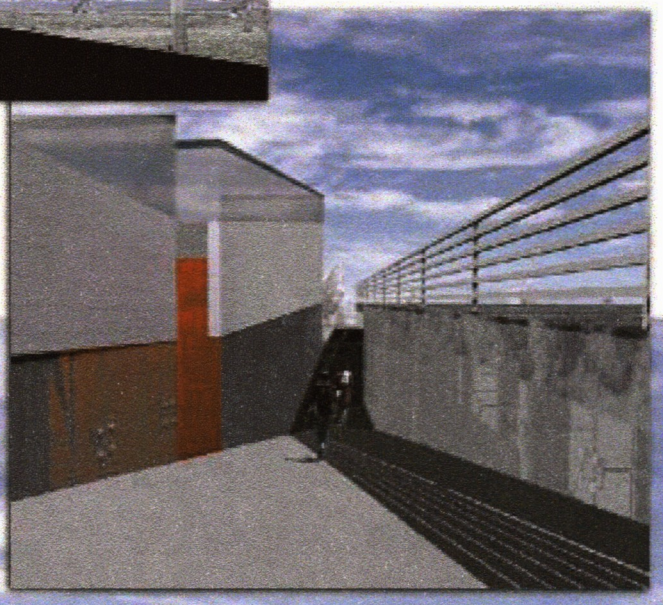
The orientation of the "slant" on the north side corresponds to the visitor walkway between the antenna and the control building.

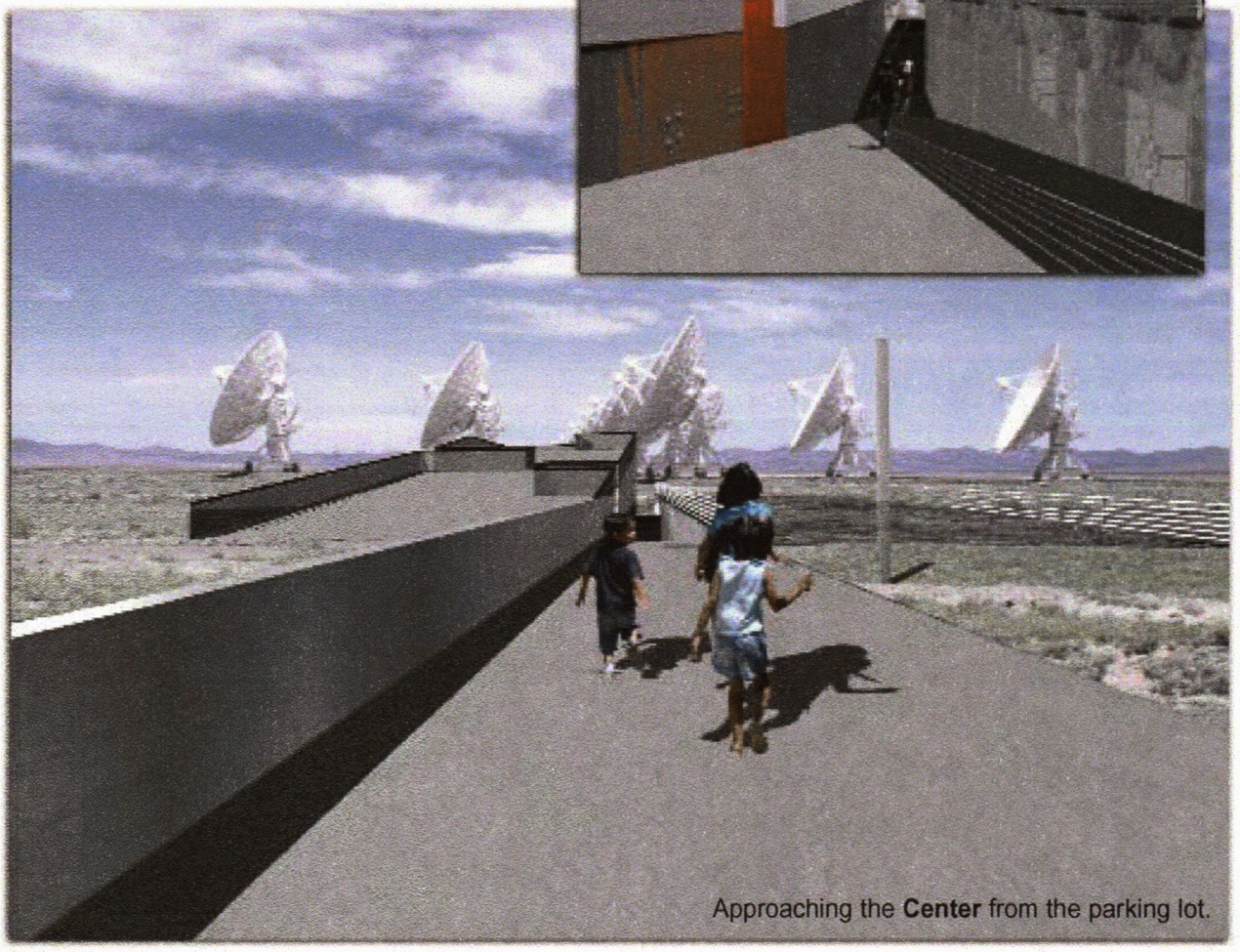
VLA
VISITOR CENTER

Exterior View

View of the **Visitor Center** from the parking lot.

The ramp descends to below ground level. Upon entering the lobby on the north side of the building, there is a beautiful view of the center of the array. The red is part of a "light well" into the exhibit area.

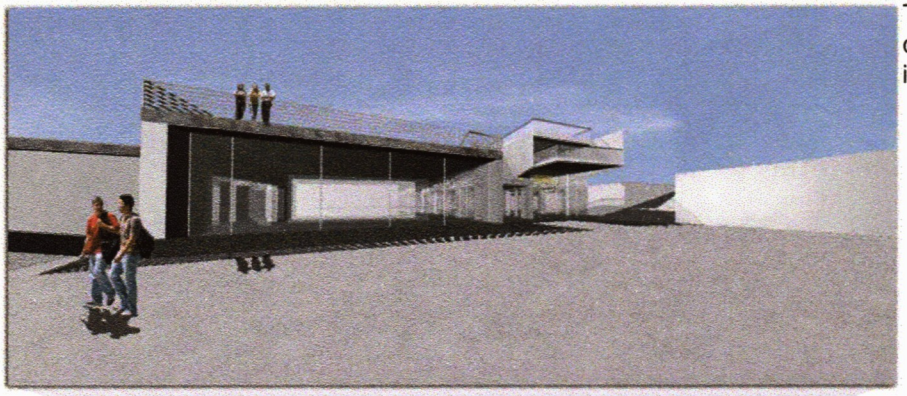




Approaching the **Center** from the parking lot.

VLA
VISITOR CENTER

Layout

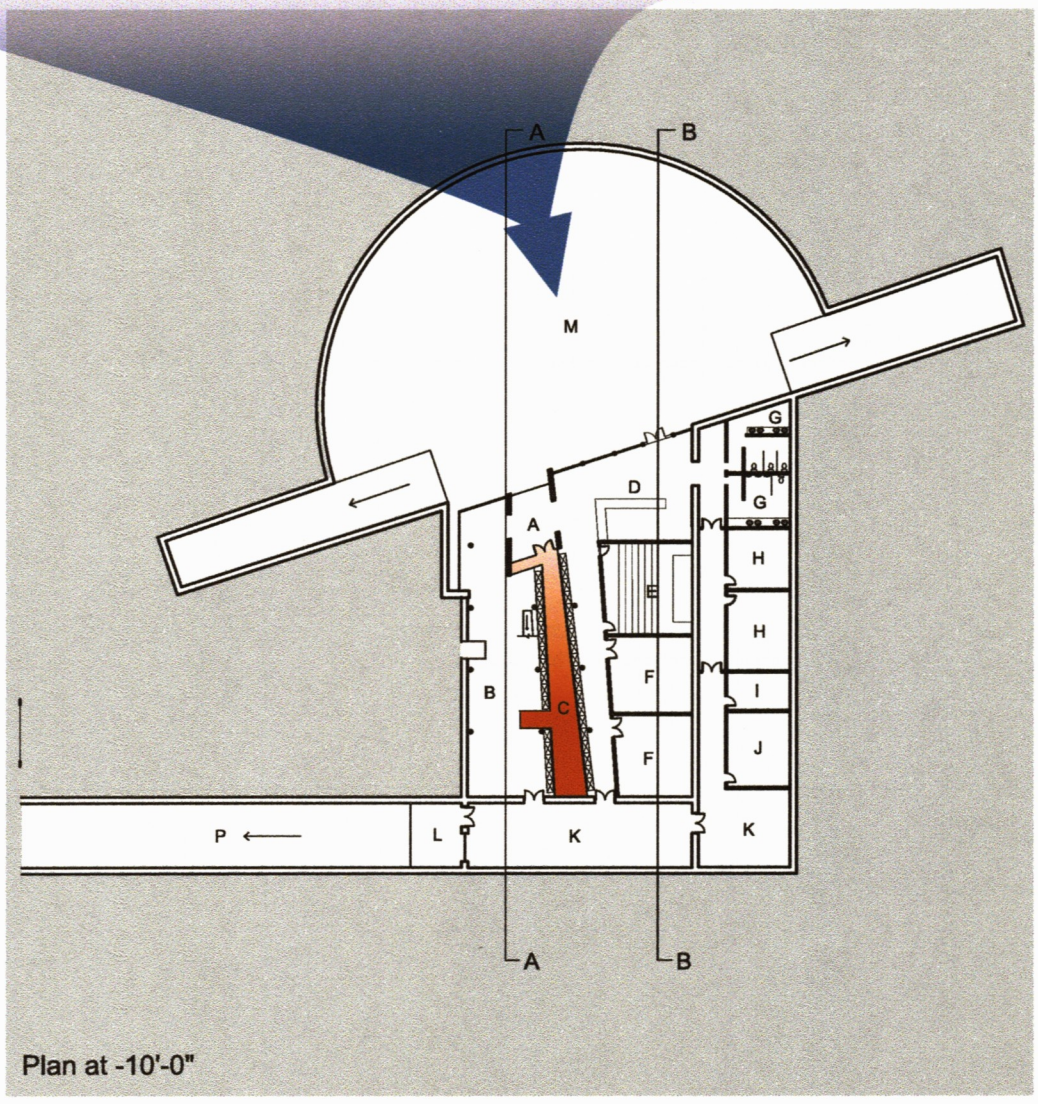


This is a view from the courtyard looking back into the lobby.

Visitors approach the entryway via a slowly descending ramp (C colored red). They are still out of doors until they enter the lobby (A).

Legend

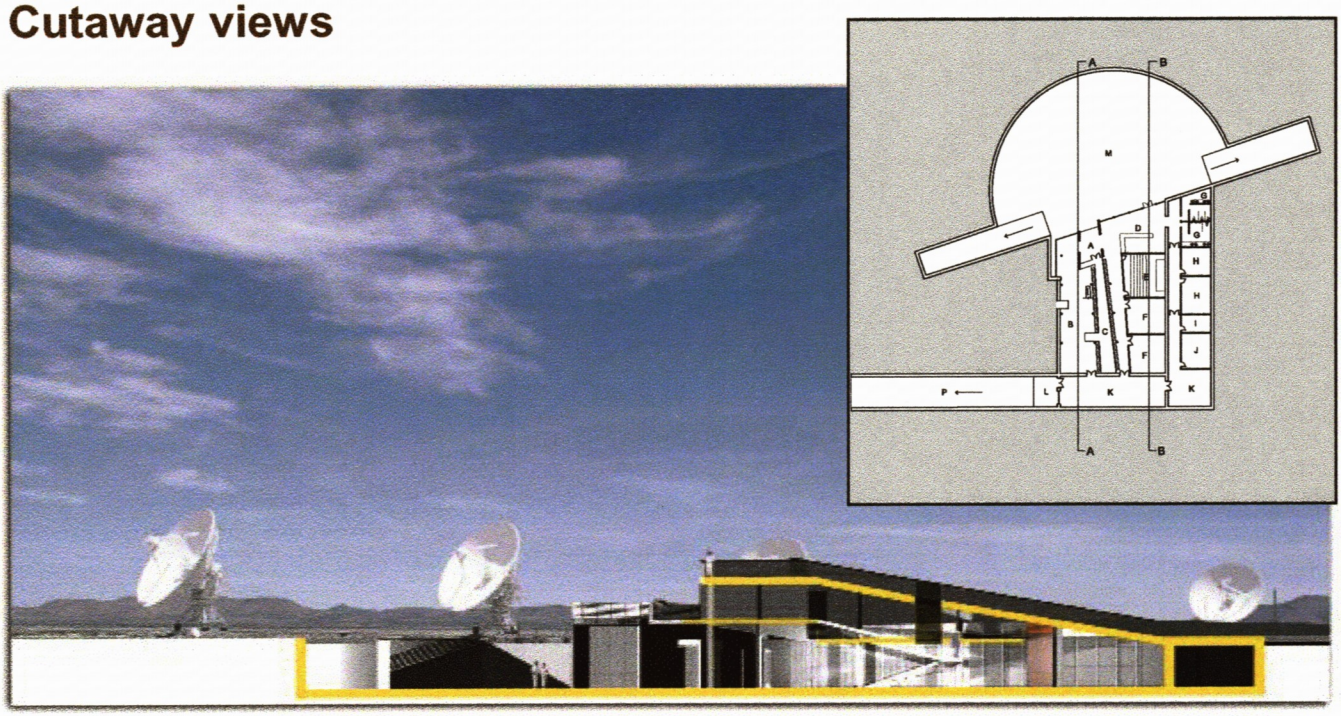
A. Lobby
B. Exhibit Space
C. Entry Ramp
D. Gift Shop
E. Theater
F. Classroom
G. Washrooms
H. Office
I. Custodian Room
J. Mechanical Room
K. Storage
L. Loading Dock
M. Dish Courtyard
N. Viewing Platform
O. Open to Below
P. Service Road



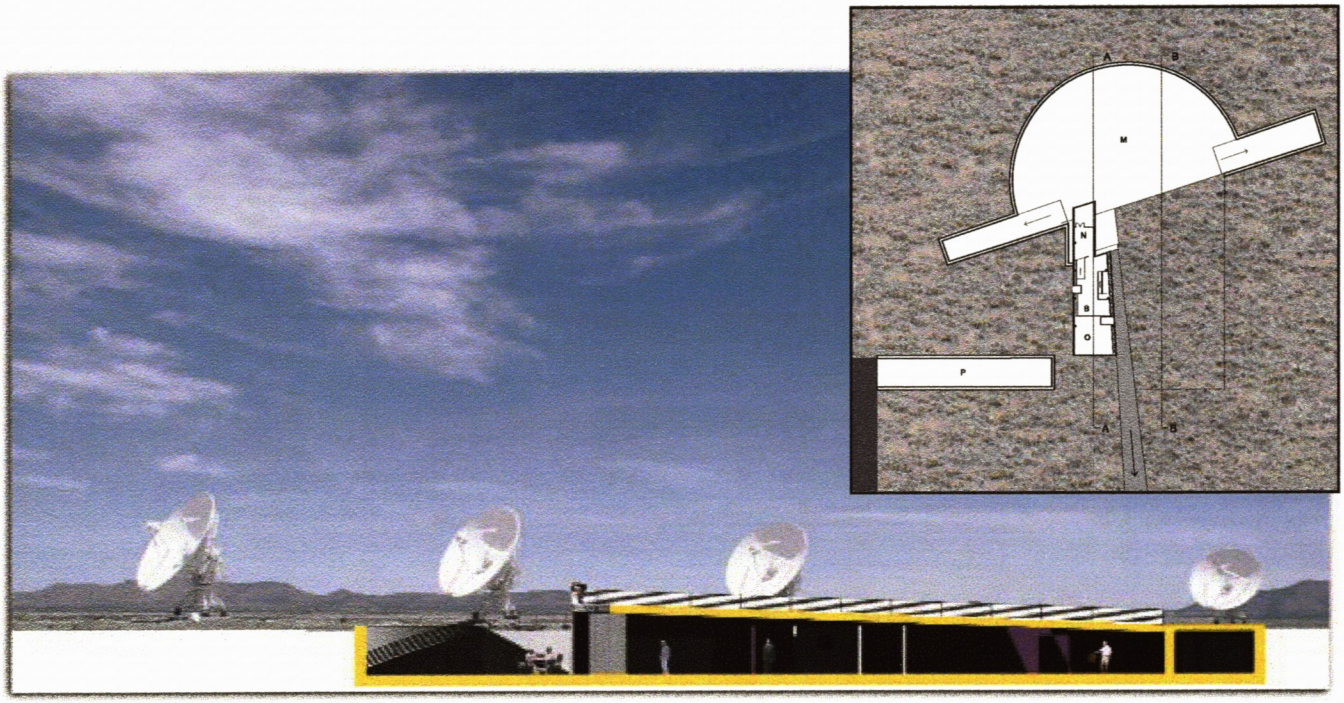
Plan at -10'-0"

VLA
VISITOR CENTER

Cutaway views



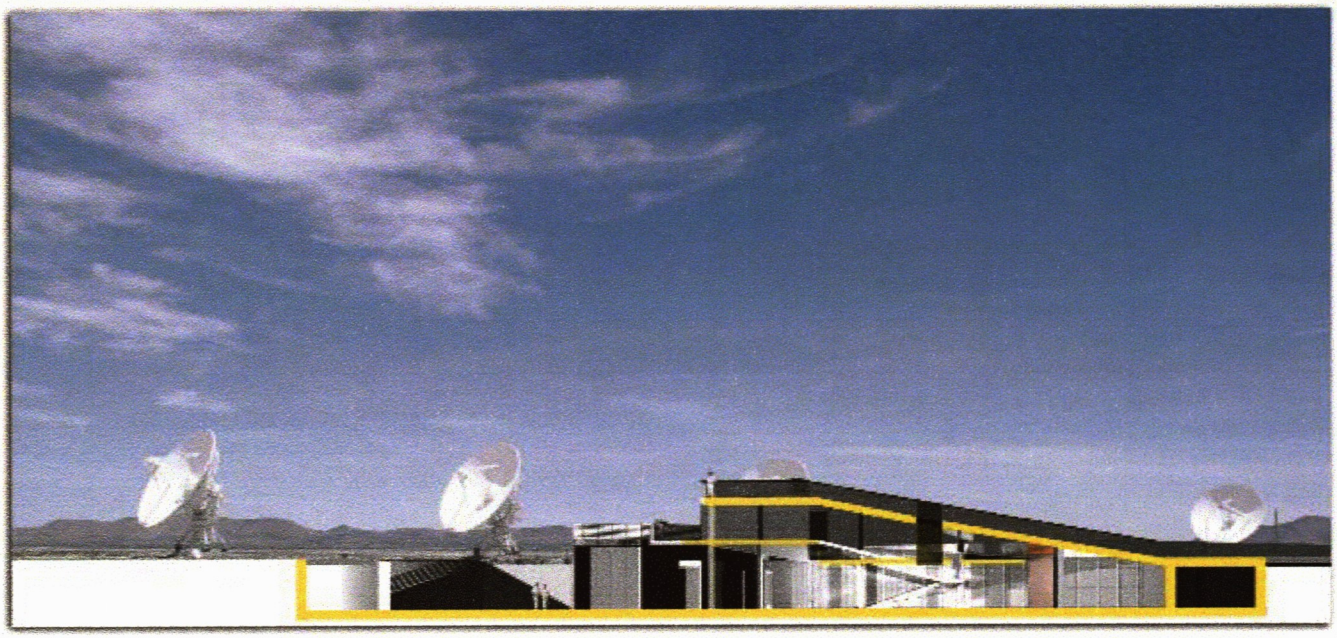
Cutaway section AA (below ground level, at entry level) of the building as described by the line drawing above.



Cutaway section BB (at ground level), observation deck level of the building as described by the line drawing above.

VLA
VISITOR CENTER

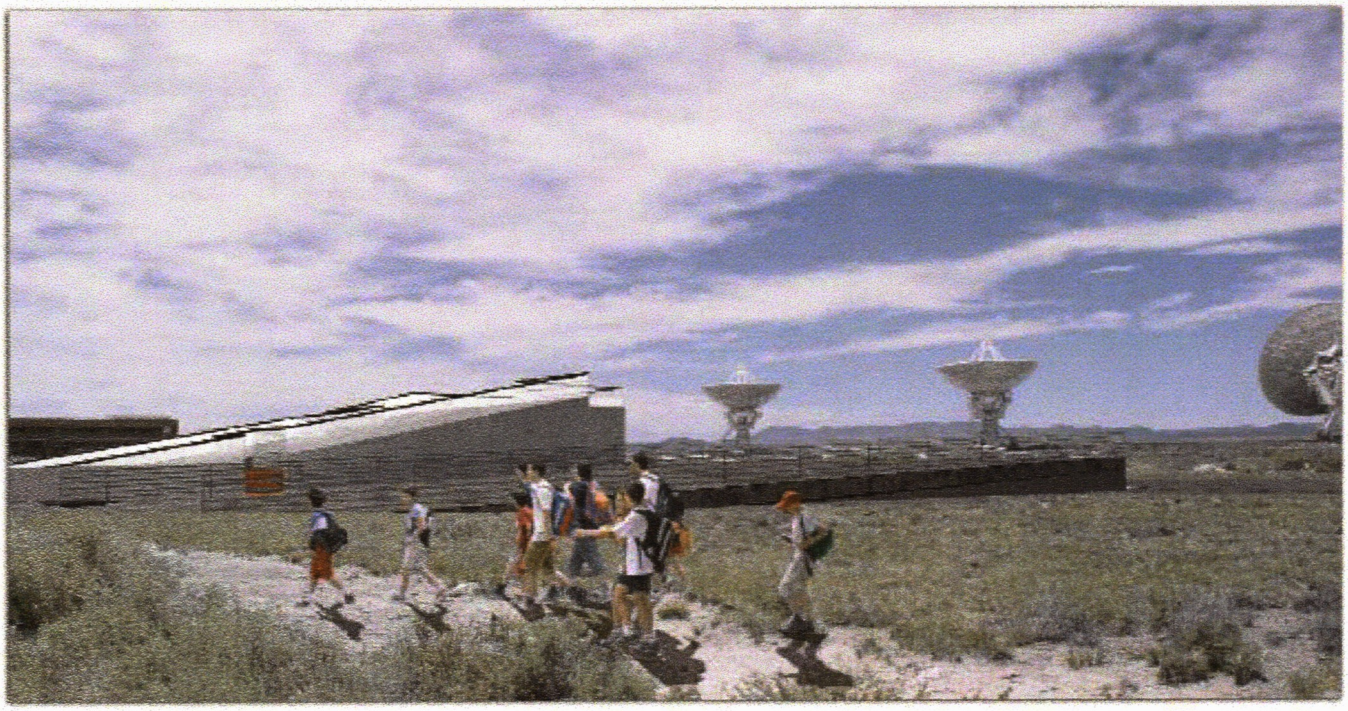
Exterior Looking East



Section AA

Looking to the east. The visitor's walkway between the visitor antenna and the control building is the walk to the right that has ascended from the sunken courtyard

Exterior Looking West



Looking toward the west. The parking lot is to the left of this picture.

VLA
VISITOR CENTER

First Floor Exhibit Space

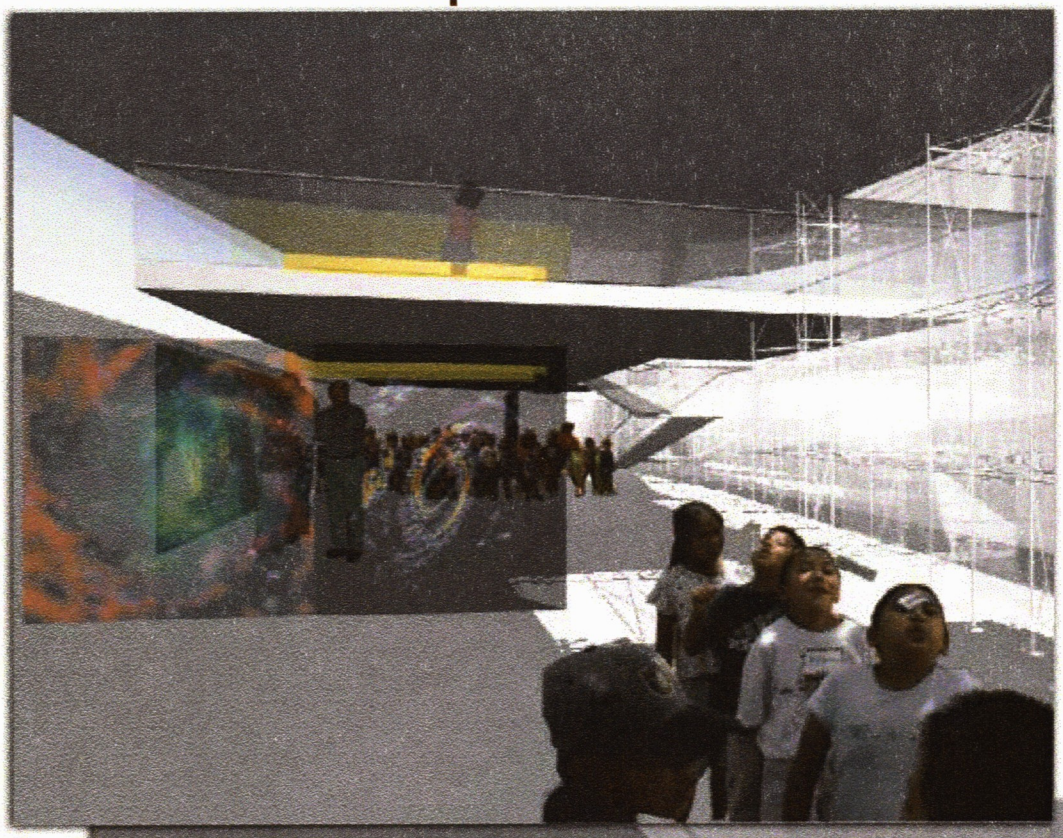
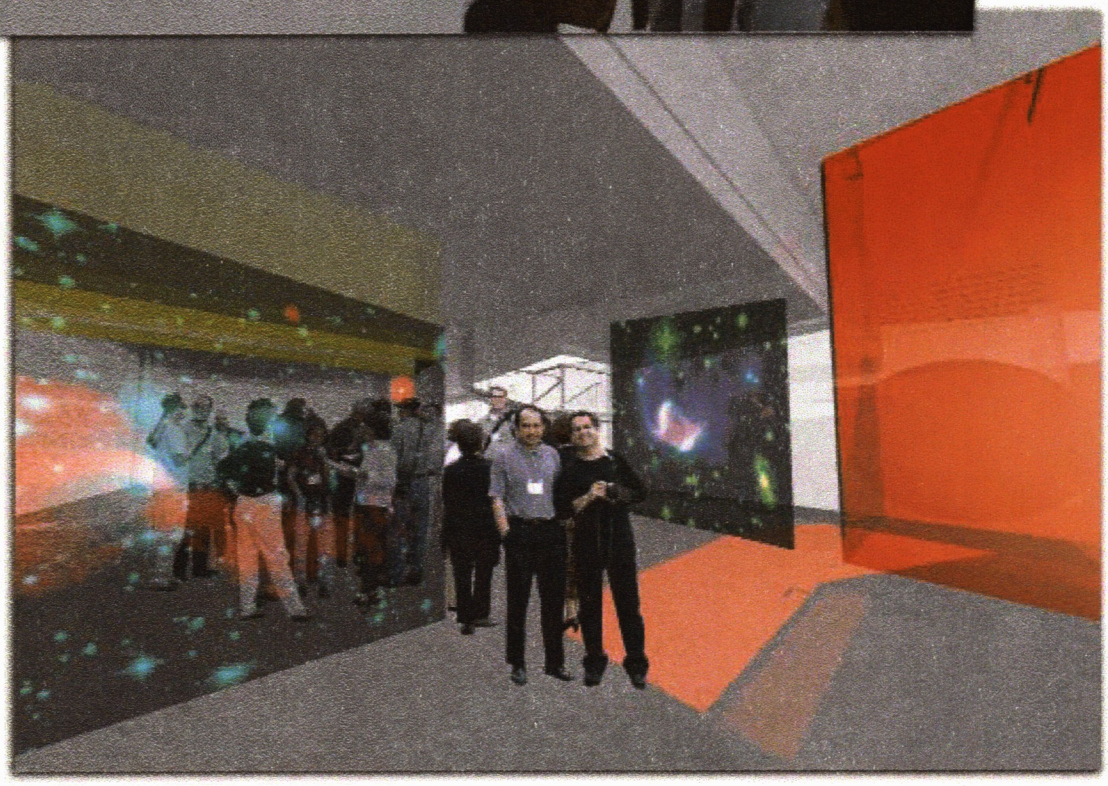
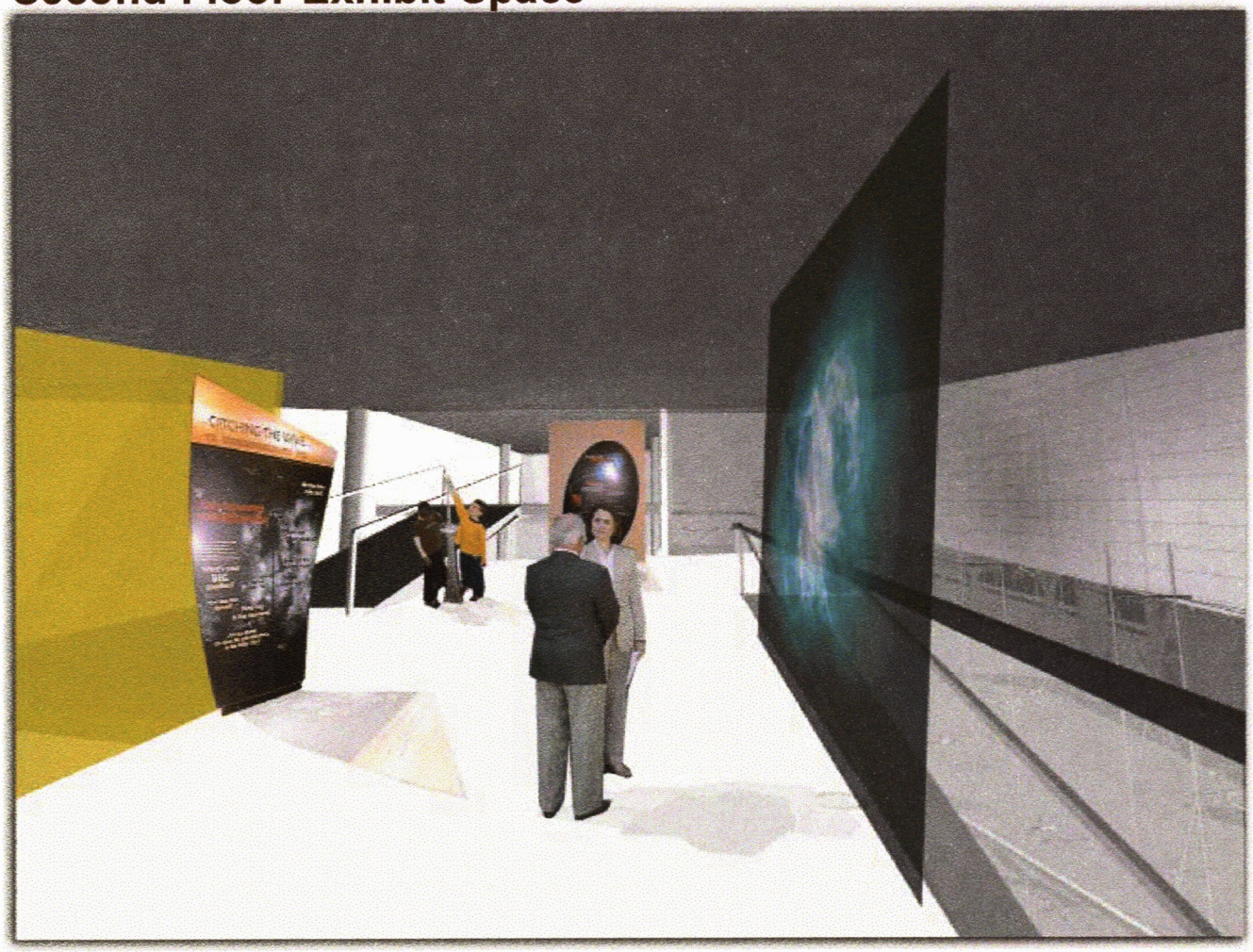


Exhibit space will be located on both levels of the building. Those are views of the exhibit space provided by "light wells."

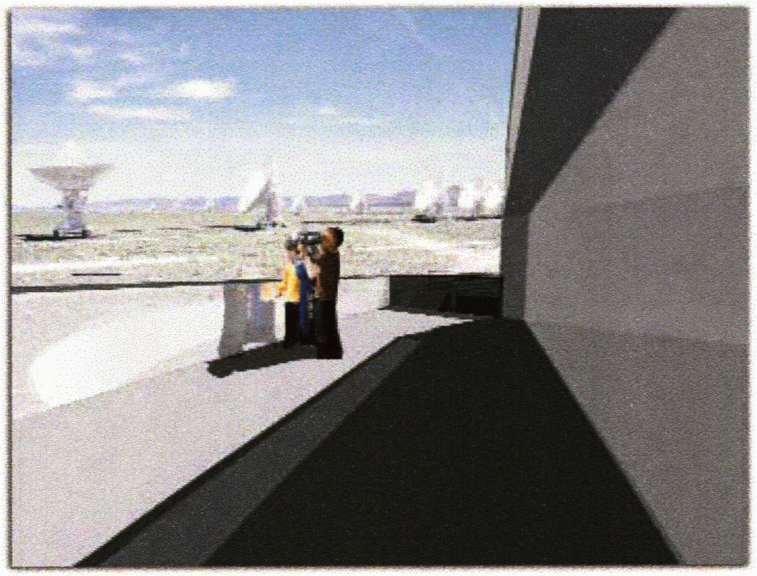


VLA
VISITOR CENTER

Second Floor Exhibit Space



The second floor exhibit space opens out on to the observation deck above the courtyard.

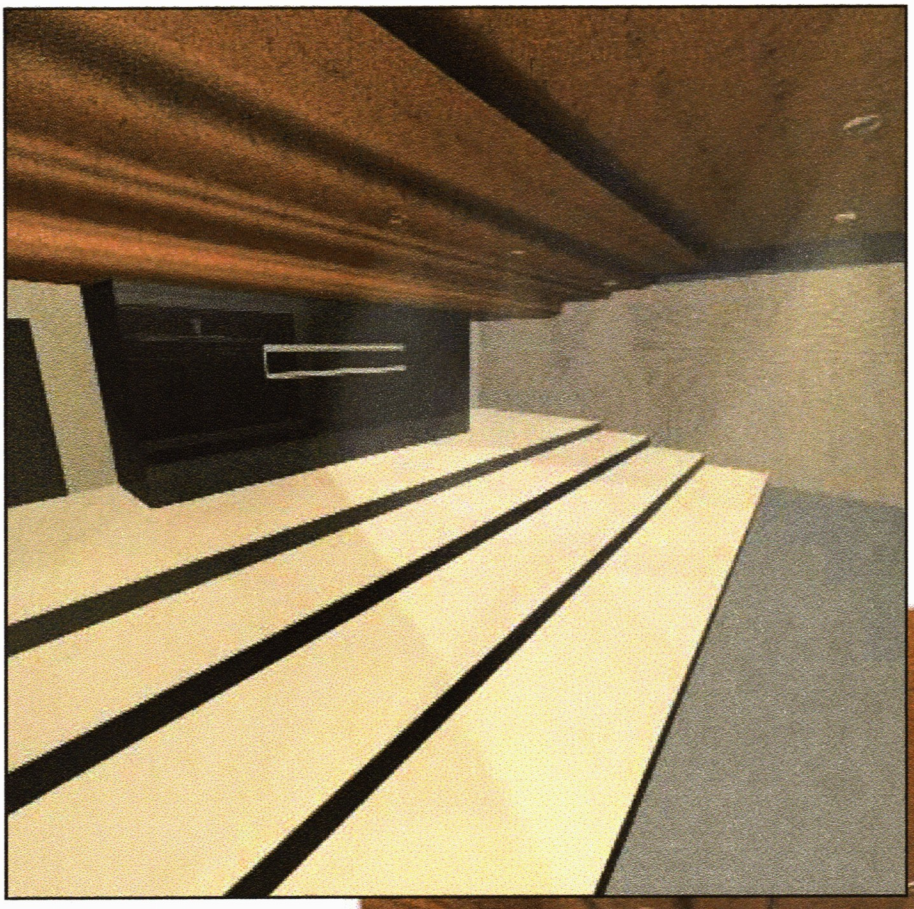


VLA
VISITOR CENTER

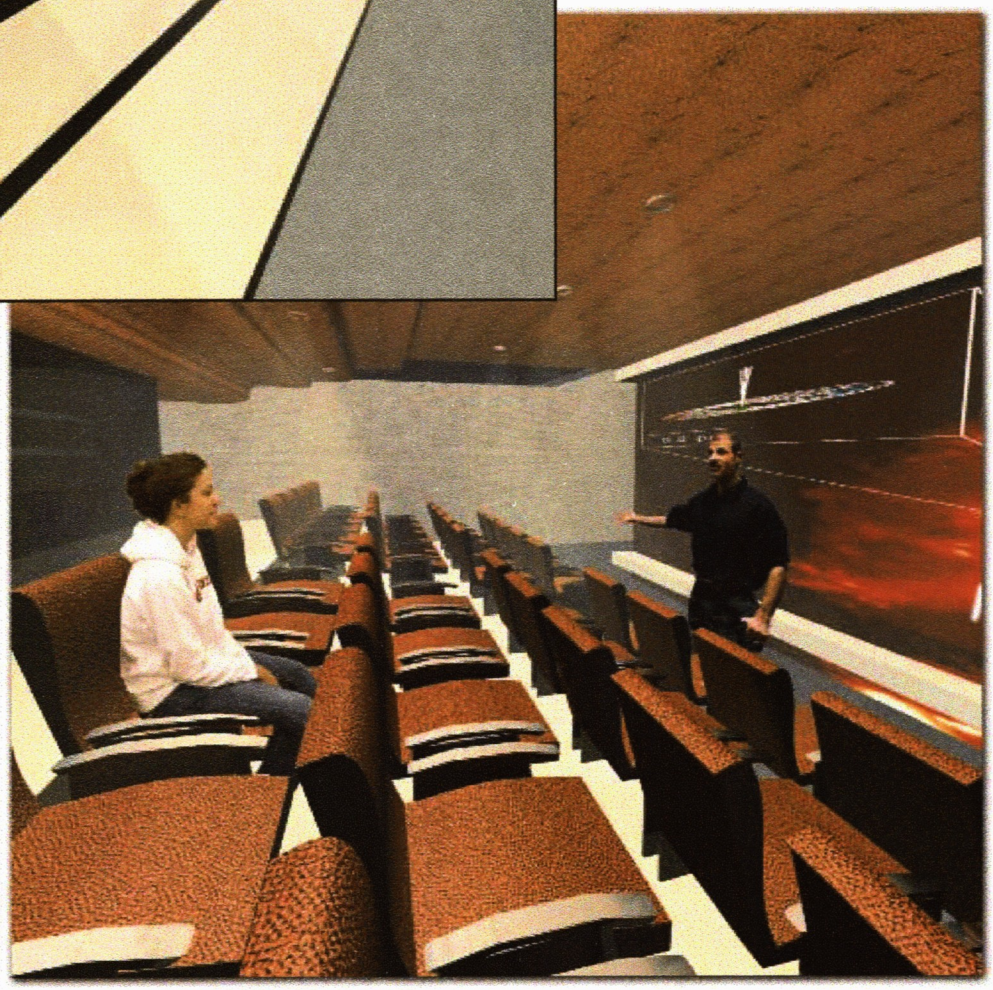
Education Wing Corridor

View looking north along the Education Wing Corridor. The entry ramp is on the other side of the left wall, classrooms are to the right. The lobby is at the end of the hall.

Theater

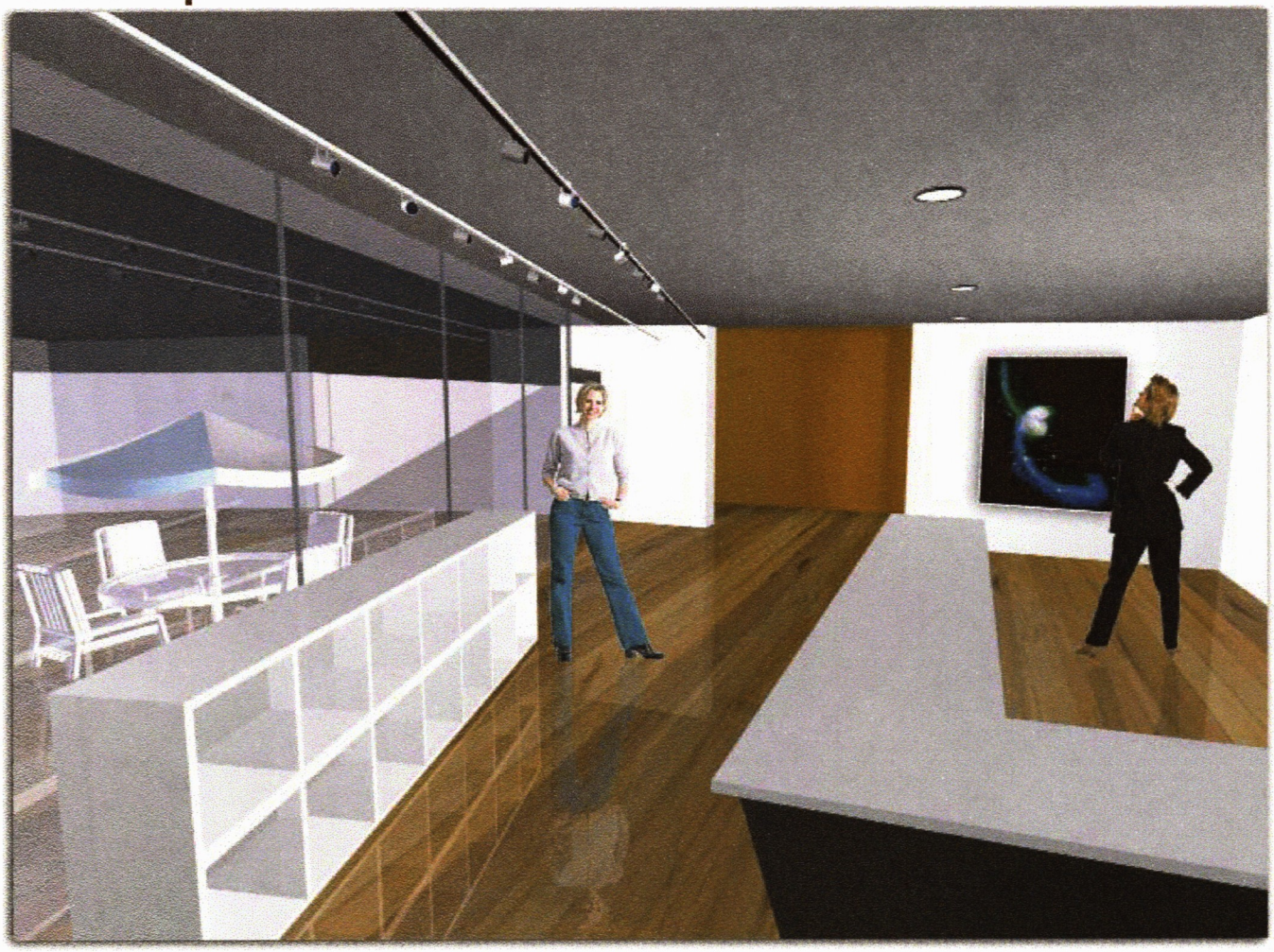


Two views of the theater: on the left with bleacher-style seating, on the right with theater seating.



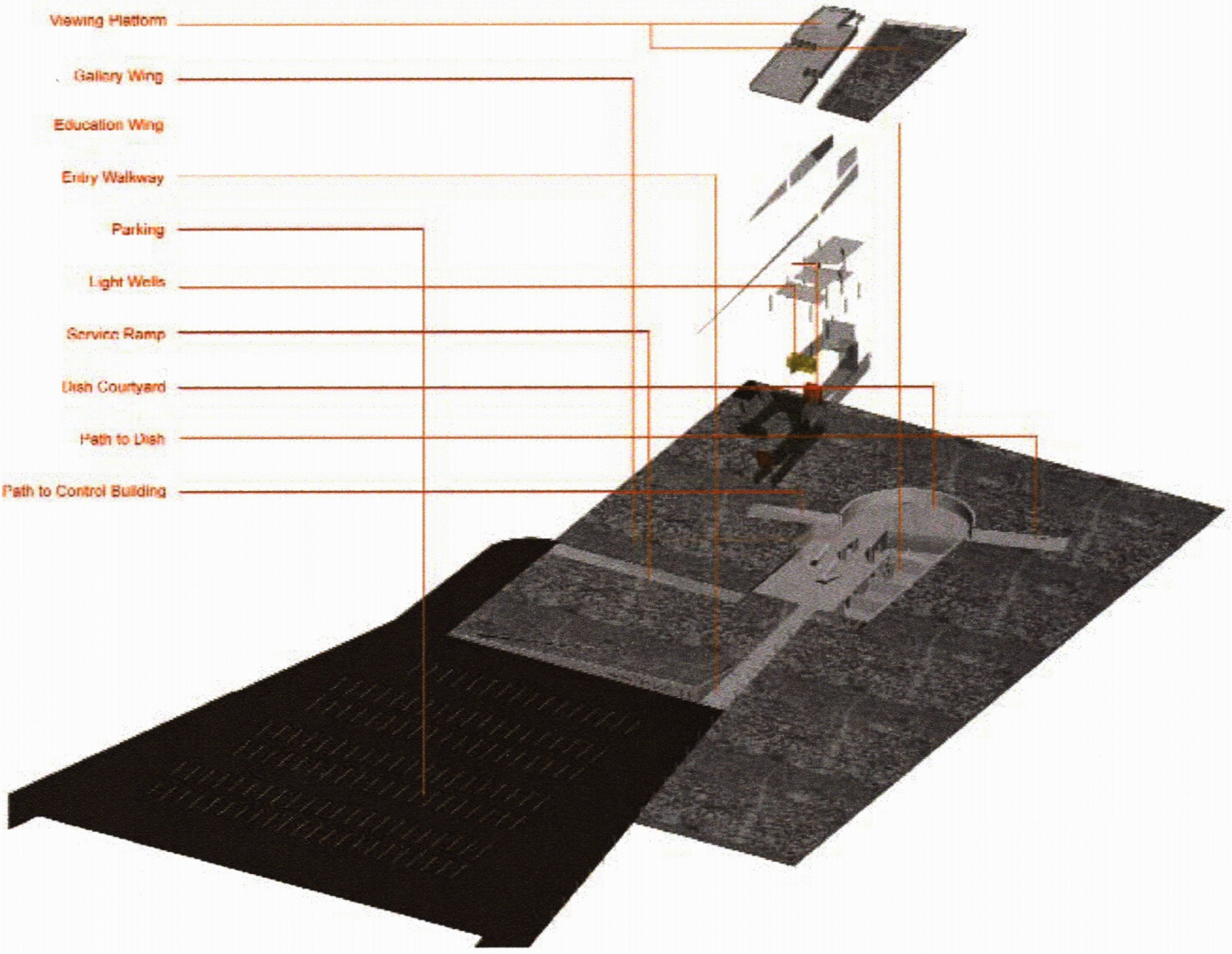
VLA
VISITOR CENTER

Gift Shop



A gift shop (above), offices, a loading dock, and storage space will round out the building.

Exploded Axonmetric



VLA
VISITOR CENTER