



appendix



figure 001	background image to contents page-Jenson Button testing the new BAR Honda at Barcelona - Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005.	001	figure 2.5	total track (www.grandprix.com accessed on 22_02_05)	020
figure 1.01	briefing document cover page-Jenson Button testing the new BAR Honda at Barcelona (Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005,pg.32)	001	figure 2.14	all makes and models competing (www.historicracing.co.za-accessed on 09_03_05)	020
figure 1.02	clockwise from top left-Pompidou Centre, Paris-pg.6; Fuji Television Building, Tokyo-pg.259; Grande Arche de le Defense, Paris-pg.438; Palace of the Lost City, Sun City-pg.323; Walt Disney Dolphin Hotel,Florida-pg.333; Umeda Sky Building, Osaka-pg.259. (Pearman,H. 1998. Contemporary World Architecture. London:Phaidon Press Ltd.)	003	figure 2.15	major nodes in Midrand, overlay on aerial photograph 2003 (city of johannesburg/gis data)	021
figure 1.03	clockwise from top left - Michael Schumacher, six time-world champion (Metcalfe,J.Winning!-2003/2004 Yearbook of South African Motorsport,pg.30) ; Subaru World Rally Championship car (Metcalfe,J.Winning!-2003/2004 Yearbook of South African Motorsport,pg.78) ; Subaru World Rally Chamionship team celebrating another victory (Metcalfe,J.Winning!-2003/2004 Yearbook of South African Motorsport,pg.81) ; Team Ferrari celebrating yet another victory (Windsor,P. Winner Takes All-Drive Magazine.July 2004, pg.61) ; Jenson Button testing the new BAR Honda at Barcelona (Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005,pg.32) ; Fernando Alonso on top of the podium (Metcalfe,J.Winning!-2003/2004 Yearbook of South African Motorsport,pg.25) ; Ralf Schumacher in the gravel trap (Windsor,P. Winner Takes All-Drive Magazine.July 2004, pg.71)	004	figure 2.16	land use around Kyalami, overlay on aerial photograph 2003 (city of johannesburg/gis data)	021
figure 1.04	image of speed_ferrari F1 (2005 Guide.Supplement to Drive Magazine. March 2005,pg.48)	005	figure 2.17	land use in Midrand, overlay on aerial photograph 2003 (city of johannesburg/gis data)	021
figure 1.05	image of speed_williams F1 (2005 Guide.Supplement to Drive Magazine. March 2005,pg.50)	005	figure 2.18	figure ground of Kyalami (author)	021
figure 1.06	image of speed_williams F1 (Henry, A.2003. 25 Years of Williams F1. London: Orion)	006	figure 2.19	framework for Kyalami (author)	022
figure 1.07	figure ground study (Trancik, R. 1986. Finding Lost Space - Theories of Urban Design. New York: Van Nostrand Reinhold.)	007	figure 2.20	portion of framework at entrance to Kyalami, autocad (author)	023
figure 1.08	Trancik's three three theories of urban spatial design (Trancik, R. 1986. Finding Lost Space - Theories of Urban Design. New York:Van Nostrand Reinhold.)	007	figure 2.21	figure ground of Kyalami (author)	024
figure 1.09	downtown Philadelphia showing the linkage theory (Trancik, R. 1986. Finding Lost Space - Theories of Urban Design. New York:Van Nostrand Reinhold.)	007	figure 2.22	aerial photograph of site (city of johannesburg/gis data, personally edited)	025
figure 1.10	Hollein's Muncipal museum-a response to historical and physical context (Trancik, R. 1986. Finding Lost Space - Theories of Urban Design. New York:Van Nostrand Reinhold.)	008	figure 2.23	site position in terms of the framework (author)	026
figure 1.11	development of the youth starts with the youngsters on the karting track (Metcalfe,J. Winning!-2003/2004 Yearbook of South African Motorsport,pg.110)	008	figure 2.24	site sketch,character of site (author)	027
figure 1.12	Total Toyota South African Rally team (www.totalmotorsport.co.za-accessed on 15_05_05)	008	figure 2.25	site sketch,character of site (author)	027
figure 1.13	entrance to Kyalami Grand Prix Circuit (photograph by author)	009	figure 2.26	site sketch,character of site (author)	027
figure 1.14	Kyalami on race day (www.formulalibre.co.za-accessed on 16_02_05)	009	figure 2.27	site sketch,character of site (author)	027
figure 1.15	aerial view of Kyalami (www.kma.org.za-accessed on 16_02_05)	009	figure 2.28	personal photograph,character of site (author)	028
figure 1.16	Altech two-seater in action (www.f1total.com-accessed on 16_02_05)	009	figure 2.29	personal photograph,character of site (author)	028
figure 1.17	aerial photograph of Kyalami 2003 (city of johannesburg/gis data)	009	figure 2.30	aerial photograph of site (city of johannesburg/gis data, personally edited)	028
figure 1.18	Motorsport South Africa logo (www.motorsport.co.za-accessed on 16_02_05)	010	figure 2.31	personal photograph,character of site (author)	028
figure 1.19	Sport and Recreation South Africa coat of arms (www.srsa.co.za-accessed on 09_03_05)	010	figure 2.32	personal photograph,character of site (author)	028
figure 1.20	Pole Position Promotions logo (business card obtained from Gugu Zulu on 25_04_05)	011	figure 3.01	precedent cover page-Jenson Button testing the new BAR Honda at Barcelona (Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005,pg.32)	031
figure 1.21	Kyalami Motortainment and Kyalami Grand Prix Circuit logo (Vodacom Power Tour Programme.26_02_05. pg.3)	011	figure 3.02	montage of the 2004 VPT championship winners (Vodacom Power Tour Programme. 26 February 2005. pg.7)	033
figure 2.01	context study cover page-Jenson Button testing the new BAR Honda at Barcelona (Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005,pg.32)	013	figure 3.03	Festival of Speed and Goodwood Revival logos (www.goodwood.co.uk-accessed on 06_04_2005)	034
figure 2.02	physical locality on a global scale (world image, personally edited, www.maptotal.com-accessed on 15_05_05)	015	figure 3.04	vintage car action during the Festival of Speed (www.goodwood.co.uk-accessed on 06_04_2005)	034
figure 2.03	map of South Africa (www.mapmart.com-accessed on 15_05_05)	016	figure 3.05	the williams F1 collection (Mark, M. The Biggest F1 Show on Earth, CAR Magazine. March 2005, vol.49, no.2, pg. 122.)	035
figure 2.04	map of Gauteng (www.samap.co.za-accessed on 15_05_05)	016	figure 3.06	the vanwall collection (Mark, M. The Biggest F1 Show on Earth, CAR Magazine. March 2005, vol.49, no.2, pg. 121.)	035
figure 2.05	Midrand as a generator (www.ecocity.org.za-accessed on 15_05_05)	016	figure 3.07	six wheel tyrrell innovation (Mark, M. The Biggest F1 Show on Earth, CAR Magazine. March 2005, vol.49, no.2, pg. 121.)	035
figure 2.06	aerial photograph of Kyalami 2003 (city of johannesburg/gis data)	017	figure 3.08	Fangio/Senna memorial (Mark, M. The Biggest F1 Show on Earth, CAR Magazine. March 2005, vol.49, no.2, pg. 123.)	035
figure 2.07	aerial photograph of Kyalami 2003 (city of johannesburg/gis data)	018	figure 3.09	Jody Ickx's Ferrari 312B (Mark, M. The Biggest F1 Show on Earth, CAR Magazine. March 2005, vol.49, no.2, pg. 123.)	035
figure 2.08	programme cover for 1992 South Africa Grand Prix (www.formulalibre.co.za-accessed on 16_02_05)	019	figure 3.10	land speed record display (www.beaulieu.co.uk/motormuseum-accessed on 16_03_2005)	036
figure 2.09	evolution of Kyalami Grand Prix Circuit (www.etracks.co.uk-accessed on 22_02_05)	019	figure 3.11	entrance to silverstone circuit (www.sportsvenue-technology.com-accessed on 16_03_2005)	037
figure 2.10	historic photo of Kyalami main straight (www.minimarcos.org.uk-accessed on 16_02_05)	019	figure 3.12	the silverstone masterplan (www.sportsvenue-technology.com-accessed on 16_03_2005)	037
figure 2.11	photograph of Jody Sheckter (www.grandprix.com-accessed on 16_03_05)	020	figure 3.13	aerial view of the circuit (www.sportsvenue-technology.com-accessed on 16_03_2005)	037
figure 2.12	vintage racing (www.cartoday.com-accessed on 08_03_05)	020	figure 3.14	old track layout (www.sportsvenue-technology.com-accessed on 16_03_2005)	037
			figure 3.15	modified track layout (www.sportsvenue-technology.com-accessed on 16_03_2005)	037
			figure 3.16	views of the McLaren Technology Centre (www.fosterandpartners.com-accessed on 06_04_2005)	038
			figure 3.17	views of the BMW Zentrum (www.bmwzentrum.com-accessed on 06_04_2005)	039
			figure 4.01	discourse cover page-Jenson Button testing the new BAR Honda at Barcelona (Windsor,P. Face Off-F1 Racing-2005 Guide.Supplement to Drive Magazine. March 2005,pg.32)	041
			figure 4.02	generation of axis (diagram by author)	043
			figure 4.03	establishment of nodes (diagram by author)	043
			figure 4.04	linkage of elements on the site (diagram by author)	043
			figure 4.05	importance of views (diagram by author)	043
			figure 4.06	three precincts on the site (diagram by author)	044
			figure 4.07	wind tunnel technology (FHM Formula1 guide 2005,supplement to FHM April 2005, pg 32)	044
			figure 4.08	wind tunnel technology (FHM Formula1 guide 2005,supplement to FHM April 2005, pg 32)	044
			figure 4.09	traffic congestion (www.physics.uiuc.edu-accessed on 19_07_2005)	045

figure 4.10	<i>Fiat Lingotto Plant, Turin</i> (Glancey, J. <i>Architecture and the Car. Architectural Review</i> vol 217, no. 1300, pg4-9)	069	figure 6.19	<i>structural view from the north east</i>	069
figure 4.11	<i>aerial view of Kyalami</i> (Vodacom Power Tour tracks, Road Magazine, Issue 14, pg.74)	046	figure 6.20	<i>structural view from the north west</i>	069
figure 4.12	<i>diagram of movement</i> (diagram by author)	046	figure 6.21	<i>south west structural view showing public seating area</i>	069
figure 4.13	<i>diagram of spaces</i> (diagram by author)	047	figure 6.22	<i>structural view of the admin block from the north</i>	069
figure 4.14	<i>site relationship to the track</i> (diagram by author)	047	figure 6.23	<i>structural view the last museum shed and outside display space</i>	069
figure 4.15	<i>inside spaces</i> (diagram by author)	047	figure 6.24	<i>aerial structural view</i>	069
figure 4.16	<i>outside spaces</i> (diagram by author)	047	figure 6.25	<i>rendered view of first museum shed</i>	070
figure 4.17	<i>"high tech" architecture, Ferrari's new production facility</i> (Domus_Ferrari_la fabbrica della velocita, The Speed Factory, 2004. Issue 872, supplement, pg 35)	048	figure 6.26	<i>rendered view of private box and transition space</i>	070
figure 4.18	<i>Williams Formula One</i> (Windsor, P. <i>Face Off-F1 Racing-2005 Guide. Supplement to Drive Magazine. March 2005, pg.33</i>)	048	figure 6.27	<i>rendered view of last museum shed</i>	071
figure 5.01	<i>technical cover page-Jenson Button testing the new BAR Honda at Barcelona</i> (Windsor, P. <i>Face Off-F1 Racing-2005 Guide. Supplement to Drive Magazine. March 2005, pg.32</i>)	051	figure 6.28	<i>rendered view of museum shed and outside display space</i>	071
figure 5.02	<i>aston martin vantage</i> (www.desktopmachine.com accessed on 12_02_05)	053			
figure 5.03	<i>steel frame construction</i> (photograph by author)	054			
figure 5.04	<i>corobrik horizon satin fbs</i> (photograph by author)	054			
figure 5.05	<i>high technology glass</i> (photograph by author)	054			
figure 5.06	<i>typical structural steel connection</i> (sketch by author)	054			
figure 5.07	<i>brick wall to h-column connection</i> (sketch by author)	054			
figure 5.08	<i>typical glass fixing</i> (sketch by author)	054			
figure 5.09	<i>aluminium cladding example</i> (www.hulafab.com accessed on 26_07-05)	055			
figure 5.10	<i>aluminium cladding detail</i> (sketch by author)	055			
figure 5.11	<i>rotunda roof edge detail</i> (sketch by author)	055			
figure 5.12	<i>admin roof edge detail</i> (sketch by author)	055			
figure 5.13	<i>museum monitor lighting detail</i> (sketch by author)	055			
figure 5.14	<i>roof composition detail</i> (sketch by author)	056			
figure 5.15	<i>steel framed flooring system detail</i> (sketch by author)	056			
figure 5.16	<i>ramp support detail</i> (sketch by author)	056			
figure 5.17	<i>steel framed seating detail</i> (sketch by author)	057			
figure 5.18	<i>mentis grid sunshading</i> (sketch by author)	057			
figure 5.19	<i>mentis grid sunshading example</i> (photograph by author)	057			
figure 5.20	<i>horizontal aluminium louvres example</i> (photograph by author)	057			
figure 5.21	<i>aluminium sun shading on the western facade</i> (sketch by author)	057			
figure 5.22	<i>monitor lighting example</i> (photograph by author)	057			
figure 5.23	<i>monitors for natural lighting and ventilation</i> (photograph by author)	058			
figure 5.24	<i>ventilation flow diagram</i> (sketch by author)	058			
figure 6.01	<i>design proposal, cover page-Jenson Button testing the new BAR Honda at Barcelona</i> (Windsor, P. <i>Face Off-F1 Racing-2005 Guide. Supplement to Drive Magazine. March 2005, pg.32</i>)	059			
figure 6.02	<i>south western view of model</i>	061			
figure 6.03	<i>eastern view of model</i>	062			
figure 6.04	<i>north west view of model</i>	062			
figure 6.05	<i>aerial view of model from the north</i>	062			
figure 6.06	<i>aerial view of model</i>	063			
figure 6.07	<i>aerial view of model from the south</i>	063			
figure 6.08	<i>view over roofs of model from the north</i>	064			
figure 6.09	<i>evening view of end museum shed</i>	066			
figure 6.10	<i>evening view private seating box and transition area</i>	066			
figure 6.11	<i>evening view of rotunda and admin block</i>	067			
figure 6.12	<i>evening view of first museum shed</i>	067			
figure 6.13	<i>aerial evening view</i>	068			
figure 6.14	<i>view of model from the north</i>	068			
figure 6.15	<i>rotunda and retail curve from the south</i>	068			
figure 6.16	<i>south eastern view of model with rotunda in foreground</i>	068			
figure 6.17	<i>eastern view showing an outside display space</i>	068			
figure 6.18	<i>structural view from the north</i>	069			

Preliminary

The purpose of setting a baseline for the project is to establish a list of performance criteria needed for the design of the precinct as whole, within the framework, and the individual design proposal. The baseline for this project is based on the Sustainable Building Assessment Tool (SBAT) presented to us by Jeremy Gibberd and a formulation of other goals as determined by the briefing document.

It needs to be understood that the baseline criteria is just a set of guidelines from where to begin the design process and is by no means a final list of requirements for the project. While every effort will be taken to accomplish the goals set in the baseline, certain points will fall away and others will be added as the design progresses.

Due to the nature of the project as set out in the brief, the baseline criteria will be a generalised view of the entire process encompassing the whole project in its entirety as the requirements for the various facilities differ substantially.



Occupant comfort

The quality of the environment in and around buildings has been shown to have a direct influence on the people who experience this environment. People who are happier have an increased positive effect in the work place. This coincides with sustainability and environmental control. Providing an environment that will aim to enhance the users experience maximizes the likelihood of a sustainable approach succeeding.

Lighting

The process of design development will focus on achieving the highest levels of natural lighting for all aspects of the facility as a whole. Where natural lighting is ineffective, direct, source lighting will be used, such as in the museum and the office space. Each aspect of lighting control will be addressed on its own merit and where possible, the end user will have as much control of their direct environment as possible.

Ventilation

Natural ventilation of the entire development is to be used to its full potential. This will help with the required air-volume changes and create an internal environment that is free from stale air. The use of mechanical ventilation may be necessary to aid in the extraction of warm air in areas where the velocity of wind flow is inadequate, such as basements, kitchen and toilet facilities.

Noise

Due to the nature of the circuit racing environment and the functions that the facility proposes, noise pollution is not of extreme importance. The museum and visitor centre will be spaces that enhance the culture of motor racing and, as such, will use the engine roar as part of this experience. People in the motor racing industry and who are passionate about motor racing will use the office complex. Their involvement in the race meeting is essential to the success of the event and do not generally work in the office on race day.

The zoning for Kyalami is of such a nature that only on sixty-four days of the year, is there allowed to be racing. For the remainder of time the circuit is subdued.

Views

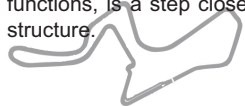
Access to views is of extreme importance to the design development of this proposal. The entire nature of the area, its functions and aesthetic are directed to what occurs on the track. Views will be maximized to the trackside at all interventions and from all vantage points. Public and private spaces will, where possible, share the availability of views to the full potential of both spaces.

Access to outside

In the creation of place, the access to the outside environment is crucial in establishing a sense of belonging. The user must feel, at all times, that they are not confined and can move freely from the inside to the outside and back again. Public, semi-private and private spaces must be clearly defined with the access to outside on the trackside fully enhanced.

Inclusive Environments

Designing inclusive buildings that can be used to accommodate everyone, with a varying degree of functions, is a step closer to environmental change and sustainability and furthers the life span of the structure.



Clearly defined routes throughout the development are to be established and to be created for all users, including the disabled. Finishes of the surface are to be of such a nature that they will not be a danger to the elderly or people in wheelchairs.

Changes in Level

The slope of the site dictates that level changes will be necessary. This is beneficial to the design development in that it can be used to create a change in character of the environment, creating places and differentiating between public and private spaces. All changes in level will be designed to accommodate the disabled, either through the use of ramps at an incline of between 1:10 and 1:12 or elevators where ramps are not justifiable.

Edges

Definition of edges throughout the facility is important for establishing spaces. This includes the use of different materials at all change in level edges and the creation of an edge on both trackside and roadside, which define the site parameters.

Toilet facilities

Public and private toilet facilities must accommodate the maximum amount of users in the different establishments and must cater for the use of the disabled as well. Male and female toilet facilities must be provided and clearly demarcated in public areas, such as in the museum and visitor centre.

Public Access

Access to the visitor centre and museum will be completely public access through controlled entry and exit points while the office complex is of a more private nature and access will be through a single reception area. A linkage must be established between the visitor centre and the office complex where the public can experience a movement of progression.

Communication

Displaying the function of the facilities is beneficial to the well being of the establishments. This can be done through billboards and well-defined signage, specifically for the museum. It can attract visitors and inform people of new displays and exhibitions. Advertising will play a very crucial role in this regard.

Participation and control

Decisions regarding the environment of the facilities should be made through participation of the users and the design should assist in user participation. This will ensure the well being of each of the individual's facilities. By being able to control certain aspects of the individual's environment, the user s gain a certain level of satisfaction and personal comfort. For the museum visitor, it could be suggestions for exhibitions or interactive displays. For the office complex it could be being able to open or close a window.

Environmental control

The control of the user's immediate environment, specifically in the office complex, will help to ensure a safe and comfortable working environment. This should be done so as to allow the individual ease of access to windows and ventilation openings, at the same time; these personal adjustments should not adversely affect other users. A recycling system should be put into place and the correct areas for the management of this system planned for.

User adaptation

Adaptation and flexibility within the entire facility should be catered for. Office space should be manageable and be able to conform to the user's requirements. This could be done through moveable partitioning

and open plan office areas. The museum will cater for a variety of exhibitions and university displays and allow spaces for temporary features, also the opportunity for the user to request specific features.

Social spaces

By providing an environment that will exhibit the necessary characteristics of social spaces through a cluster of different units, the user will experience phases of emotion and culture. This can be done with outside gathering areas, specifically designed to group people with like-mindedness. These could be smoking areas in the office complex and open courtyards in the museum where vehicles will be on display outside.

Amenities

The provision of a variety of amenities should be catered for to allow for personal taste. These should ideally be located on routes or in social spaces. These could include a coffee shop, a curio shop, vending machines and bar facilities for the user. Provision of parking, on street and basement parking, should be explored for the entire facility.

Education, health and safety

All facilities need to provide for adequate education, health and safety of their users. Dangers associated with motor sport should be made fully aware to all users.

Education

Education is the primary aim of these facilities and through the development and history of motor sport in South Africa and Kyalami itself, will serve the community on a multitude of levels. Emphasis will be on a truly South African motor sport identity.

Security

All attempts will be made to ensure that users will not be put in danger and that public users do not disturb private areas. All points will be monitored by visible security and Closed Circuit Television and all private spaces will only be accessed through a car-control management system. In the evenings, all spaces will be well lit and identification of pedestrian routes clearly demarcated.

Health

The health and welfare of all users is paramount in the survival of the facilities, particularly the public service areas. As such, all members of staff of the museum and visitor centre should have first-aid training and have easy access to first aid kits. Provision for emergency services parking is crucial and designated spaces for smoking should be clearly defined to the user. All areas inside any building or structure are to be no-smoking zones.

Safety

The entire facility will comply with all standards for health and safety a set out by the South African Bureau of Standards.

Culture

Many people know of the cultural differentiation of motor sport, but have not been able to experience it completely. This facility will aim to serve that divide by introducing the masses to the culture that is motor sport and the design of the buildings should reflect that culture.

Local economy

Through the establishment of a new framework for Kyalami Grand Prix Circuit, the possibilities of stimulation for the local economy are far-reaching. This can be sustained through the use and development of local skills and resources.

Local Enterprises

These include the use of local contractors and sub-contractors, local building material suppliers and local component manufacturers situated with the Greater Midrand area. All materials for construction will have to be sourced from within Gauteng and, where necessary, specialized aspects of all building work will be outsourced.

Outsource opportunity

Through the establishment of the new framework and specifically the Facility for development and promotion of motor sport, the opportunities for outsourcing of various components are created. These components include aspects of cleaning, maintenance and security. Local suppliers from these trades will benefit greatly from the development and only in specialized fields will business from outside Midrand be considered.

Repair and Maintenance

With the guided principles of using local enterprises in a majority aspect of the design development, the repair and maintenance components will only benefit. Local enterprises ensure that these features are easily accessible whenever necessary. By using materials and components that are relatively maintenance free, with the inclusion of passive heating and cooling techniques and limiting machinery, problems should not occur.

Efficiency of use

Effective and efficient use of buildings will not only limit the number of buildings needed, but also aim to serve sustainability, limit costs and reduce resources needed. Efficiency of use ensures the maximum financial gain for the building and support the network that aims to support the community.

Useable space

Maximum utilization of space that is beneficial to the nature of the establishment is crucial. Where possible, methods of alternative income gain for the facility should be explored and only the utmost essential space needed for service areas is suggested.

Space usage

The provision of areas that could be used for more than one function should be explored. This will eliminate the degradation of certain areas of the building units and also serves as alternative methods of income, such as the café area supporting evening functions and the auditorium in the office complex being used for seminars.

Technology

Communication and information technology points must be accessible to all employees to enhance the work productivity and the use of technology in the museum will serve to educate the user of motor sport in other areas around South Africa and the world.

Mixed-use development



The nature of the design proposal suggests a mixed-use development that will encompass office space, entertainment, retail space and educational facilities. Many of these areas will also serve to promote other functions as they are required. Areas for housing and high-density apartments are provided for within the larger Kyalami Grand Prix Circuit framework and are not deemed to be necessary for these facilities.

Adaptability and flexibility

Buildings that feature adaptability to change and flexibility overtime are instrumental in the sustainability cause. This is an aspect that will ensure a longer life span for the structure and reduces energy requirements over the long term.

Vertical dimensions

All spaces should be designed for the essential requirements of the current functions, but should also cater for future possible functions – floor to ceiling heights for the different facilities are to be guided by the following dimensions:

- Entrance foyers and receptions on ground floor: 4500mm minimum
- Offices: 2700mm minimum
- Museum: 6000mm minimum
- Basement Parking: 2700mm minimum

Internal partitioning

Internal portioning structure will be designed so as to not be load bearing and as such has no influence on future possible functions for the establishment. Within the museum, moveable partitioning will be employed to allow for flexibility of exhibition space. Only specific service areas will not be flexible.

Service areas

Ease of access to hidden service areas such as electrical, sewerage, HVAC and communication zones is essential in allowing for maintenance and alterations if necessary, but should not be of such a way that public users have direct access.

Ongoing costs

Even more demanding than capital costs is the effect that ongoing costs have on a building and the design of the buildings should alleviate, where possible, these costs through the correct material selection and management procedures.

Maintenance

Through the correct selection and specification of materials, maintenance can be kept to an absolute minimum and reduce the need for disturbance to all of the facilities. Low-energy, long life elements should be introduced into the design development wherever possible.

Cleaning

Cleaning of the facilities is important in portraying a highly successful image and the chance to promote the local economy can be enhanced in this regard, not only for this specific facility, but also for other establishments within the framework. The choice of materials in the design development should promote low maintenance and high durability with ease of access to all elements that will require cleaning.

Security

The design of the facility should ensure highly visible aspects from a variety of control points and through methods of physical patrol and technology, through the use of CCTV, security will also have a role in the local community upliftment. The environment within the proposed framework for Kyalami Grand Prix Circuit is envisioned as a controlled one and as such the security for the facility will fall within the larger scheme.

Insurance/water/energy/sewerage

These are factors that are largely uncontrollable to a certain degree. The nature of the proposed facility is such that insurance for the museum will be relatively high. Water can be controlled through the use of low flush mechanisms in toilets and automatic cut-off valves on hand basins. Alternative methods of water collection and energy production can be explored. As there are no possibilities for recycling in the proposed framework, sewerage will flow directly into the municipal collection points.

Disruption and downtime

These are aspects that cannot be avoided, but the effects can be minimized through ease of access to all service areas, thereby avoiding maximum disruption to the users. The design of the museum area should include the possibility of closing sections to allow for new exhibitions to be created without disturbing the entire facility.

Capital costs

The cost involved in establishing a new building is very high and, as a result, it is often one of the most valuable assets that a person or organization has. By providing a building that is sustainable, or at least partly sustainable, it creates funds in the long run that can be spent in other places, such as development and education of the youth. With an establishment of this nature, the involvement of the Government and NGOs is crucial to its future. The capital outlay for these facilities will be covered by a collaboration of the government, NGOs and sponsors whose passion in the motor sport is evident.

ENVIRONMENTAL ISSUES

Water

The use of clean, fresh water in today's society is a necessity. It is required by a large number of activities that, more often than not, waste it considerably. Through the use of many techniques, water consumption can be brought down to minimum so as to alleviate the need for excessive municipal supply. Water requirements for this project will, as a standard, be at a minimum, but efforts for the larger framework can reduce the demand.

Rainwater

With the collection of rainwater from the roof systems and storing it in tanks, a large percentage of municipal can be eliminated. The stored water can be used to supply toilet cisterns and for watering the landscape. During the dry, winter period it will be necessary to increase the municipal supply and alternatives like boreholes should be looked into.

Water Usage

The greatest percentage of water consumption in this facility will be in the toilets. With the use of low-flush mechanisms in the toilets and flow restricting taps, this can be brought down to a minimum. The tenants of the coffee shop and bar will be advised on saving water and a possibility of a lowered rental rate could be put into place if the process is successful.

Run-Off

To assist in excessive run-off of water during the wet, summer season, the use of soft landscaping against hard surfacing should be investigated so as to allow the water to penetrate the surface and re-supply the ground water system.

Planting

Planting of indigenous species is a prerequisite. It not only contributes to the local character of the site, but local species have also got a lower water requirement than the exotics.

Energy

With the idea that buildings consume approximately 50% of all energy produced, alternative means of energy production should be researched. This not only decreases the demand on conventional energy supply, but also reduces ongoing costs for the facility.

HVAC

Passive techniques of air supply and extraction should be researched and implemented and only where necessary will mechanical means be put into place. The use of heating and cooling devices that are required must be specified as low energy and placement within the facility should be designed so as to allow user control over their immediate environment and not to create uncomfortable spaces for other users.

Renewable Energy

Alternative methods of energy production are a necessity in today's society and through facilities such as these- education of the public can take place. Solar power should be investigated to supply electricity to extraction units within the facility and possible solar geysers for the heating of water.

Natural Light

Orientation of the site is defined predominantly by a western façade. This is due to the site facing the track on the western side. All possible measures should be taken so as to minimize the effect of western sun in the afternoons through the use of shading devices. Attempts must be made to ensure that the view of the circuit is not interrupted with the inclusion of these shading techniques. Measures will be taken to allow for as much natural lighting as possible throughout the entire facility.

Materials and Components

During the construction process, materials and components will be needed to create the facility. Many of these will require large amounts of energy to produce. Through the correct selection and specification of materials and components, the energy demand in creating the facility can be reduced.

Embodied energy

Criteria for selection of materials will include the embodied energy of that specific material. No targets will be set as the possibility of recycling the material could outweigh the initial embodied energy requirement.

Components

All components that are specified should be of long life-low energy types and only where there is no other available alternative, can other products take their place. Artificial lighting throughout the facility will be specified with low energy light fittings.

Recycling

Specifically in the office environment will a recycling programme be put into place. The design should take this into consideration and allow for possible areas of collection of recycled material.

The architectural character of many buildings today does not respond even remotely to the context of its surroundings. Vernaculars of the local context need to be addressed correctly and initiatives need to be put into place that represents the true culture of its location. In this proposal, recognition must be given to motorsport and the motor racing culture as its highest priority. The architecture must be a representation of what motorsport is.

A link between architecture and the culture of motorsport has already been established and needs to respond to the context of the current situation. The goal of the design proposal must be to create an architecture that will display the middle ground between the "old world" grand prix circuit and the "new world" racing formula. It must be an architecture that serves to enhance.

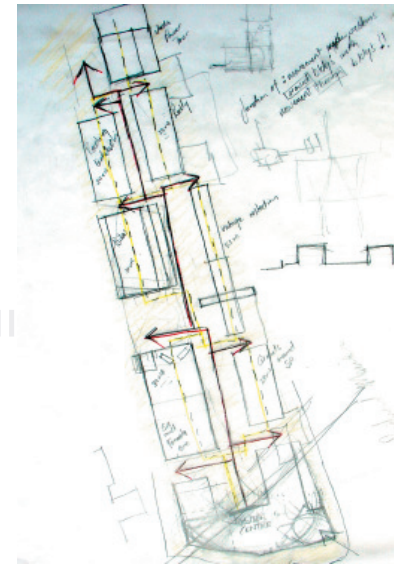
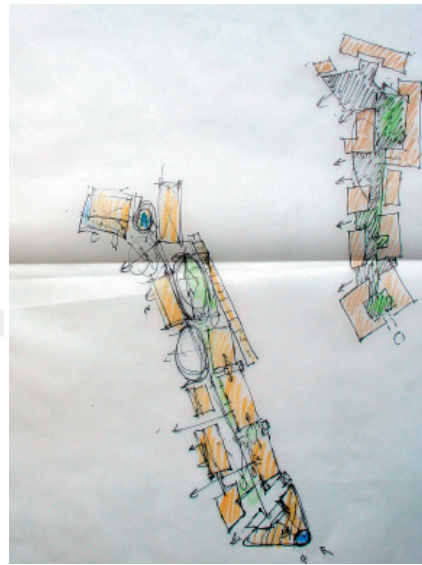
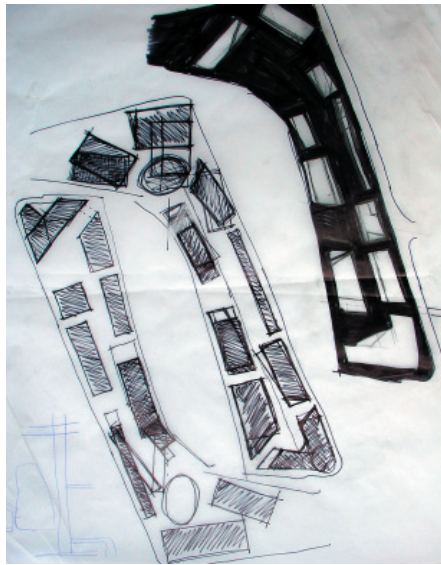
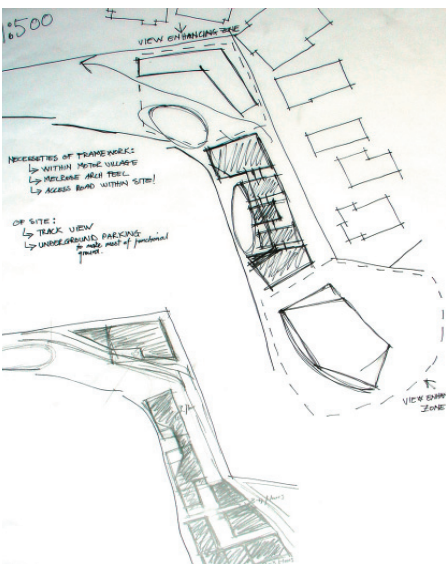
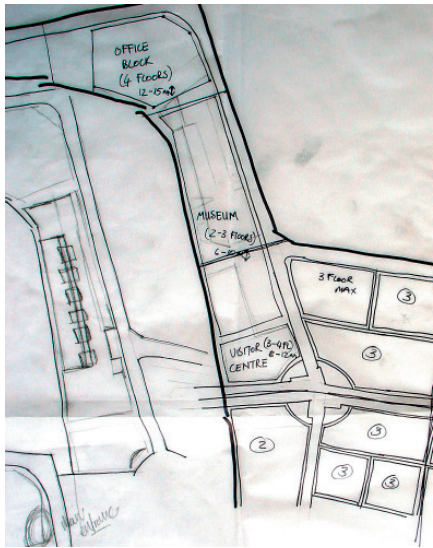
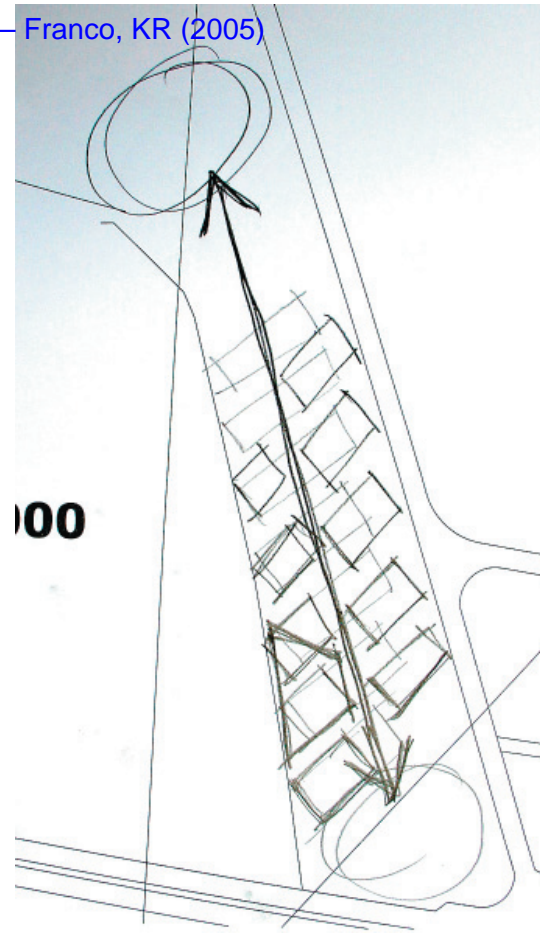
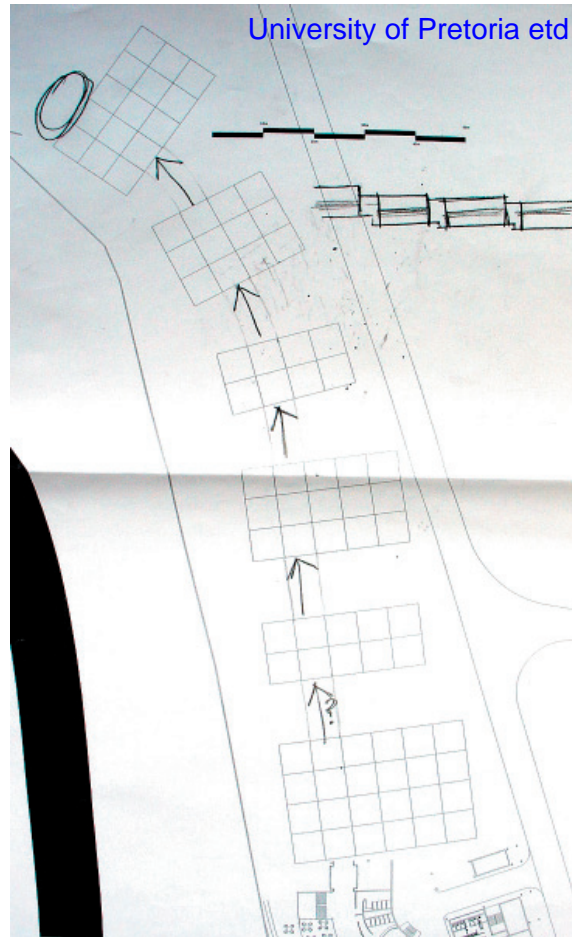
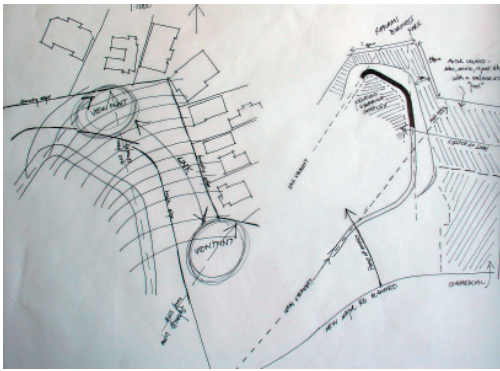


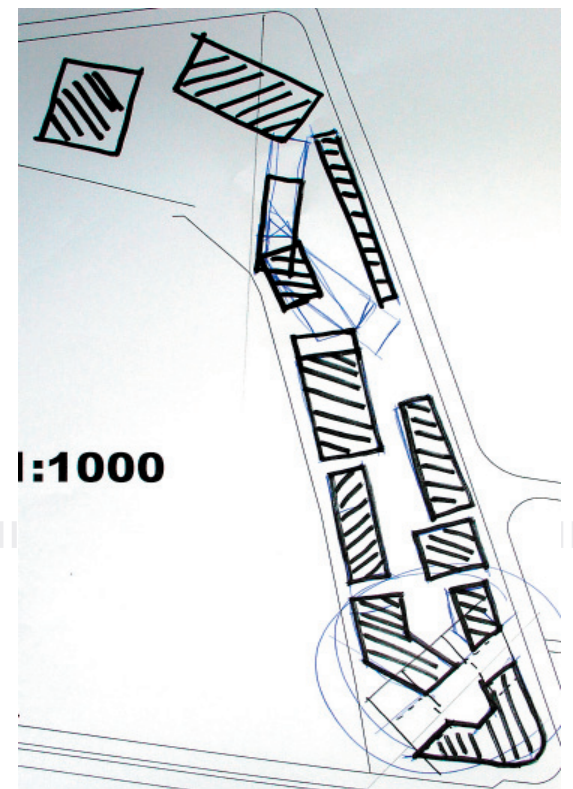
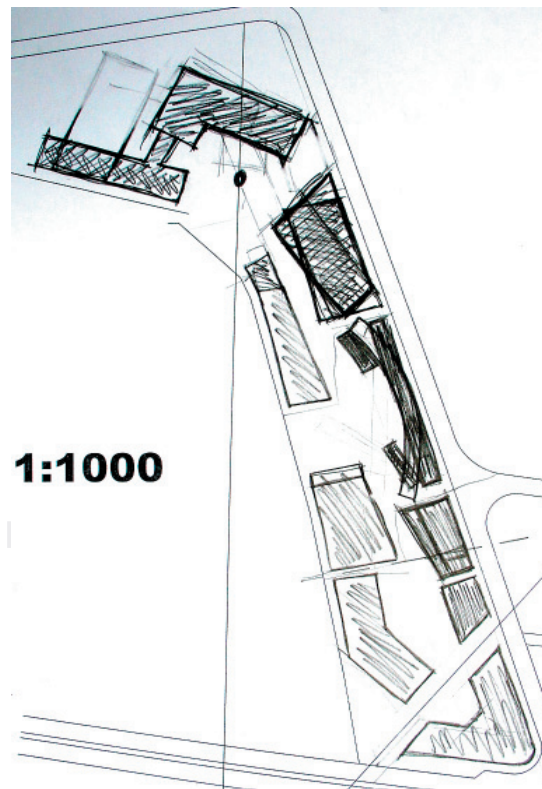
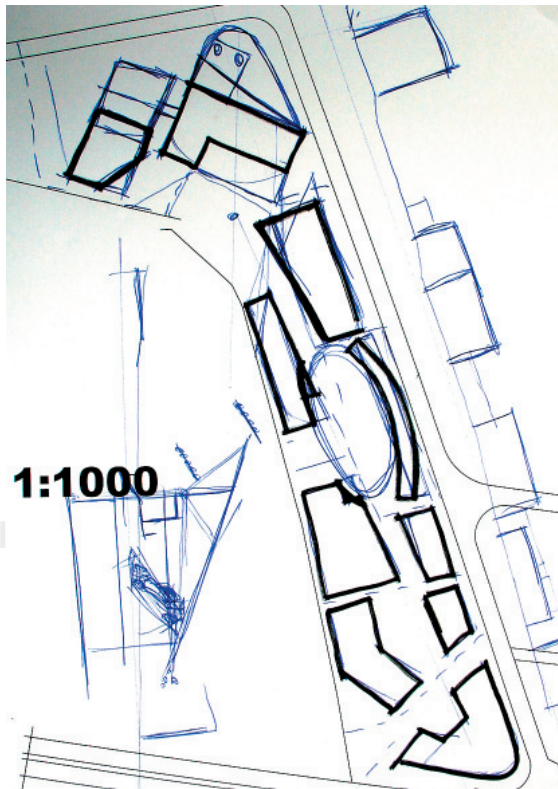
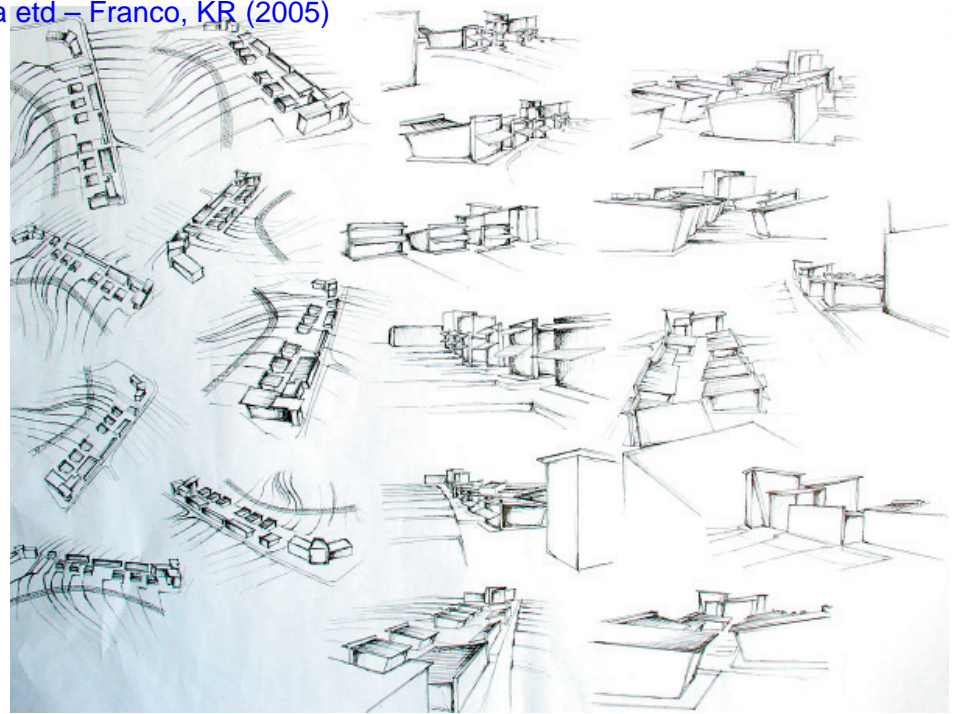
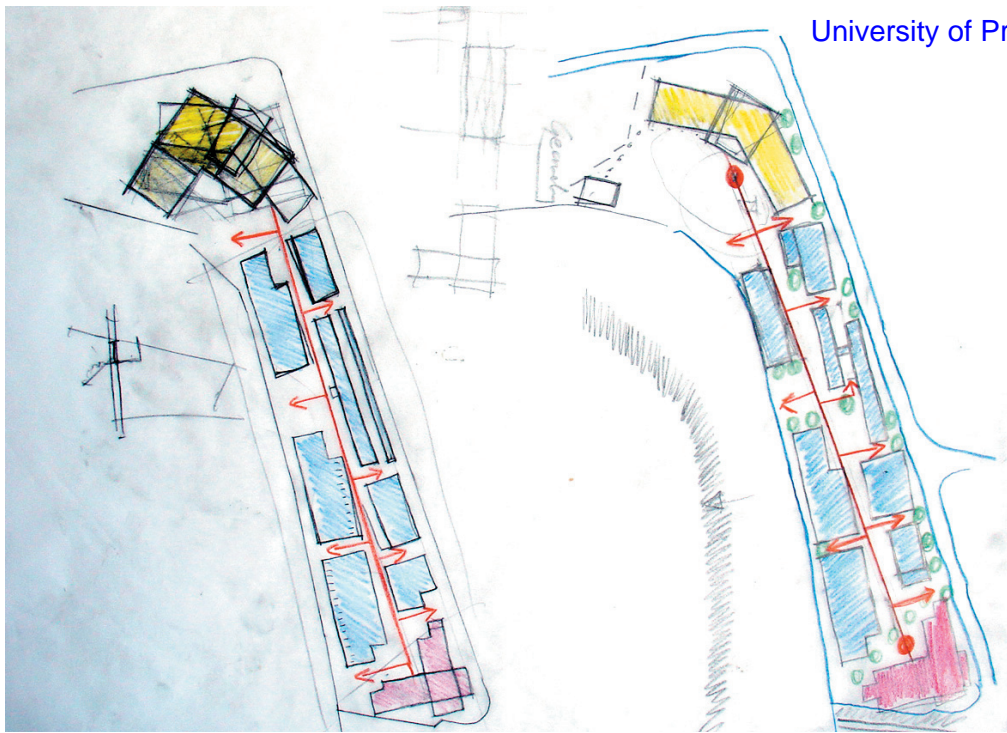
Application	Zone	Quantity	Area/Unit	Total Area	Lighting requirement	Airflow requirement
		unit	Sq/m	Sq/m	lux	L/s
Private office	Private	11	12	132	300	5
Open Plan office	Semi-Private	1	34	34	300	5
Meeting rooms	Semi-Private	1	34	34	300	5
Reception/Waiting area	Semi-Private	4	16	64	200	3.5
Staff lounge area	Private	3	15	45	200	3.5
Retail	Public	12	21	252	300	7.5
Toilet Facilities	Private	15	1.4	21	100	25
_units are number of toilets/urinals _totals include facilities for the disabled	male	9				
	female	6				
	Public	87	1.4	122	100	25
	male	57				
	female	30				
Areas of Movement	Public			2275	100	5
Museum display area_1	Public	49	18	882	200	3.5
_units are per car _area/unit is a module of 6m x 3m per car	2	17	18	306	200	3.5
	3	24	18	432	200	3.5
	4	15	18	270	200	3.5
	5	25	18	450	200	3.5
	6	34	18	612	200	3.5
	Museum Workshop	Semi-Private	15	18	270	300
Private Boxes	Private	17 boxes	15	255	100	
Seating area in box	Private	24 seats/box	0.85	408.85	100	5
_units are per seat _area/unit is a module of .85m ²		17 boxes				
Public Seating area	Public	430 seats	0.7	301	100	5
Restaurant_ seating area	Public	4ppl/table	0.85	102	200	5
		30 tables				
_Kitchen/wash up/bar	Private			63	500	17.5
_Office/staff area/store	Private			45	300	5

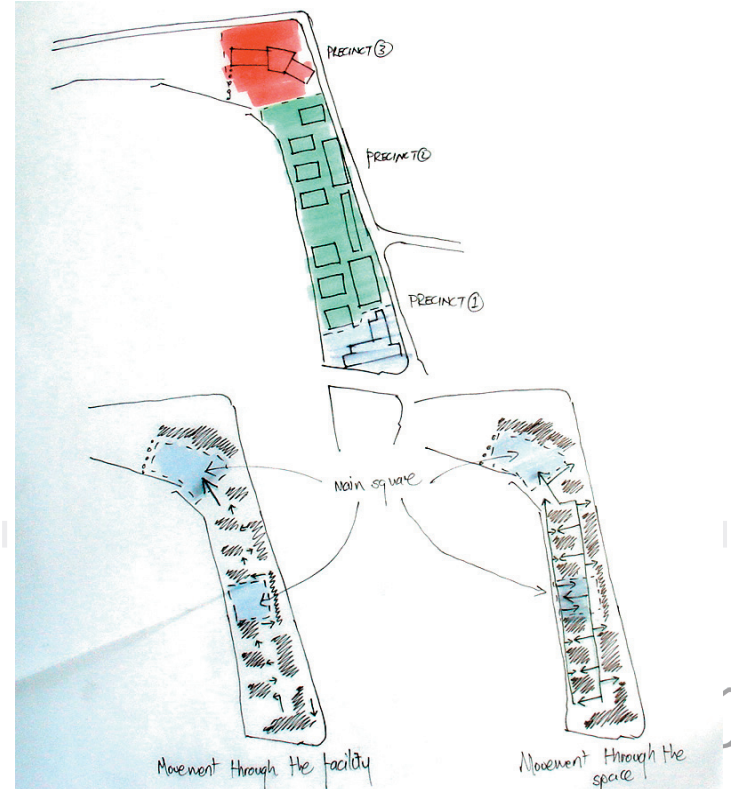
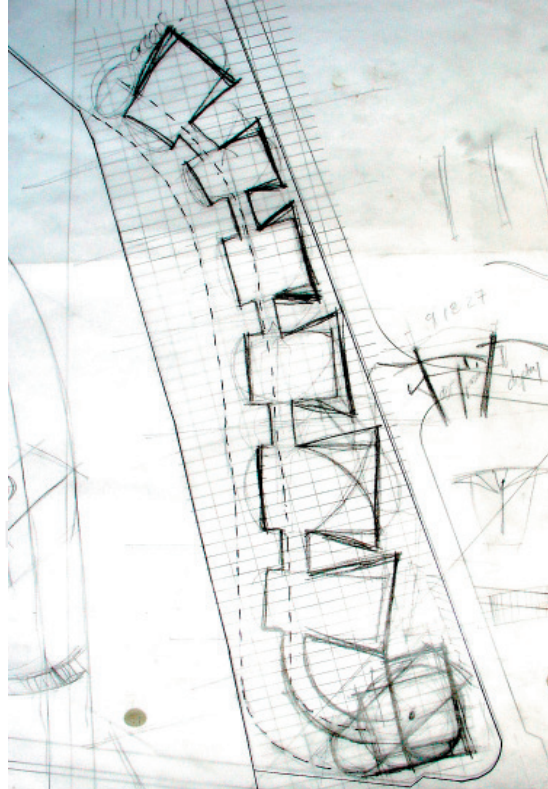
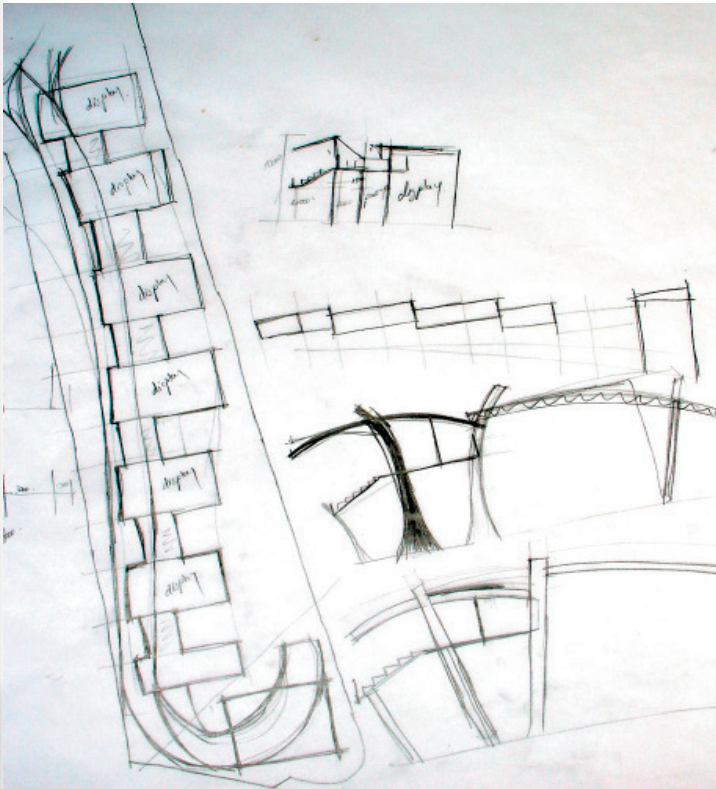
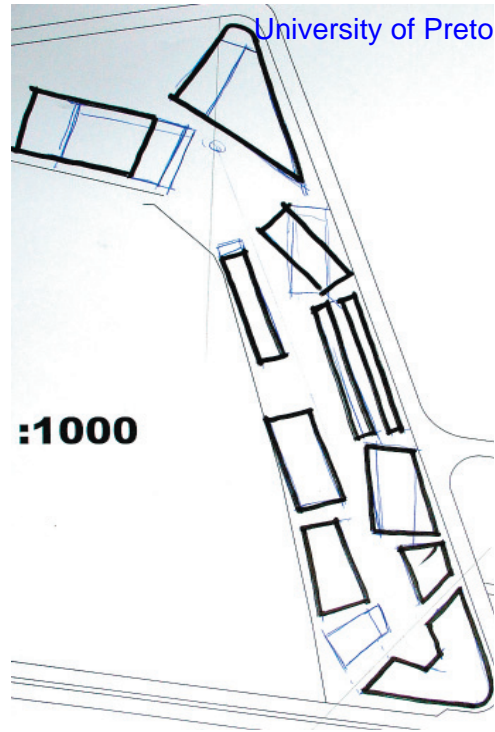
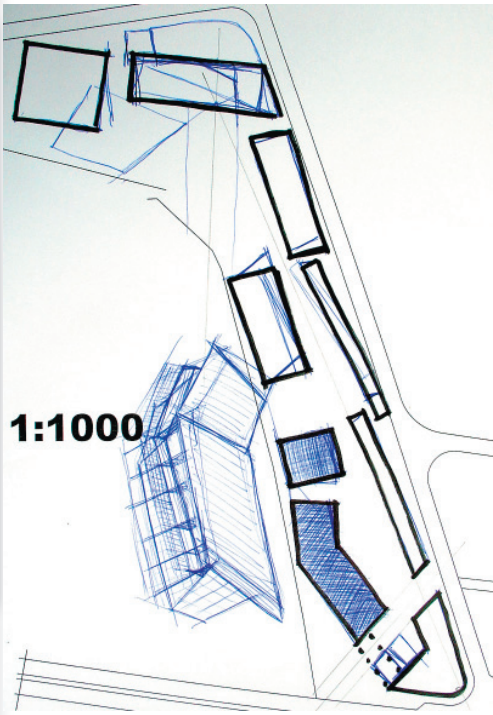
_lighting and ventilation
ventilation values were obtained from SABS 0400 [pg112-113],lux lighting values are recommended values obtained in Neufert- Architects' Data (third edition) [pg149]

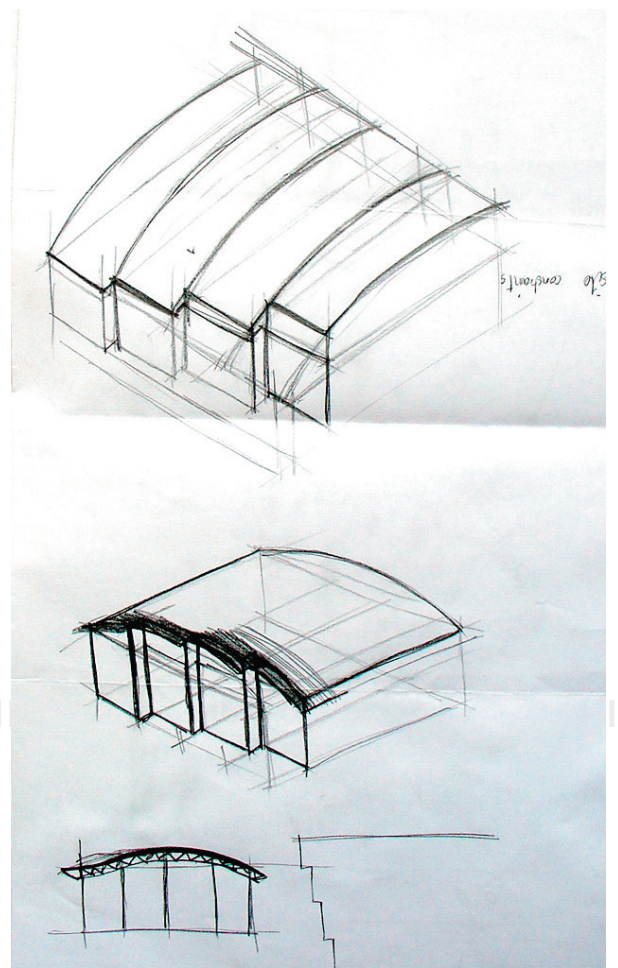
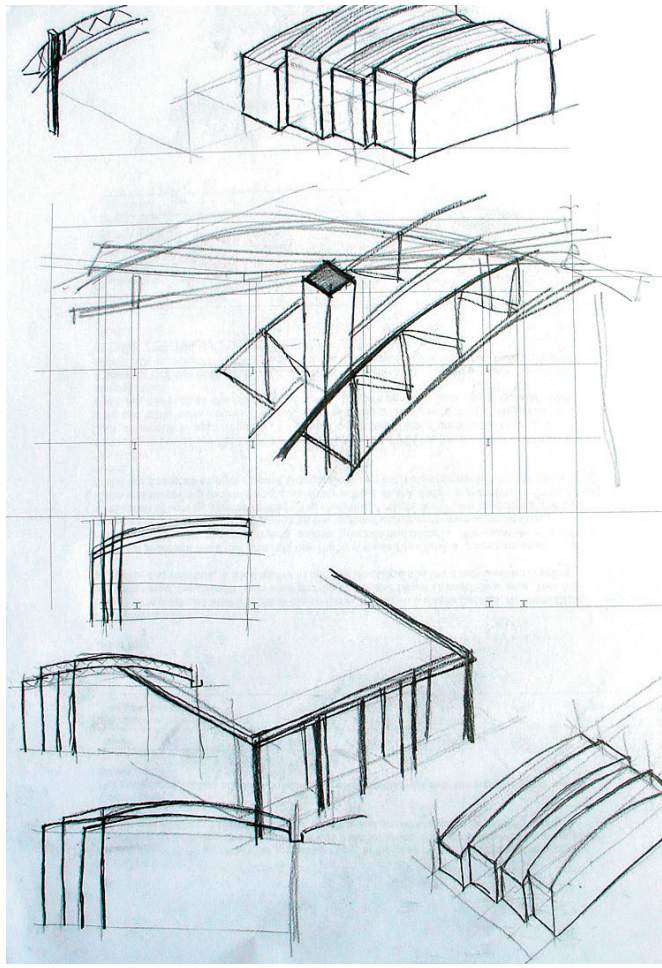
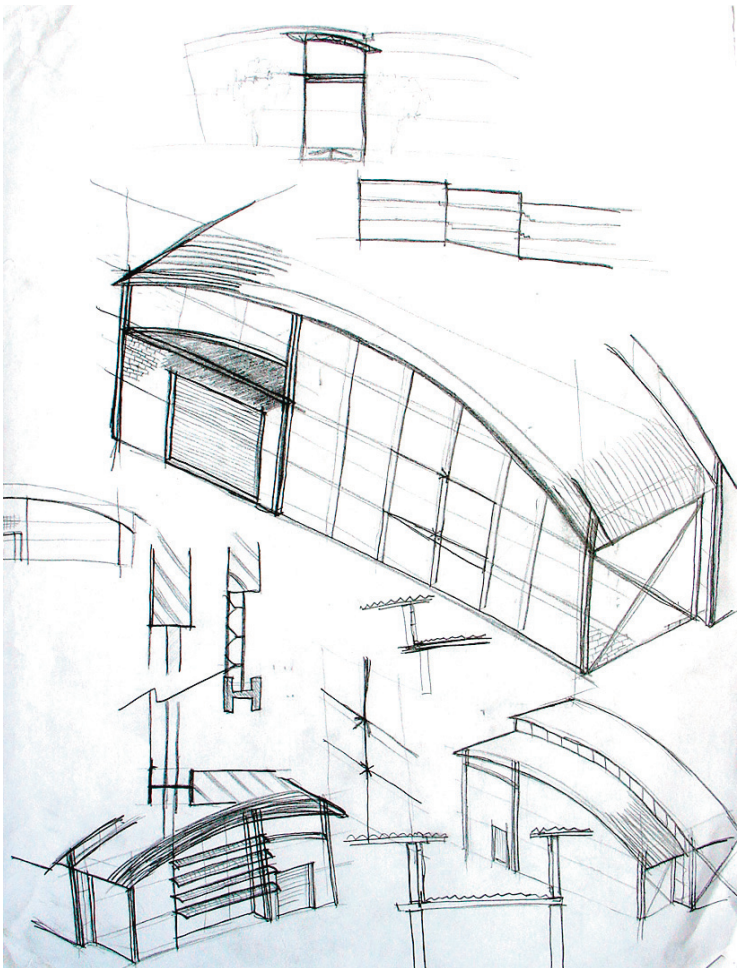
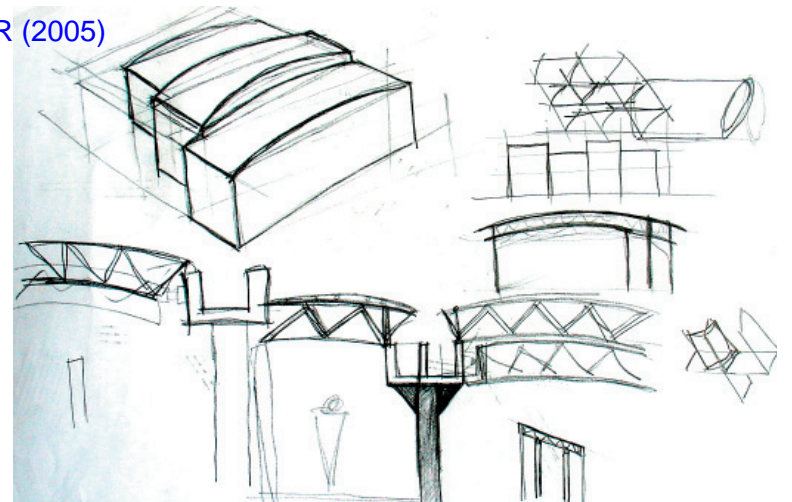
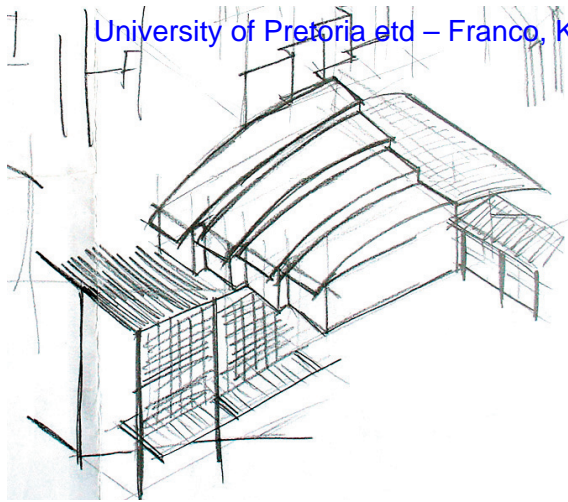
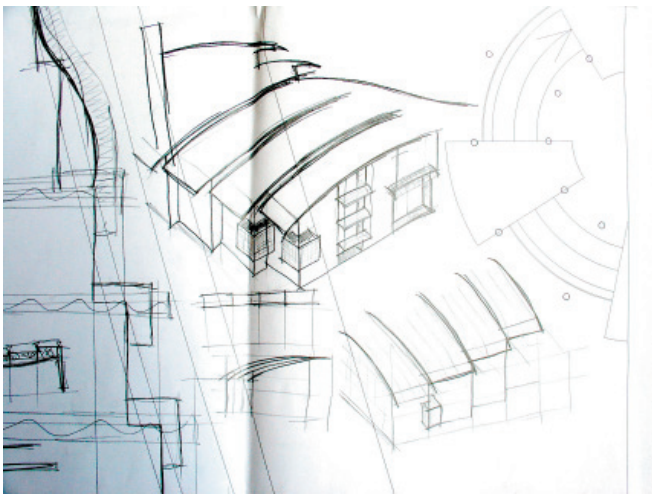


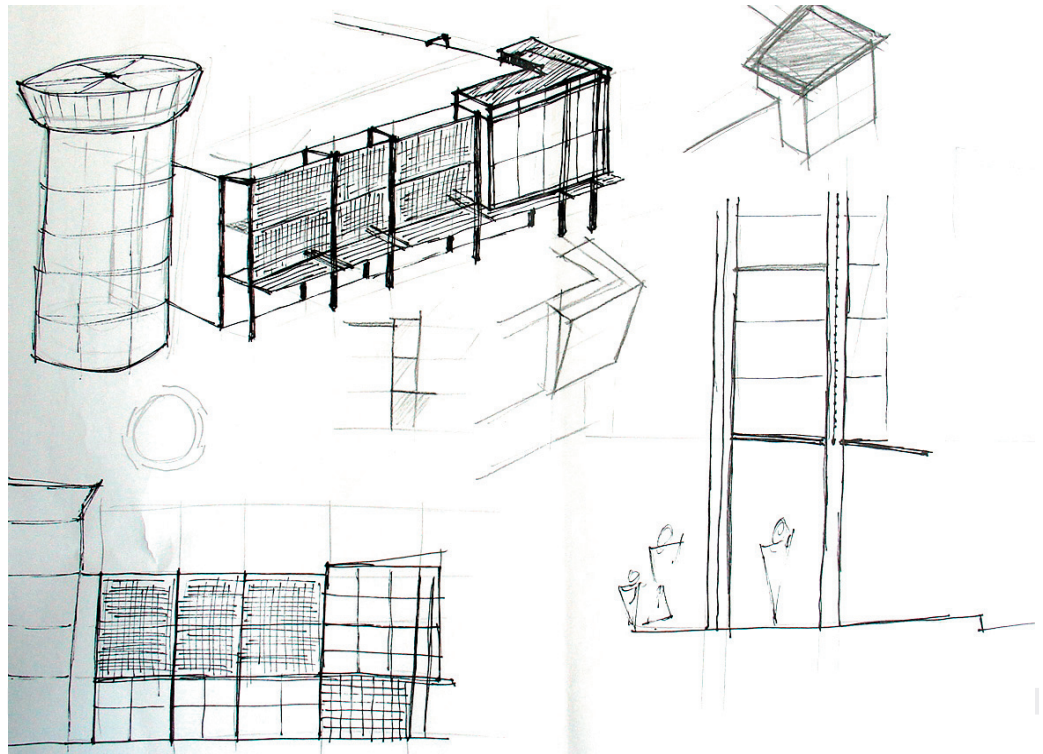
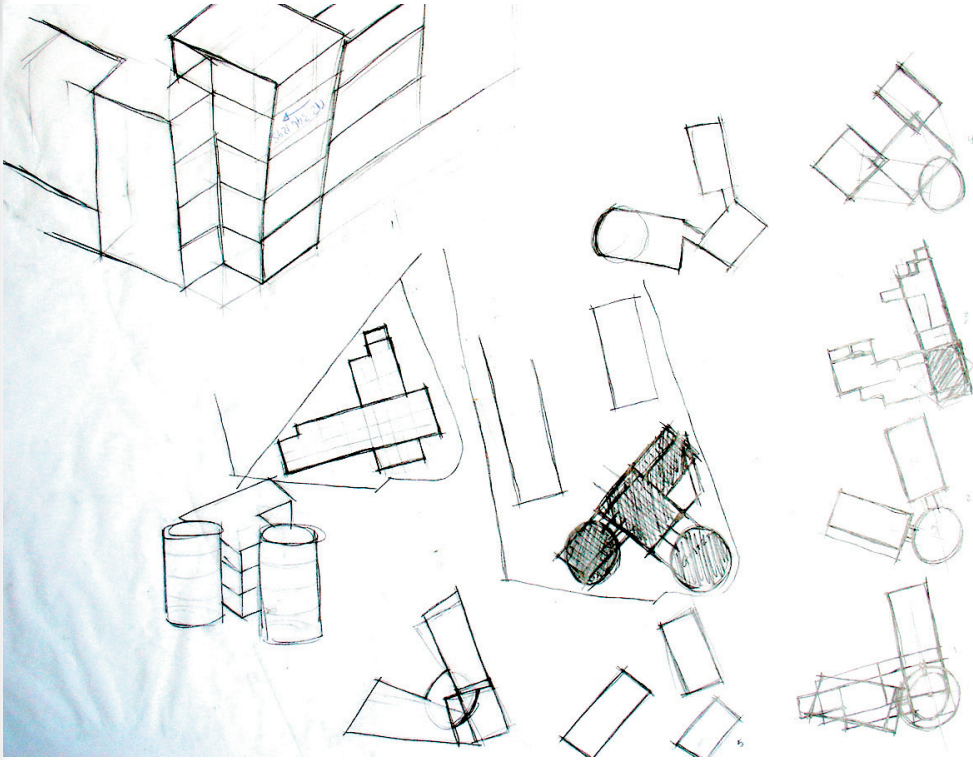
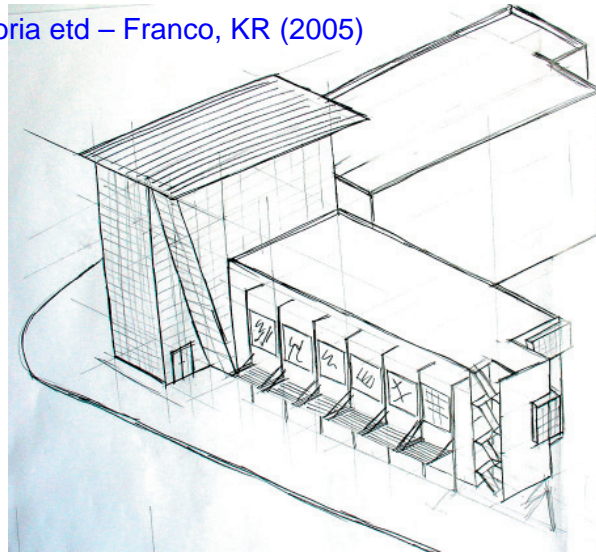
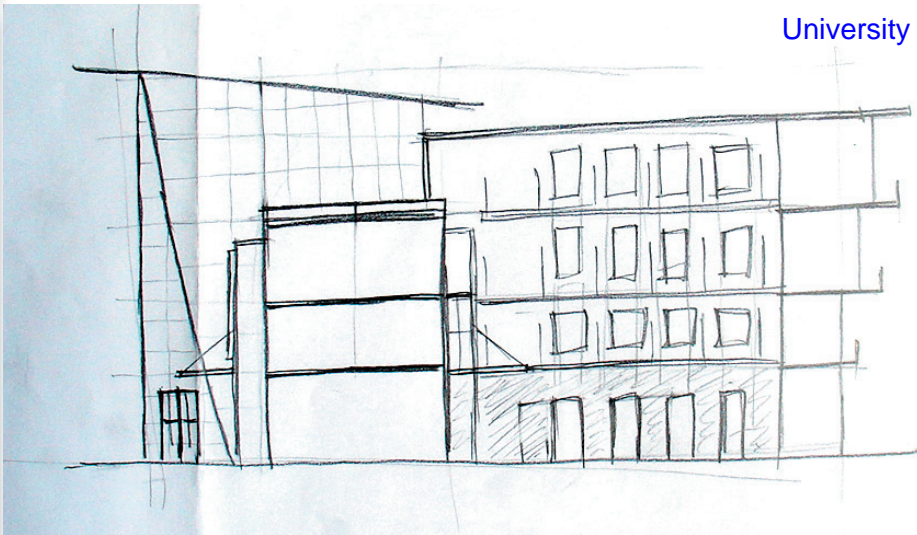
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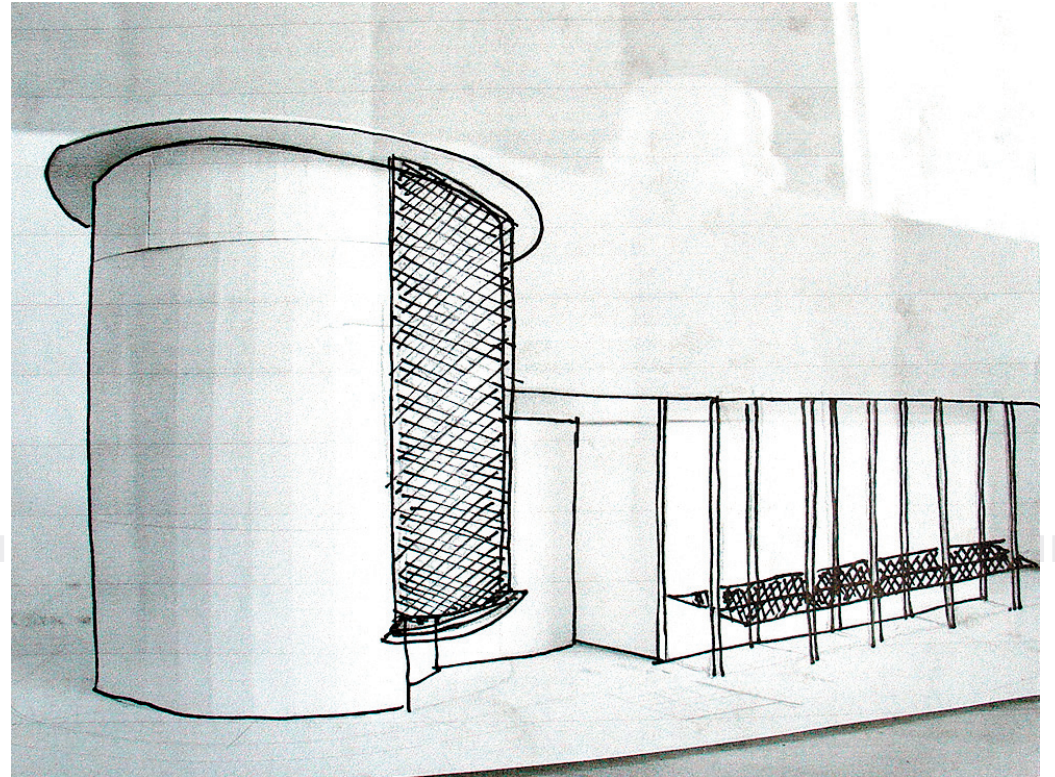
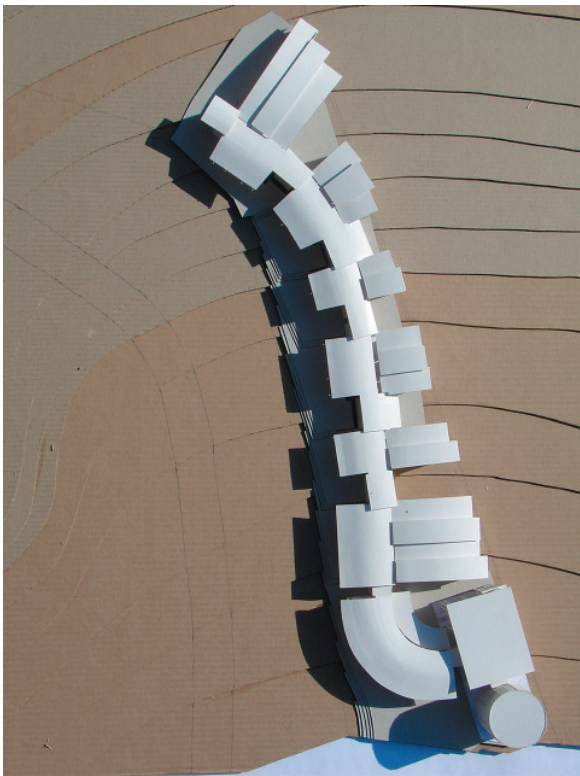
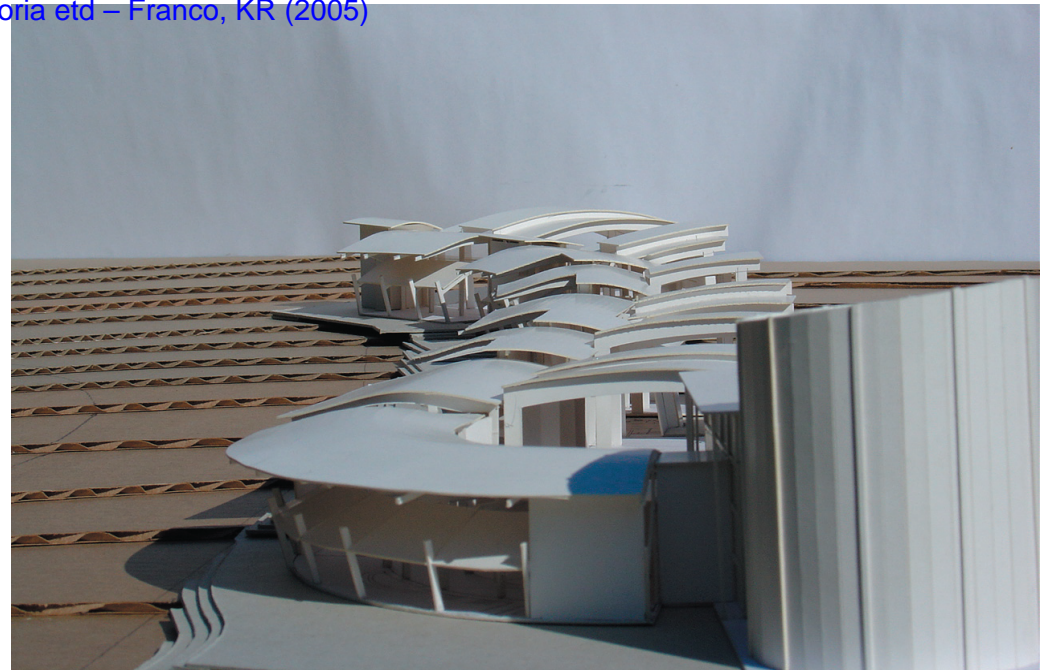
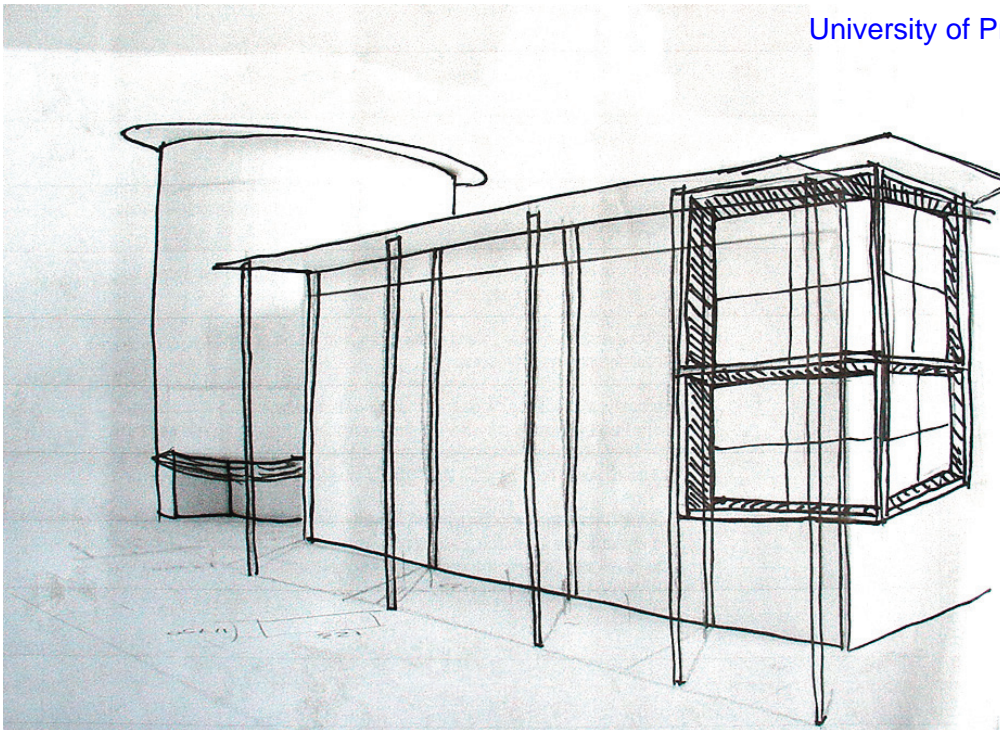












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*Gary, for guiding me through the process that would have otherwise been much more hectic
My Mom, because that's what moms are for
Nadia, for all the help through this year and for just being there when I needed you, without question
and to all my friends, thank you, you made my varsity journey possible*

